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Foreword

It is with great pleasure that we introduce the inaugural volume of **Innovation Academy: Advanced Management (Applied Innovation)**, an open-access collection that highlights the exceptional work produced by learners on the *PGCert Applied Innovation* programme. This publication brings forward research outputs and practice-informed projects that embody the central tenet of applied innovation: the purposeful integration of theory, evidence, and action.

This volume captures how learners translate academic frameworks into real-world innovation through experiential learning settings such as **CLIMB (Cardiff and Vale University Health Board)** and the **Exemplar Programme (Bevan Commission)**. These environments provide authentic innovation challenges, enabling learners to apply analytical tools, systems thinking, and change methodologies to complex organisational contexts. Across the projects presented, learners demonstrate how academically grounded approaches can:

- **Enable innovation within complex systems**
- **Support transformation under real-world constraints and organisational pressures**
- **Deliver tangible benefits for organisations, services, and communities**

The contributions assembled here exemplify the productive interplay between scholarly inquiry and applied practice. Each project engages directly with contemporary challenges in innovation management, service redesign, and transformational change, advancing both conceptual clarity and actionable, context-specific solutions. Collectively, the works reflect the academic rigour of our students and their commitment to generating measurable impact within their professional spheres.

These projects also align with key national priorities for Wales. They resonate with ***A Healthier Wales*** (Welsh Government, 2018), which sets out a whole-system approach to integrated, sustainable models of care, and with the ***Innovation Strategy for Wales*** (Welsh Government, 2023), which emphasises mission-driven innovation, improved translational pathways, and research that delivers societal and economic value, thereby contributing to Wales's broader ambition to cultivate a resilient, equitable, and innovation-led future.

The interdisciplinary composition of the cohort, spanning health and social care, the third sector, public services, industry, and the wider life sciences landscape, has greatly enriched this volume. The diversity of perspectives strengthens the analyses presented, enhances knowledge exchange, and underscores the collaborative ethos that defines the PGCert Applied Innovation.

For academics and researchers, this volume provides insight into emerging practitioner-led scholarship. For policymakers, it offers evidence of innovation capabilities developing across the Welsh ecosystem. For students and professionals, it presents accessible exemplars of inquiry-driven innovation applied to real organisational challenges.

The *Innovation Academy Research Series* reaffirms Swansea University and the All-Wales Intensive Learning Academy for Innovation in Health and Social Care's enduring commitment to advancing innovation scholarship, promoting open access, and disseminating knowledge that informs both policy and practice.

Warm regards,

Editorial team

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Escalation of Care in the Management of Postpartum Haemorrhage

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Abstract:

Escalation of care in any health care context is a complex process comprising clinical, behavioural and logistical steps. Postpartum haemorrhage (PPH) remains one of the leading causes of morbidity and mortality worldwide and is the second largest cause of direct maternal deaths in the UK. National enquires into adverse maternal outcomes still show that failure to escalate remains a contributory factor to a large proportion of cases. This is despite most hospital's having their own escalation policies for the management of PPH. The aim of this scoping review was to identify the number and types of literature available looking at the barriers and facilitators of escalation of care in PPH. This systematic scoping review identified 24 studies; a third of which were editorials, narrative reviews or consensus statements. Only 2 publications, both by the Royal College of Obstetrics and Gynaecologists (RCOG) from their Each Baby Counts quality improvement reports, looked specifically at barriers to escalation of care, albeit more widely in maternity care in general. We use the themes identified in the RCOG 2020 report to chart the barriers and facilitators from all the literature included in this scoping review. Our charting summary of barriers and facilitators to escalation of care in PPH could offer clinical leaders a template in identifying any barriers in their local context and enable them to implement some of the facilitators to help improve escalation practices within their own units.

Keywords: Escalation, Postpartum Haemorrhage

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INTRODUCTION

The primary objective of this report is to carry out a scoping review to quantify the number and types of literature available, looking at the barriers and facilitators to clinical escalation of care in post-partum haemorrhage (PPH). With this objective in mind, we describe a robust methodological process used to search the literature, using the Joanna Briggs Institute's Manual for Scoping Reviews (Peters et al, 2015). We systematically searched all available literature, using an eligibility criterion further prescribed later in this report. A priori protocol was created to help guide the screening process, and this is included in Supplementary Appendix A.

Scoping reviews are designed to quantify the literature on a broad topic and not draw conclusions specific to a research question which is more suited to systematic reviews (Munn et al, 2018). The rationale to undertake a scoping review for my research project, as opposed to a systematic literature review, is that this is very broad and complex area which has previously not been a topic of research focus. The aim is to therefore quantify the available literature in this area, so that any limitations identified can help inform future work.

IDENTIFICATION OF PROJECT REQUIREMENTS

Excess bleeding is the most common complication of childbirth. Every year 50,000 women in the UK lose 1 litre of blood or more. The 2019–21 Confidential Enquiries into Maternal Deaths and Morbidity report identified 17 direct deaths due to obstetric haemorrhage in the UK and Ireland: the report placed obstetric haemorrhage as the second leading cause of direct maternal deaths (Knight et al, 2021). Many women need a blood transfusion, are admitted to intensive care and find the experience of bleeding traumatic, developing mental health issues after having their baby. Multi-professional management of post-partum haemorrhage (PPH) requires the skills of midwives, obstetricians, anaesthetists, healthcare support staff and haematologists working in an effective team (Bell et al, 2021).

The MBBRACE report highlighted the need for improved implementation of appropriate escalation policies for periods of high activity. These policies should include a plan to escalate to more senior obstetric and anaesthetic assistance (Knight et al, 2021). Variations in care are widely reported, with delays in escalation to senior staff a common theme (Al Watter et al, 2023. Carrol et al, 2018). As the most recent triennial MBRRACE-UK report suggests there remains barriers in implementing appropriate escalation policies, often without a clear reason, despite this being a recurring theme in previous MBRRACE reports (Knight et al, 2018). Significant work remains to understand these barriers to minimize delays in appropriate management (Walsh & Nauoum, 2021).

Limited guidance exists on the best processes or protocols to guide escalation of care in PPH. Shields et al. (2015) describe a quality improvement programme that standardised care during PPHs (Shields et al, 2015). This included risk assessment followed by a stage-based escalation policy. These stages were based on objective measurements of 500-, 1000- and 1500-mL blood loss and/or clinical signs. This stepwise, prescriptive approach requires objective measurement rather than estimation of blood loss that was initiated after every delivery. The protocol stipulated that a senior midwife, obstetrician and anaesthetist should be at the bedside when blood loss reached 1000 mL (Shields et al, 2017). A similar stage-based approach to escalation of care was described in Wales as part of an 'Obstetric Bleeding Strategy' (OBS) intervention bundle (Bell et al, 2021). Both approaches described between Shields et al. (2015) and Bell et al. (2021) demonstrated a fall in the number of women suffering excess bleeding and fewer needed blood transfusion. Similarly, the E-MOTIVE study, which had an escalation arm in their invention bundle, demonstrated good adherence to their PPH treatment bundle, but they did not interrogate the impact or adherence of the escalation arm of their treatment bundle (Gallos et al, 2023).

The results of these specific risk assessment tools and protocolised care in helping to reduce preventable complications is encouraging. However, there remains a dearth in the literature that looks at the mechanisms by which these bundles actually improve the escalation processes or understanding how they influence on the complex model of escalation, as described by the RCOG (RCOG, 2020). Without understanding the barriers and facilitators to escalation of care, we cannot reliably inform future interventions or guidelines looking at clinical escalation in PPH.

The objective of this systematic scoping review is to investigate what studies exist within the available literature looking at the barriers and facilitators to escalation of care in the management of PPH, in the

hospital setting. We hope the work carried out in this scoping review can help inform areas for future research and inform types of escalation interventions in PPH that can be implemented in units.

MAIN ANALYSIS

Methods

We used the Joanna Briggs Institute's Method Manual for Scoping Reviews to inform the conduct of our methodology (Peters et al, 2015). We started by creating a priori review protocol to establish the objectives, map the search strategy, and outline the appraisal of sources to inform the reviewers. The protocol is included in Supplementary Appendix A.

Eligibility Criteria

Our eligibility criteria required the literature to be relevant to barriers and facilitators of personnel escalation of care in post-partum haemorrhages. This could be escalation of care in a single specialty (midwifery, obstetrics, anaesthetics, or haematology), as well as escalation across these disciplines. As we are focussing on escalation of care within clinical teams, we excluded those articles that looked at escalation relating to medical interventions and/or treatments. We included articles conducted in any setting or country, including those published in another language.

A comprehensive literature search of electronic Medline, EMBASE and CINAHL databases was carried out by an experienced librarian. The search strategy was peer-reviewed by another expert librarian from a different institution. We did not put a limit on the date ranges for the search criteria to enable us to capture as many data sources relevant to the objectives of this scoping review as possible. The final search terms used for each database was agreed by consensus and is included in Supplementary Appendix B. Grey literature sources were also searched using Google Advanced Search & Overton search platforms, as well as websites of relevant regulatory authorities for additional publications (e.g. Obstetric Anaesthetists' Association, MBRRACE-UK, Royal College of Obstetrics & Gynaecology etc). Reference lists of all screened reviews were also searched for relevance based on the eligibility criteria.

Data Selection

The results from each of the databases were compiled into RIS format and imported into Covidence to allow independent review by 2 reviewers. Both reviewers first undertook pilot testing, to ensure consistency and mutual understanding of the objectives and eligibility criteria. It was agreed that screening would require a consensus of greater than 80% from a random sample of 10% (25) of the titles/abstracts from the search strategy. Disagreements in this pilot screening were subsequently solved by discussion and consensus, before proceeding with the initial screening review. This approach to pilot screening is consistent with best-practice guidelines (Polanin et al, 2019).

Following this pilot screening, both reviewers undertook a two-stage screening review. Firstly, they independently reviewed all titles and abstracts for potential relevance against the eligibility criteria (level 1 screening). Following this initial screening, they independently carried out a full-text review of the articles (level 2 screening).

Data Analysis

The barriers and facilitators were described using a taxonomy described by the Royal College of Obstetricians & Gynaecologists (RCOG) in their quality improvement initiative to describe clinical escalation broadly in maternity care (RCOG, 2020). This work categories clinical escalation in maternity care into three broad themes; human factors and behaviours, workload and workforce challenges, and communication (RCOG, 2020). These 3 themes were used in our coding scheme to chart barriers and facilitators of escalation of care in the included studies in our scoping review.

Results

There were initially 695 studies identified, across the 3 searched databases, using the agreed search terms. When duplicates were removed, there were 398 studies eligible for the initial level 1: title and abstract screening. Following this screening there were 51 studies identified for level 2: full-text screening. Following this screening, 31 studies were excluded for lack of relevance to the eligibility criteria, leaving 20 studies eligible for data extraction. A further 4 reports were identified as relevant for final inclusion from the grey

literature and relevant website search. The final number of publications included for data extraction was 24. Figure 1 shows the full data selection process, from screening to final selection of sources.

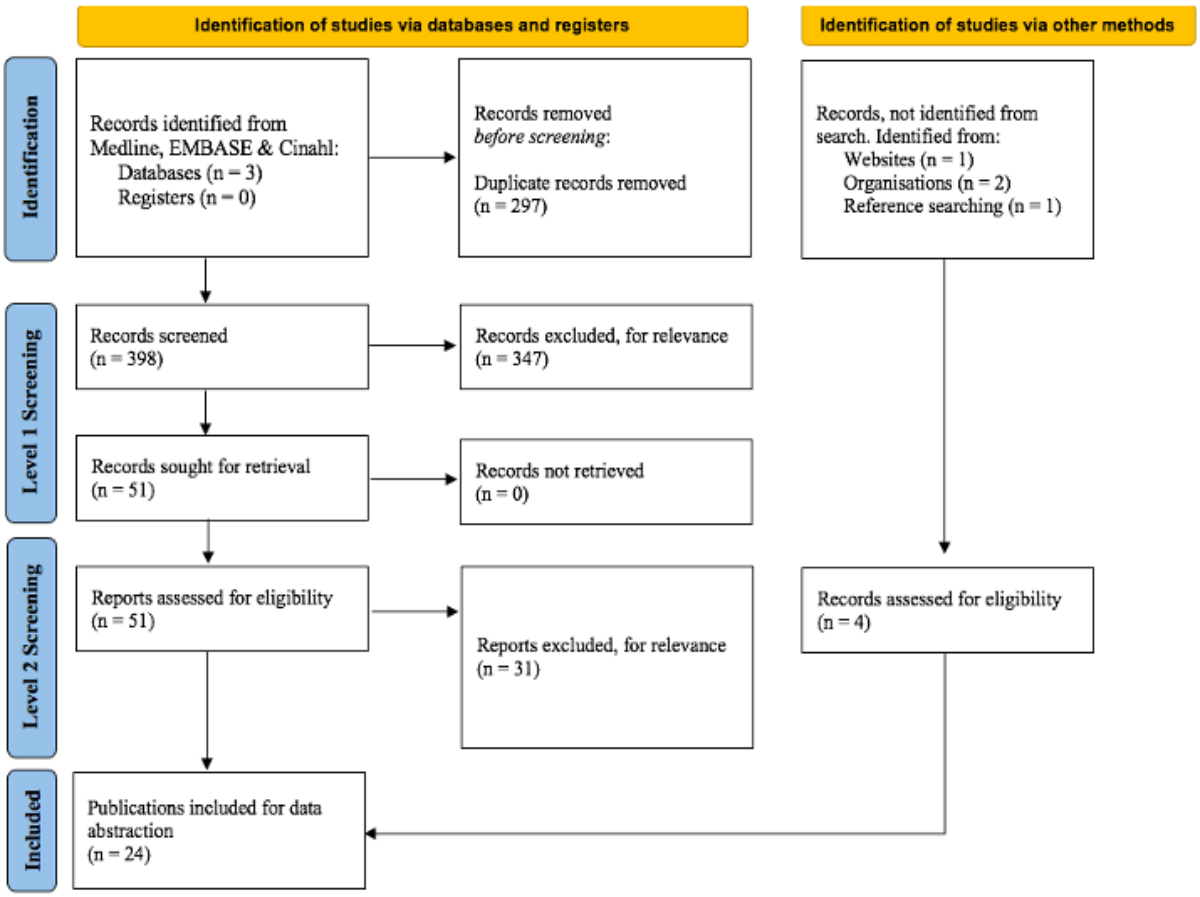


Figure 1: Flow Diagram depicting full screening process.

Table 1 outlines the study characteristics of the included studies. Of the 24 studies, authors were most commonly from USA or UK (14). A third of the studies included for data extraction (8), were narrative reviews, editorials or consensus statements describing PPH management and/or specific national guidelines. 7 of these reviews were American or Canadian authored, with 1 from India. Of the remaining 14 studies; 4 were qualitative studies, of which 3 carried out semi-structured interviews looking at PPH management practices in a low-resource setting, 2 of these being pre-trial studies to inform the E-MOTIVE study (Akter et al, 2022, Forbes et al 2023). Of the remaining 14 studies; 6 were observational cohort studies, 2 were quality improvement research, 1 was a cluster-randomised controlled trial and there was 1 Cochrane Review (see Table 1).

Of the 24 studies included for data extraction; only 2 had a primary objective specific to escalation of clinical care, as opposed to PPH management in more broad terms. These were both from the UK's RCOG, with both looking at escalation of care in maternity care as a whole, rather than specifically PPH (RCOG, 2020, RCOG 2022). The RCOG's Each Baby Counts 2019 report involved a thematic analysis of all national case reports where escalation of care was identified as a factor to adverse maternal outcomes including, but not exclusively, where adverse outcomes related to PPH (RCOG, 2020). The themes identified in this qualitative report are used to categorise the barriers and facilitators to escalation of care identified in our scoping review. The Each Baby Counts, Final Evaluation Report published in 2022 was also included. This used quality improvement methodology to implement strategies to improve escalation of care practices in 16 maternity units. This quality improvement work was informed by an initial qualitative interviewing of staff and field observation of practice to inform the interventions that were implemented to address the barriers to escalation of care in maternity care (RCOG, 2022).

Table 1. Characteristics of included studies

Reference	Title	Aims	Study Design
Abir et al, (2023)	Automated Alert System of Second-Line Uterotonic Drug Administration	Description of the development & implementation of an automated second-line uterotonic drug alert system	Quantitative
Akter et al. (2022)	Detection and management of postpartum haemorrhage: Qualitative evidence on healthcare providers' knowledge and practices in Kenya, Nigeria, and South Africa.	Explore healthcare providers' knowledge and practices of PPH detection and management after vaginal birth, to inform design and implementation of E-MOTIVE.	Qualitative
Atallah and Goffman (2019)	Bundles for Maternal Safety: Promises and Challenges of Bundle Implementation: The Case of Obstetric Hemorrhage.	A brief review of obstetric haemorrhage with critical elements of readiness, recognition and prevention, response, and reporting/systems learning described.	Qualitative
Atallah and Goffman (2020)	Improving Healthcare Responses to Obstetric Hemorrhage: Strategies to Mitigate Risk.	A review of obstetric haemorrhage with a focus on areas that may be amendable to further risk reduction efforts.	Qualitative
Crowe and Faulkner (2014)	Lean management system application in creation of a postpartum hemorrhage prevention bundle on postpartum units.	The paper develops a PPH urgent care bundle based on 'lean management principles', and tests bundle adherence following a 6-month simulation training programme using QI methodology.	Quantitative
de Lloyd et al. (2024)	Early viscoelastometric guided fibrinogen replacement combined with escalation of clinical care reduces progression in postpartum haemorrhage: a comparison of outcomes from two prospective observational studies.	The aim was to compare outcomes from 2 observational studies, in the same institution, before and after practice changed from fixed ratio transfusion to VHA-guided blood product replacement in PPHs.	Quantitative
de Visser et al. (2018)	Multifaceted intervention to decrease the rate of severe postpartum haemorrhage: the PITHAGORE6 cluster-randomised controlled trial.	Develop a strategy, tailored to current barriers for implementation of post-partum haemorrhage guidelines	Qualitative
Deneux-Tharaux et al. (2010)	Development of a tailored strategy to improve postpartum hemorrhage guideline adherence.	To test the impact of an educational intervention to improve the translation into clinical practice of guidelines of PPH management.	Quantitative
Fitzgerald et al. (2020)	A review of the current management of postpartum haemorrhage in the Republic of Ireland, using a case study approach.	To get a better understanding of the steps taking during a PPH in the Republic of Ireland, using a data collection tool to retrospectively analyse case notes from PPHs over a 3-month period	Quantitative
Fleischer and Meirowitz 2016)	Care bundles for management of obstetrical hemorrhage.	Review of the components of the safety bundle for obstetric haemorrhage developed by ACOG District II Safe Motherhood Initiative.	Qualitative
Forbes et al. (2023)	Factors influencing postpartum haemorrhage detection and management and the implementation of a new postpartum haemorrhage care bundle (E-MOTIVE) in Kenya, Nigeria, and South Africa.	Explore influencers (barriers and enablers) on current PPH detection and management and on the future implementation of a new PPH bundle (E-MOTIVE) in low-resource, high-burden settings.	Qualitative
Fuschs et al. (2009)	Optimizing outcomes through protocols, multidisciplinary drills, and simulation.	This review highlights different institution-specific protocols and simulations employed to improve outcomes related to obstetric haemorrhage in response to national guidelines.	Qualitative
Ghodki and Sardesai (2014)	Obstetric hemorrhage: Anesthetic implications and management	This review highlights the optimum preoperative care to assess risk factors for PPH & explore most recent guidelines and PPH management protocols.	Qualitative
Gonte et al (2023)	Feasibility and Impact of a Postpartum Hemorrhage Emergency Care Package Using a Bundle Approach in Migori County, Kenya	To investigate the impact of a PPH Emergency Care package (PPH EmC), in a low resource setting	Qualitative

Reference	Title	Aims	Study Design
Katz et al. (2020)	The association between the introduction of quantitative assessment of postpartum blood loss and institutional changes in clinical practice: an observational study	The aim was to examine the impact of quantitative assessment of postpartum blood loss on clinical practice and outcomes.	Quantitative
Main et al. (2015)	National Partnership for Maternal Safety: consensus bundle on obstetric hemorrhage.	National guidance for obstetric haemorrhage safety bundle implementation	Qualitative
Miller et al. (2016)	Obstetric Hemorrhage Current Management and Usefulness of Protocols, Checklist, Drills	This review updates readers on early detection, preparation, diagnosis, and treatment of obstetric haemorrhage whilst highlighting different institution-specific protocols, cognitive aids and drills.	Qualitative
Rosenbaum and Mhyre (2017)	The Anesthesiologist's Role in the National Partnership for Maternal Safety's Hemorrhage Bundle: A Review Article.	A review of the 13-elements within each of the domains of the National Partnership for Maternal Safety Bundle for maternal haemorrhage, with a specific focus on the Anaesthesiologists role.	Qualitative
Royal College of Obstetricians & Gynaecologists, (2020)	RCOG Each Baby Counts, 2019 Progress Report	The aim was to explore non-clinical factors influencing escalation to understand the barriers to delivering timely senior care for a complication or evolving clinical situation.	Qualitative
Royal College of Obstetricians & Gynaecologists, (2022)	RCOG Each Baby Counts, 2022 Final Evaluation Report	The aim was to test ways to improve clinical escalation in 16 maternity units by end August 2021 and use that knowledge to feedback the learning for all maternity units in England.	Qualitative
Skupsi et al. (2017)	Improvement in Outcomes of Major Obstetric Hemorrhage Through Systematic Change.	To report on the level of patient safety, by comparing specific outcomes (mortality, acidaemia, hypothermia, coagulopathy), among time periods, and the factors that were important in sustaining this programme	Quantitative
Smith et al, (2011)	Physiological track-and-trigger/early warning systems for use in maternity care	To evaluate the clinical- and cost-effectiveness of maternal physiological TTS/EWS on pregnancy, labour and birth, postpartum (up to 42 days) and neonatal outcomes.	Quantitative
Vousden et al. (2018)	Evaluation of a novel vital sign device to reduce maternal mortality and morbidity in low-resource settings: a mixed method feasibility study for the CRADLE-3 trial.	Feasibility study of the CRADLE-3 trial, to further knowledge on the acceptability of CRADLE device & how implementing the package into routine care might change behaviour	Mixed-methods
Young Cho. (2015)	Implementation of a multidisciplinary clinical pathway for the management of postpartum hemorrhage: a retrospective study	To compare the outcomes of postpartum haemorrhage (PPH) episodes before and after the introduction of a clinical pathway known as the Severance Protocol to save postpartum bleeding through Expeditious care Delivery (SPEED)	Quantitative

A summary of barriers and facilitators to escalation of care in PPH, identified in the scoping review, is shown in Table 2. We have broken down the barriers & facilitators into the 3 themes identified in the Each Baby Counts 2019 report of barriers to escalation in maternity care: human factors and behaviours, workload and workforce challenge, and communication (RCOG, 2020).

Many of the barriers discussed in some of the papers had corresponding facilitators. We have listed any corresponding facilitators identified in the included studies next to barriers identified. The barriers and corresponding facilitators did not necessarily come from the same study.

Table 2: A summary of barriers & facilitators from the articles included in our scoping review

	Barriers	***Facilitators***
Human factors & Behaviours	Failure of recognition of severity of PPH, due to subjective assessment measures Cognitive biases affecting situational awareness & decision making to escalate	Using objective methods i.e. quantitative blood loss, or other objectives tools e.g. EWS Managing choice architecture, by using stage-based escalation triggers or methods

	Hierarchical culture; feature to escalate	'Top down' culture change; positive response to being escalated to Simulation & training to reinforce escalation protocols
Workload & Workforce Challenges	Unfamiliarity of who to escalate to, a lack of formal policy Insufficient staff to escalate to Team dynamics; conflict, uncertainty	A primary haemorrhage response team as an escalation team
Communication	Inability to get through to senior staff when attempting escalation	A single point of communication to escalate to all required staff i.e. buzzer Use of huddles & briefings

Barriers: Human Factors & Behaviours

Failure to identify the severity of the PPH, due in part to visual estimation as opposed to quantification of blood loss, was the most common barrier to escalation, and was described in both low- and well-resourced settings (Fitzgerald et al, 2020, Forbes et al, 2023, Katz et al, 2020, Main et al, 2015, Miller et al, 2016). Subjective methods, rather than using objective assessment tools, could affect situational awareness as to the severity of the clinical situation and therefore the need to escalate (RCOG, 2022). This subjectivity and the resultant tolerance of ambiguity would lead to variation in management decisions, including the need to escalate (Atallah and Goffman, 2020, RCOG 2022). A Cochrane Review examining the effectiveness of Early Warning Scores peripartum, examined 1 study that looked at effectiveness in post-partum haemorrhage. The review concluded that using such scoring systems may be helpful in reducing some maternal outcomes such as haemorrhage and maternal length of hospital stay, possibly through early identification of clinical deterioration and escalation of care, although acknowledged this as low GRADE evidence, given that this was based on 1 study which did not look at escalation as an outcome measure (Smith et al, 2019).

Both RCOG reports included in this scoping review recognise the impact of cognitive biases and the differences in behaviour between day and night decisions, including the responses of those who the situation was being escalated to (RCOG, 2020, RCOG, 2022). These cognitive biases can be precipitated by individual factors [i.e. stress, fatigue, distraction, fear of failure], and systematic factors [workload, inadequate teamwork or a lack of support] (RCOG, 2020).

Multidisciplinary team dynamics including communication amongst the team, and lack of agreement amongst the team of the severity of the situation was identified as a barrier (Akter et al, 2022 de Visser et al, 2018). This was enhanced when staff were unfamiliar with each other, their environment, or where there was no formal escalation policy (RCOG, 2022).

A hierarchical workplace culture resulting in fear to escalate was described in a number of studies (Atallah and Goffman, 2019, Ghodki and Sardesai, 2014, RCOG 2020, Skupsi et al, 2017). This phenomenon extended to affect the ability of other team members to escalate above those managing the clinical situation (de Visser et al, 2018, RCOG, 2022).

Barriers: Workload & Workforce Challenges

The inability to form a contingency team in all settings due to a lack of human resources was seen as a barrier to escalation in a number of the reports (Atallah and Goffman, 2020, RCOG 2022). This included both qualitative studies informing the E-MOTIVE study, which discussed how shortages of staff to escalate to be an issue expressed by staff (Akter et al, 2022, Forbes et al, 2023).

Barriers: Communications

The method used by staff to call for help and the inability to get through to senior staff during a PPH was identified as a barrier (RCOG 2022). In a retrospective observational study, staff were only using the

obstetric emergency number in 6% of PPH emergencies, resulting in staff members spending more time away from the patient during this emergency (Fitzgerald et al, 2020).

Facilitators: Human Factors & Behaviours

Unsurprising, given that subjectivity in assessment of blood loss resulting in delayed recognition was seen as a barrier to escalation, a number of studies highlighted the importance of standardised, quantification of blood loss as a recommendation to facilitate better recognition and thence escalation (Katz et al, 2020, Main et al, 2015). The important of the cumulative nature of quantification of blood loss, could further facilitate a more rapid response. A retrospective observational study showed this change in practice resulted in demonstrable earlier recognition and escalation of care, with these being potential factors in the identified reduction in observed morbidity and mortality (de Lloyd et al, 2024). The use of other more objective measures to recognise deterioration, was also seen to improve the response from the person or groups that concerns were escalated to (Smith et al, 2011, Vousden et al, 2018).

Managing choice architecture, by adopting a stage-based escalation protocol was seen as an effective method of escalating care in a number of studies. This approach would remove the subjectivity and potential for cognitive bias (Rosenbaum and Mhyre 2017). It was recognised that such an approach should be adapted to the individual unit's setting and resource capabilities, with consensus crucial to achieve suitable buy-in (Atallah and Goffman, 2020). A number of different escalation triggers were identified including based on blood loss, physiological triggers, or following certain medical or surgical interventions (Abir et al, 2023, Atallah and Goffman, 2019, Main et al, 2015). Crucially adopting this standardisation of response should be supported by regular simulation and training, to ensure the development of shared mental models and the approach to escalation embedded into practice (Akter et al, 2022, Atallah and Goffman, 2020, Main et al, 2015, Miller et al, 2016, Skupsi et al, 2017).

The benefits of simulation and training would also extend to improving multi-professional team dynamics, including facilitating coordination between personnel and improving response times (Deneux-Tharaux et al, 2010, Fuschs et al, 2009).

It was acknowledged that addressing fear and culture around escalation is difficult. Addressing this 'top down' with departmental leaders adopting a safe environment and expectation for MDT to speak up, including the empowerment of health care providers including nurses or midwives, to escalate to senior leaders directly. This would extend to a commitment by senior leaders to respond to escalation in a supportive manner (Atallah and Goffman, 2019, Ghodki and Sardesai, 2014, RCOG 2022, Skupsi et al, 2017). It was recognised that managing choice architecture, by a stage-based escalation protocol as highlighted above, may also contribute to a safer working environment, with greater understanding of the requirement by both the referrer and receiver (Forbes et al, 2023, Miller et al, 2016).

Facilitators: Workload & Workforce Challenges

The most common facilitator described was the use of a PPH response team, that the primary treating team could call upon to escalate clinical concern (Crowe and Faulkner, 2014, Fleischer and Meirowitz, 2016, Fuschs et al, 2009, Gonte et al, 2023, Rosenbaum and Mhyre, 2017). Any such response team should be adapted to a unit's setting with stakeholder involvement from all specialties and be supported by briefings and huddles. The use of such a response team could enable shared mental models with a greater understanding of individual roles (Akter et al, 2022).

Facilitators: Communication

The effectiveness of any such emergency haemorrhage response team could be enhanced by advanced role allocation and using a single point of communication i.e. emergency alarms, to escalate to the response team (Atallah and Goffman, 2019, Crowe and Faulkner, 2014, Fleischer and Meirowitz, 2016, Fuschs et al, 2009, Gonte et al, 2023, Young Cho 2015). This should be supported by regular testing and training in response to these group communication systems (Rosenbaum & Mhyre, 2017).

Conclusion

Clinical escalation is a complex process that involves clinical, behavioural and logistical steps in order to correctly identify and deliver urgent care (RCOG, 2022). Work has been done to further explore the importance of human factors and the interplay of social and behavioural influences on a clinicians' ability to

escalate (Bergström, 2012). Our scoping literature review identified 24 papers across 3 databases and other sources including websites and grey literature. The vast majority of these sources were in middle- and high- income settings, with just 4 studies based in developing countries (Akter et al, 2022, Forbes et al, 2023, Ghodki & Sardesai, 2014, Vousden et al, 2018). This suggests further work can be done to look at escalation in developing countries. A third of the studies were editorials, reviews or consensus statements, meaning just 14 studies were primary qualitative or quantitative studies. Almost exclusively these studies looked at PPH management in more broad terms, with some reference to escalation. Only the 2 RCOG reports primarily looked at barriers and facilitators to escalation, albeit more generally in maternal care (RCOG 2020, RCOG 2022). Future work could further explore the effect on escalation when combining a number of different interventions, possibly in a bundle, targeting different barriers and facilitators that we have identified in this study.

Recommendations

The Each Baby Counts Final Evaluation Report informed 3 quality improvement interventions which focussed primarily on addressing communication, teamwork and hierarchical culture. This is the only paper identified in our scoping review that identifies and implements an intervention focussing on addressing barriers to escalation in maternal care (RCOG, 2020). A retrospective cohort study by de Lloyd et al. (2024) combined 2 independent facilitators of escalation highlighted in this scoping review: objective clinical assessment methods to aid identification, and a stage-based escalation protocol. This study showed earlier recognition and escalation compared to before these measures were in place (de Lloyd et al, 2024). Further work could be considered to further investigate any improvements in escalation when combining a number of different interventions, possibly in a bundle, using the facilitators and barriers we have outlined in Table 2.

It is important to note that scoping reviews have limitations. Scoping reviews do not assess the risk of bias of the included studies, nor should they be used to draw definitive conclusions (Arksey & O'Malley, 2005). The reason we opted to carry out a scoping review was due to the broad and complex nature of the topic. We were aware that clinical escalation specific to PPH was not well studied, and we wanted to understand the breadth and types of literature available, without asking a specific clinical question which is more appropriate for a literature review or systematic review (Munn et al, 2018). Most of the studies in our scoping review discussed PPH management in more broad terms, as a narrative review, editorial or consensus statement. As described earlier in our report, there were only 2 trial designs included in our scoping review, both having limitations in there that their primary objective was not specific to escalation of care in PPH. This opens the possibility of future work in this area.

The work we have done in charting the barriers and facilitators to escalation of care in PPH in this scoping review could offer clinical leaders a template in identifying any barriers to escalation in PPH locally and implementing corresponding facilitators to help improve escalation practices within their own units.

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APPENDIX A: PRIORI SCOPING REVIEW PROTOCOL - BARRIERS AND FACILITATORS TO ESCALATION OF CARE IN THE MANAGEMENT OF POSTPARTUM HAEMORRHAGE.

Scoping Review question

- What are the barriers and drivers to escalating care in a post-partum haemorrhage?
- What studies are there within the literature that look at care escalation to senior members of the multidisciplinary team during the management of post-partum haemorrhage, in the hospital setting?
- How is 'escalation of care' defined in this context?

Scoping Review question

As per the main body of this report, above

Inclusion Criteria

- Escalation of care in the context of post-partum haemorrhage management in the hospital setting
- Escalation of care; this can include studies that focus on a single speciality (midwifery, obstetrics, anaesthetics, haematology) or those that incorporate escalation across disciplines.
- This can include paper or web based studies, and grey literature
- We are examining databases that contain our search terms, without a restriction on the date range.

Search Strategy

Comprehensive literature searches of electronic Medline, EMBASE and CINAHL databases were searched by an experienced librarian. The search terms used for each database is included in the appendix. The search strategy was peer-reviewed by another expert librarian using the PRESS checklist. We will also search grey literature sources and websites of relevant regulatory authorities for additional publications or pre-existing platforms of social media listening and data analytics (e.g. Obstetric Anaesthetists' Association, MBRRACE-UK, Royal College of Obstetrics etc).

Reference lists of all screened reviews will also be searched.

Source of evidence collection

The results were compiled into RIS format and imported into Covidence for review. Duplicated articles were removed, before the titles and abstracts were screened by 2 independent reviewers, in line with the criteria outlined in this review protocol. Any disagreements were solved by consensus, before proceeding with a full-text screening review.

We plan to undertake pilot testing, as described below.

Random sample of 25 titles/abstracts is selected. Both reviewers screens these using the eligibility criteria and definitions/elaboration document, Reviewers meets to discuss discrepancies and make modifications to the eligibility criteria and definitions/elaboration document. Reviewers only starts screening when 75% (or greater) agreement is achieved There will be a narrative description of the process accompanied by a flowchart of review process (depicted through Covidence) detailing the flow from the search, through source selection, duplicates, full-text retrieval, and any additions from third search, data extraction and presentation of the evidence.

Data extraction

The final screened articles will be charted to include the following descriptive headings:

1. Author(s)
2. Year of publication
3. Origin/country of origin (where the source was published or conducted)
4. Aims/purpose
5. Source of evidence
6. Population and sample size within the source of evidence (if applicable)
7. Methodology / methods
8. Intervention type, comparator and details of these (e.g. duration of the intervention) (if applicable). Duration of the intervention (if applicable)
9. Outcomes and details of these (e.g. how measured) (if applicable)
10. Key findings that relate to the scoping review question/s

This will be completed by the lead author, and the second reviewer will verify the charted information. Any differences in abstraction will be resolved by discussion.

Analysis of the evidence

We will extract results descriptively and map them out as per the categories identified above. We will share our taxonomy for barriers and facilitators with expert anaesthetists, obstetricians, haematologists and midwives to assess for validity and ensure no additional categories are required. A simple coding scheme will be used to identify text in each article relevant to these factors. A basic qualitative analysis using NVivo will aggregate the codes into themes, centred on whether the barriers/facilitators were related to; attitudes, knowledge, skills, or behaviours towards escalation of care in post-partum haemorrhage. Discrepancies in coding will be discussed by the team to achieve consensus.

The results of this scoping review will be presented as a map of the data extracted in tabular form, and in a descriptive format that aligns with the objective/s and scope of this review.

References

As above.

APPENDIX B: SEARCH TERMS EMPLOYED

CINAHL

S1	(MH "Postpartum Hemorrhage")	4,285
S2	((postpartum or "post-partum" or "post-natal" or postnatal or "post-birth" or obstetric) N2 (hemorrhage* or haemorrhage* or bleeding))	6,348
S3	S1 OR S2	6,348
S4	escalat*	15,881
S5	(protocol* N2 (management or h#emorrhage or care))	6,519
S6	bundl*	15,505
S7	S4 OR S5 OR S6	37,723
S8	S3 AND S7	162

Embase <1974 to 2024 Week 31>

1 exp Postpartum Hemorrhage/ 20194
2 ((postpartum or "post-partum" or "post-natal" or postnatal or "post-birth" or obstetric) adj2 (hemorrhage* or haemorrhage* or bleeding)).mp. 25766
3 1 or 2 25779
4 escalat*.mp. 122498
5 (protocol* adj2 (management or h?emorrhage or care)).mp. 17184
6 bundl*.mp. 125580
7 4 or 5 or 6 264447
8 3 and 7 502
9 limit 8 to conference abstract 202
10 8 not 9 300

Ovid MEDLINE(R) ALL <1946 to August 01, 2024>

1 exp Postpartum Hemorrhage/ 8851
2 ((postpartum or "post-partum" or "post-natal" or postnatal or "post-birth" or obstetric) adj2 (hemorrhage* or haemorrhage* or bleeding)).mp. 14618
3 1 or 2 14618
4 escalat*.mp. 54507
5 (protocol* adj2 (management or h?emorrhage or care)).mp. 11682
6 bundl*.mp. 89361
7 4 or 5 or 6 155217
8 3 and 7 234

ACKNOWLEDGMENTS & DECLARATIONS

Jason Curtis (Keele University) and Tilly Davenport (Cardiff University) were the Librarians involved in helping to develop the search terms used in the search strategy. Alexander Johnson (Cardiff & Vale University Health Board) was the second reviewer for the level 1 and 2 screening of articles.

The first author (Amrit Dhadda) has been funded to complete an MD with Keele University. A detailed version of this scoping review will form part of the final thesis submission for this MD.

ABOUT THE AUTHOR

Amrit Dhadda. is an Anaesthetic Senior Registrar, coming to the last year of his training to become a Consultant Anaesthetist. In February 2024, he started a 12-month fellowship post working on the NIHR-funded OBS UK Study. His role involves leading the anaesthetic implementation of a complex intervention bundle for Postpartum Haemorrhage, with the intervention being rolled out into 36 maternity units across the UK.

Dr Dhadda has an interest in the interplay of human factors and non-technical skills within healthcare systems and teams. He is also passionate about improving workforce conditions, and staff & patient well-being through system improvement projects.

Does introducing paediatric clinical expertise within NHS 111 Wales reduce unwarranted demand for unscheduled care?

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Abstract:

Children and young people are more frequent users of the Emergency Department (ED) than any other age group and the number of children under 5 years old presenting to ED for whom no abnormality is found or with a minor illness has been increasing in recent years (Nuffield Trust, 2017; Institute of Health Visiting, 2023). The Welsh Government Six Goals for Urgent and Emergency Care focus on “right care, right place, first time” and a national telephone advice service (NHS 111 Wales) was established to support this aim by providing health advice and directing individuals towards the most appropriate healthcare services (Welsh Government, 2022). There is some evidence to suggest that NHS 111 in England may over-estimate the level of input needed for young children and that this may be driving an increase in demand for unscheduled care (Ramlakhan et al., 2021; Kumar et al., 2024). Studies undertaken in England and Italy suggest that, if Paediatricians are providing the consultations for a telephone triage service, the majority of calls about children can be ended with simple advice (Colombo et al., 2016, Stilwell et al., 2022). This report describes the impact of introducing Consultant Paediatricians into an NHS 111 Wales Clinical Support Hub (CSH) at weekends during peak hours. Calls handled by Paediatricians compared to standard CSH staff resulted in higher numbers of patients being given selfcare advice (59.3% vs 18.5% of calls), lower use of GP out of hours (OOH) appointments (32.7% vs 75%) and fewer recommendations to attend ED (1.8% vs 6%). There were no safety concerns identified for any of the patients given self-care advice. This successful pilot in one Health Board within Wales has shown that introducing Paediatric expertise into NHS 111 Wales Clinical Support Hub can safely reduce unwarranted demand for unscheduled care.

Keywords: Telephone triage, NHS 111, Children, Young People, Emergency, Advice, Unscheduled Care

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Introduction

Background and context

In February 2022 Welsh Government published "Six Goals for Urgent and Emergency Care" which outlined their priorities and the overall guiding principle being to provide "right care, right place, first time"(Welsh Government, 2022). Goal two is "Signposting people with urgent care needs to the right place, first time" and the NHS Wales 111 telephone advice service was established in support of this goal. The 111 service is a 24/7 service offering advice and where necessary signposting or referring on to the right healthcare facility for a face-to-face consultation. There is a paucity of existing published research within a UK context regarding the effectiveness of telephone triage at directing children and young people to appropriate care services. There are some international examples of telephone triage successfully reducing paediatric attendances to the Emergency Department; however, these were all clinician led (with no call handler initial triage) and the most successful examples making use of specialist paediatric staff (Colombo et al., 2016; Ho et al., 2021; Poole et al., 2022)

NHS 111 was founded with the aim of being able to offer advice that could reduce unnecessary demand on urgent and emergency care services but there is some evidence to suggest that the opposite effect has been observed with telephone triage services potentially driving an increase in demand (Kumar et al., 2024; Ramlakhan et al., 2021).

Specialist knowledge within NHS 111 Wales

In recognition that some people require specialist advice in order for the 111 service to be effective the Welsh NHS introduced a "press 2" option for those calling the service.(Welsh Government, 2023) This allows tailored support to be provided for people calling with emotional ill health or mental illness by giving them direct access to a mental health worker. This is a 24/7 service.

A similar service has been in place in Scotland for several years with funding being announced for a 24/7 service in March 2020 (Scottish Government, 2020). In August 2024 a "press 2" for mental health option was also introduced into the NHS England 111 service (NHS England, 2024).

Children and young people

A report analysing hospital episode statistics in England found that children and young people are more frequent users of emergency department (ED) services than any other age group (Nuffield Trust, 2017). Rates of attendance to the emergency department for children under 5 years old is at an all-time high in England having increased by 42% in the past 10 years with babies under 1 year of age having the highest rates compared to all other age groups, including the frail elderly (Institute of Health Visiting, 2023). Furthermore, this same report highlighted that the number of children under 5 years of age attending the emergency department for whom no abnormality was detected or with minor illnesses requiring no investigation, treatment or hospital admission has been increasing over the past 5 years.

Objectives of the research

- To improve the advice that is provided to Children and Young People (CYP) under 16 years of age when calling NHS 111 Wales
- To reduce unnecessary ambulance call outs, Emergency Department attendances and primary care visits for CYP using the NHS 111 Wales service
- To increase the number of CYP safely given self-care advice

Literature review

A literature review was performed to provide a context of the current academic knowledge on this topic. Search terms are outlined in the Table 1.

Table 1. Literature Search Details (Source: Author's Own)

Literature Search Keywords	**"Children" "emergency" "telephone" "advice" "111"**
Database used	Pubmed

Total papers identified	189
Filter criteria applied	English language, last 10 years
Papers remaining following filter	65
Titles and Abstracts reviewed	51 papers identified as not relevant
Remaining papers identified for full review	14

Table 2 summarises the relevant papers identified in the literature review and highlights key themes within each.

Table 2. Summary of relevant papers identified in systematic literature review (Source: Author's Own)

Authors	Title	Location	Key themes	Journal
Nakubulwa MA, Greenfield G, Pizzo E, Magusin A, Maconochie I, Blair M, Bell D, Majeed A, Sathyamoorthy G, Woodcock T.	To what extent do callers follow the advice given by a non-emergency medical helpline (NHS 111): A retrospective cohort study.	UK	Compliance with advice given	PLoS One. 2022 Apr 21;17(4):e0267052.
Ramlakhan S, Nathan K, Eferakeya S.	Outcomes in children advised to attend the emergency department by a healthcare telephone advice service (NHS111).	UK	Overtriage; Alternatives to the emergency department	J Emerg Med. 2021 Aug 1;28(4):315316.
Kumar A, Husk K, Simpson R, Johnson GD, Burton C	Use of emergency departments by children and young people following telephone triage: a large database study.	UK	Compliance with advice given; Overtriage	Emerg Med J. 2024 Sep 13:emermed2023-213619.
Poole S, Ambardekar E, Gablehouse B,	Office "Phone First" Systems Reduce Emergency Department/Urgent Care	USA	Reduction in ED visits; Clinician-led triage system	Acad Pediatr. 2022 May-Jun;22(4):606613.
Joslyn L, Jaramillo S, Hegarty T, Foster J, Peters C, Lamb M, Armon C, Schmitt B, Todd J.	Utilization by MedicaidEnrolled Children			
Anderson A, Roland M.	Potential for advice from doctors to reduce the number of patients referred to emergency departments by NHS 111 call handlers: observational study.	UK	Clinical expertise; Overtriage	BMJ Open. 2015 Nov 27;5(11):e009444.
Stilwell PA, Stuttard G, Scott-Jupp R, Boyle A, Kenny S, Maconochie I.	Paediatric NHS 111 Clinical Assessment Services pilot: an observational study.	UK	Clinical expertise; Reducing demand	Arch Dis Child. 2022 Mar;107(3):e14.

Mason S, Stone T, Jacques R, Lewis J, Simpson R, Kuczawski M, Franklin M.	Creating a Real-World Linked Research Platform for Analyzing the Urgent and Emergency Care System.	UK	Overtriage; Compliance with advice given	Med Decis Making. 2022 Nov;42(8):9991009.
Ellbrant JA, Åkeson SJ, Karlsland Åkeson PM.	Influence of awareness and availability of medical alternatives on parents seeking paediatric emergency care.	Sweden	Overtriage; Parental motivation	Scand J Public Health. 2018 Jun;46(4):456-462.
Watts DJ, Hajjar M, Dowla N, Hirway P, Kamath S.	Use of Pediatric Primary Care Telephone Advice by Families Whose Usual Language Spoken at Home Is Not English.	USA	Barriers to access	Clin Pediatr (Phila). 2019 Mar;58(3):343-348.
Ho K, Lauscher HN, Stewart K, Abu-Laban RB, Scheuermeyer F, Grafstein E,Christenson J, Sundhu S.	Integration of virtual physician visits into a provincial 8-1-1 health information telephone service during the COVID-19 pandemic: a descriptive study of HealthLink BC Emergency iDoctor-inassistance (HEiDi).	Canada	Clinical expertise; Reducing demand;	CMAJ Open. 2021 Jun 15;9(2):E635E641.
Gibson A, Randall D, Tran DT, Byrne M, Lawler A, Havard A, Robinson M, Jorm LR.	Emergency Department Attendance after Telephone Triage: A Population-Based Data Linkage Study.	Australia	Compliance with advice given; Overtriage	Health Serv Res. 2018 Apr;53(2):11371162.
Siddiqui N, Greenfield D, Lawler A.	Calling for confirmation, reassurance, and direction: Investigating patient compliance after accessing a telephone triage advice service.	Australia	Compliance with advice given	Int J Health Plann Manage. 2020 May;35(3):735745.
Colombo A, Bert F, Camussi E, Gualano MR, Arensi D, Castaldo D, Siliquini R,Pirola ME.	Analysis of users and reasons for use of a physician-on-call service in an Italian local health unit.	Italy	Clinical expertise; Reducing demand	Fam Pract. 2016 Dec;33(6):684-689.
Turbitt E, Freed GL.	Use of a telenursing triage service by Victorian parents attending the emergency department for their child's lower urgency condition.	Australia	Clinical expertise; Overtriage	Emerg Med Australas. 2015 Dec;27(6):558-562.

The English Health Service has had a nationwide NHS 111 telephone service since 2014 (having transitioned from NHS Direct which preceded it) and the majority of the identified papers relate to this service with a small number of reports identified regarding similar telephone triage services internationally.

Impact of NHS 111 on demand for unscheduled care

There are several published articles that have evaluated the impact that the NHS 111 service has on demand for unscheduled care services by children and young people.

A prospective study of 2574 children attending a UK paediatric Emergency Department (ED) set out to compare the outcomes for children who self-present to the ED with those who attended following a recommendation from the NHS 111 service (Ramlakhan et al., 2021). Children directed to ED by 111

accounted for 10.3% of ED attendances during the study period. Children whose parents had decided independently to attend ED were significantly more likely to present with an injury, have more than basic investigations or treatment or be admitted to hospital than those who presented following advice from 111. They concluded that "the majority of children advised to attend the ED by NHS 111 did not require any ED intervention and would have been suitable for self-care, primary care or scheduled same-day specialist clinics."

A retrospective cohort study analysing 348 401 calls regarding children to NHS 111 in one region of England found that 9.9% of callers were advised to attend the emergency department but the overall attendance rate in ED was higher than this at 13.1% of all calls made(Kumar et al., 2024). Some of this difference is accounted for by parental non-compliance with the advice given by 111 and some of it by onward referral made to ED following a primary care appointment. This study also found that younger children were more likely than older children to be advised to attend ED by 111 for low-acuity conditions that could have been managed more appropriately in other settings.

Further evidence revealing that this is also a problem at a national level was outlined in the recent report from the Institute of Health Visiting which notes that in England babies under 1 are the most frequent users of ED of any age group and many of those are presenting with low-acuity problems that could be more appropriately managed in primary care or by providing support so that families can remain at home (Institute of Health Visiting, 2023).

Similarly, a large dataset analysis looking at linked data from across an entire region within England

(involving 14 acute hospital, 111 data, 1 ambulance service and 19 emergency departments) found that

21% of paediatric attendances to the emergency department were avoidable and that the youngest patients were the most likely to present with non-urgent problems. They also highlighted that a large number of non-urgent attendances occurred during out-of-hours periods (where in hours is defined as 0800-1800 Monday-Friday)(Mason et al., 2022).

Different models of telephone triage

The model for both the English and Welsh NHS 111 services is for non-medically trained call handlers to manage the initial triage of patients using decision support software. There is some published evidence that explores the effectiveness of this approach. An observational study in the year following the introduction of the English NHS 111 telephone service looked at the impact of an experienced GP reviewing the decision made by the call handler to recommend attendance to ED. This study found that the GP only recommended ED attendance in 27.1% of the cases that would otherwise have been signposted to ED by the call handler. (Anderson & Roland, 2015)

An example of the impact of a telephone triage service involving a clinician as the first point of contact rather than a call-handler is provided by a study from Colorado in which telephone triage clinician advice resulted in significant reduction in emergency department attendances for children(Poole et al., 2022). This model involved nurse triage (with decision support algorithms) for all patients with a secondary telephone triage being provided by a doctor if following discussion with the nurse it was believed that a visit to the ED may be required.

A second example of a telephone triage service involving initial contact with a nurse is outlined in a study from a group in British Columbia outlining the impact of providing access to clinicians with videoconferencing software for patients categorised by nursing triage as needing urgent care. The virtual physicians answered 7687 calls and 33.8% were advised to attempt home treatment, 38.5% to contact a primary care doctor within one week and 15% to attend an ED immediately (Ho et al., 2021).

A study looking at a telephone advice service in an Italian local health unit found that the majority of calls regarding children resulted in telephone advice (68.2%) with far fewer being recommended to attend ED than in the aforementioned studies from within the NHS 111 England service (Colombo et al., 2016). However, it is important to note that a key difference is that the telephone advice service was provided by paediatricians as well as GPs with a direct to clinician model rather than via a call handler first.

A pilot study took place introducing paediatricians into the NHS England 111 service from May to December 2020 to test the differences in disposition outcomes reached by Paediatric compared to non-paediatric

clinicians (Stilwell et al., 2022). The study found that the introduction of the paediatric specialists increased self-care dispositions and reduced onward referral to Primary care, ED and Ambulances. As a result of the pilot a single Paediatric Clinical Assessment Service (PCAS) was established in August 2021.

Compliance with telephone triage advice

A retrospective cohort study looking at data within the English NHS 111 service aimed to discover to what extent callers follow the advice given when they call 111. Overall, callers followed the advice given for less than half of calls (49%) and for children aged under 16 years of age the compliance was 55%. The highest compliance was among callers advised to self-care without the need to contact any other healthcare service (83% compliance)(Nakubulwa et al., 2022).

Another retrospective cohort study looking at 348 401 NHS 111 provides further insight into actions taken by families following NHS 111 advice (Kumar et al., 2024). They also found that compliance was highest in those given self-care advice with only 2.3% of these calls being followed by an ED attendance within 24 hours. Compliance with advice to attend ED was low with only 41% being followed by an ED attendance within 24 hours of which 28% were low-acuity presentations.

A survey of parents of children who had been assessed in a Swedish paediatric emergency department looked at the reasons for parents seeking care in ED. They found that 79% of patients had attempted to contact a medical professional or telephone triage service before attending ED but that 22% of these did not manage to make contact. Of those who did not manage to make contact with a health care provider the majority went to ED (Ellbrant et al., 2018).

A large observational cohort study in Australia looking at 1.04 million calls to a telephone triage service Calls regarding children aged 0-4years accounted for 34% of all calls with this age group also being the most likely to be advised to attend ED immediately compared to any other age group (Gibson et al., 2018). Compliance for all ages with the advice to attend ED immediately was 66.5%, notably higher than that observed by the study in England by Kumar et al mentioned above.

Impact of family characteristics

There is a small body of literature exploring the factors that may influence compliance with advice provided by NHS 111 services or create barriers to accessing the 111 service.

A survey conducted in the USA of families whose usual language is not English explored if this represented a barrier for these families when accessing telephone triage advice (Watts et al., 2019). A total of 277 surveys were completed of families bringing their child to a paediatric primary care practice. No meaningful differences between language categories were found in the use of telephone advice when a child was unwell. Although within a different healthcare setting it is interesting to note that language barriers did not appear to influence behaviours in accessing a telephone triage service in this study.

Pilot of introducing Paediatric Expertise within NHS 111 Wales

A pilot was undertaken to test the impact of introducing paediatric consultants into the Clinical Support Hub (CSH) to undertake telephone consultations for children under the age of 16 years. Cases that required further specialist assessment by a paediatric consultant were selected by the senior clinicians within the CSH using an agreed set of criteria. The consultants were also available to provide expert advice and support to the other clinicians working in the NCSH, urgent primary care and the 111-contact centre.

There are three regional clinical support hubs located in three sites across Wales - North (Ty- Elwy), West (Thanet House) and East (Vantage Point House). The core workforce in each hub comprises GPs, pharmacists and administrative support, although other specialist staff are also sometimes involved. The operational hours are 6.30am-11pm Monday-Friday and 8am-6pm weekends and bank holidays. The clinicians in the hubs support Health Board Urgent Primary Care services by assessing and consulting with patients by pulling calls from the health board advice queues. They also support the flow of calls through the system.

The paediatric pilot in Wales commenced on the 27th of January 2024 covering the Aneurin Bevan

University Health Board (ABUHB) footprint whereby paediatric consultants from ABUHB worked in the East Clinical Support Hub at weekends between the peak times of 10am-4pm to handle calls regarding people

from ABUHB area under the age of 16. The clinicians selected were all experienced paediatricians who received training on use of the CSH software and processes. Paediatricians picked up calls from a queue of selected patients at their own pace.

This report provides an evaluation of the pilot for the period 27th Jan 2024 – 28th April 2024.

Methods

As part of the scoping work in advance of the pilot data was pulled to assess the current level of demand for advice regarding children and young people. An analysis of calls coming into 111 between March and August 2023 revealed that weekends and bank holidays were the times of peak demand for calls regarding children and young people. During weekends and bank holidays in this time period calls regarding children and young people accounted for between 20% and 30% of all calls received to the NHS 111 Wales Service. Furthermore, it was noted that a large proportion of these calls (between 5060%) were referred to Urgent Primary Care out of hours for further assessment.

Data were pulled from the Adastra patient system relating to all calls for patients under 16 years. The data extracted related to calls dealt with by both CSH and Out of Hours (OOH) clinicians regarding patients under 16 years old during all times between 27th of January 2024 to the 28th of April 2024. The failed contacts and duplicate calls were removed from the data and the disposition outcomes recorded; self-care (included self-care and refer to own GP), OOH appointment, referral to ED or Minor Injuries Unit and 999.

During the pilot the Paediatricians were only working in the CSH during times of peak demand at weekends (10am-4pm). Given that most of the calls regarding patients under 16 years that occurred during this time were handled by the Paediatric staff a decision was made for the comparison data for regular CSH/OOH staff to be at all other times of the week in order to account for this.

Unlike the Out of Hours service in ABUHB, the hub clinicians (including the paediatricians working there as part of the pilot) have the ability for patients to send in photos or have a video call. These numbers were also recorded. Of those that had self-care advice, searches were done on the 111/Adastra system and clinical workstation (CWS) hospital records to review if patients had re-called the service or presented to ED in the following 7 days.

Data analysis was performed to compare clinician groups; regular OOH and CSH clinicians versus paediatric clinicians. Further subgroup analysis was performed of the OOH/CSH clinicians (multidisciplinary staff including pharmacists and nurses). Subgroups included the OOH General Practitioners (GPs) and CSH GPs. Differences between the dispositions reached for calls taken by Paediatricians versus CSH clinicians were compared using χ^2 analyses.

Results

Activity - numbers of calls and average handling time

A total of 455 calls were dealt with by the Paediatricians during the 26 shifts included in this evaluation period. On average each paediatrician dealt with 18 calls per shift with an average call handling time of 12 minutes. In 19% of calls, the paediatricians used photos to aid the telephone assessment, although no video calls were used for consultations.

A total number of 1,964 calls were ended in advice at the point of triage by OOH and HUB clinicians during all of the OOH time in this pilot period. Of these 544 calls were excluded as they didn't have any outcome recorded, failed contacts, duplicate calls or dental. The data from the whole OOH time period was looked at as when the paediatricians are on shift, they are dealing with the majority of the paediatric calls.

Disposition – percentage of calls directed to other services

The disposition outcomes of all calls were recorded. These were categorized into; self-care (including advice to see own GP), direct referral to the children's emergency assessment unit (CEAU), OOH GP appointment booked, recommendation to attend the Emergency Department, ambulance call out via 999 or referral to other secondary care specialist.

The percentage of calls in each disposition category by clinician group are shown in Table 3. The percentage of patients given self-care advice was higher when the consultation was conducted by a paediatrician, and

those offered Out of Hours appointments or advised to attend ED was lower when handled by a paediatrician compared to all other OOH/CSH staff (GPs and wider multi-disciplinary team).

Table 3. Disposition of calls by staff group (Source: Author's Own)

	Paediatricians	OOH and CSH Clinicians (MDT)	Chi-square analyses
Mean length of call	12.44	12.67	
Self-care	270 (59.3%)	1035 (18.5%)	χ^2 (1, N = 6046) = 414.40, p<.01
Direct admission CEAU	28 (6.2 %)	0 (0%)	
OOH Appointment	149 (32.7%)	4193 (75%)	χ^2 (1, N = 6046) = 371.05, p<.01
ED	8 (1.8%)	335 (6%)	χ^2 (1, N = 6046) = 14.09, p<.01
999	0 (0%)	16 (0.29%)	
Secondary Care	0 (0%)	12 (0.21%)	
Total calls	455	5591	

Measures of success – increasing self-care and reducing unnecessary demand for services

As demonstrated in Table 1, calls handled by paediatricians resulted in a greater proportion of patients being given self-care advice and lower use of Out of Hours appointments or recommendations to attend ED. Furthermore, 6.2% of callers were also able to be directly admitted to the Children's Emergency Assessment Unit (CEAU) by a paediatrician thereby reducing the number of hand offs for the patient and avoiding unnecessary GP OOH appointments and delays for patients.

Measures of safety and quality

All calls handled by the Paediatricians during the pilot were audited to assess the number of follow up calls to 111 or presentations to the emergency department within 7 days of the initial call. There were no safety concerns for any of these patients. In total 267 patients were given self-care advice and of these 30 (11%) had repeat healthcare contact within 7 days. Of these, 50% were given further self-care advice.

Further analysis was undertaken of patients who were booked in for a GP Out of Hours appointment following telephone consultation and the final disposition outcome is outlined in Table 4.

Table 4. Final outcome following OOH appointment (Source: Author's own)

Outcome following OOH appointment	OOH appointment booked by Paediatricians	OOH appointment booked by OOH/CSH clinicians
Refer to CEAU	15%	11%
Prescription Issued	56%	45%
Self-care advice	27%	39%
Did not attend	1%	2%

Cost saving implications

Previously published unit costs to the NHS for a primary care appointment, ED attendance and ambulance call out were used to perform a basic economic analysis of the difference in disposition of calls by the

different staff groups. The unit costs used for the analysis are those quoted in the academic paper published following a similar pilot in NHS England (Stilwell et al., 2022).

Using the percentage disposition of the call outcomes the relative cost of 100 calls taken by each clinician group can be compared as outlined in Table 5. Using these unit costs, it is estimated that for every one hundred calls handled by a paediatrician compared to regular CSH/OOH staff there is a cost saving of just over £2300.

Table 5. Relative cost of calls taken by each clinician group (Source: Author's Own)

Disposition	Unit Cost	Cost of 100 calls taken by Paediatricians	Cost of 100 calls taken by OOH/CSH clinicians	Difference
Self -care	£00	£00	£00	
OOH	£39.23	£1322.05	£2926.56	-£1604.50
ED	£144	£244.80	£907.20	-£662.40
999	£197	£0	£41.37	-£41.37
				-£2308.27

Conclusion

This report describes the impact of introducing Paediatricians into the East Clinical Support Hub (part of NHS 111 Wales) at weekends 10am-4pm to handle calls regarding people from ABUHB area under the age of 16 years. The analysis was performed over a 3-month period and compared the call disposition between the different staff groups.

Data showed that calls handled by Paediatricians compared to regular CSH/OOH clinicians resulted in a larger proportion of under 16s being safely offered self-care advice, smaller numbers of OOH GP appointments requested and reduced onward referrals to the Emergency department. Paediatricians were also able to directly admit patients to the Children's Assessment Unit resulting in more streamlined experience of care for patients. Furthermore, for every one hundred calls that a paediatrician deals with there is a cost saving of circa £2,300 compared to non-paediatricians.

The aim of 6 Goals for Urgent and Emergency Care is to ensure the delivery of the right care, in the right place, first time and this pilot has demonstrated this concept. During the pilot paediatricians have become valued members of the multidisciplinary urgent primary care team offering advice and treatment to children at the point of first contact. They have also been able to provide advice to other clinicians from OOH and the CSH who are seeing paediatric cases.

Key Recommendations

As outlined in this report, this initial pilot project suggests that introducing paediatric clinical expertise within NHS 111 Wales can reduce unwarranted demand for unscheduled care. Based on the findings from this study there are a number of recommendations for changes to practice and further research.

Recommendation 1 – Employ Paediatric clinicians to work in the Clinical Support Hub throughout the week

This pilot project took place over a three-month period and during this time paediatricians were only working at the Clinical Support Hub at weekends and during peak hours. Data analysis showed that calls handled by Paediatricians compared to regular CSH/OOH clinicians resulted in a significantly larger proportion of under 16s being safely offered self-care advice, smaller numbers of OOH GP appointments requested and reduced onward referrals to the Emergency Department. However, the total number of calls taken by the Paediatricians was far smaller than that handled by the regular CSH staff. This is in part because the data is drawn from a seven-day service provided by the CSH staff and only two days by the Paediatricians. A practical limitation of implementing this recommendation would be the availability of sufficient numbers of

Consultant Paediatricians to cover this service therefore alternative solutions would need to be sought to cover a seven-day service (see recommendation 2).

Recommendation 2 – Expand the type of paediatric clinicians selected to work in the CSH

In order to address the need to expand the hours of paediatric expertise within the limitations of available staff it is recommended that alternative paediatric expertise could be used and the impact of this analysed. In a similar pilot study introducing paediatric expertise into the English NHS 111 service clinicians included senior registrars and paediatric Advanced Nurse Practitioners as well as consultant paediatricians (Stilwell et al., 2022). Another potential source of suitable workforce could be from recently retired paediatric consultants who may wish to return to telephone advice service work on a retire and return basis.

Recommendation 3 – Prioritise paediatric cover at time of highest demand

This pilot study involved paediatricians working in the CSH at weekends as an analysis of call data revealed that these were the busiest days for calls relating to children under 16 years. In implementing recommendation 1 and expanding into weekday cover it would be important to prioritise staffing for times of day with peak demand for advice regarding children and young people.

Recommendation 4 – Assess if this change could have a similar impact in other geographies

This study took place in one Health Board area. Plans to expand to other Health Board areas would need to include an evaluation of the impact in these different geographies to ensure that results are replicated in other parts of Wales with different population demographics and local healthcare models.

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Navigating Consultant Led-Elective Care: An analysis of Referral to Treatment (RTT) Challenges in Hywel Dda University Health Board.

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Abstract:

Background: Referral to Treatment (RTT) waiting times for Elective Care in Wales have significantly increased in recent years, with many patients experiencing prolonged delays to appointment and treatment time as a result of combined post-COVID-19 backlogs and resource constraints within the wider healthcare system. Whilst significant progress has been made throughout Wales to reduce elective waiting times, health boards across Wales continue to face immense challenges for Planned Care recovery. The following report seeks to explore the multifaceted challenges that remain impactful on Planned Care recovery progress in Hywel Dda University Health Board (HDUHB).

Methodology: The study employs a cross-sectional design by analysing primary and secondary data. A Literature Review was undertaken around RTT challenges in Wales from various academic and governmental sources. A questionnaire was undertaken and gathered direct insights from Service Management and Senior Clinical staff at HDUHB and quantitative analysis of measurable data collected. Thematic analysis of primary and secondary data was also conducted to extract key findings.

Findings: The research revealed several recurring themes which posed challenges to planned care recovery across Wales and HDUDB. Impacting factors included, lack of financial investment, Unscheduled and Urgent Care pressures, inadequate healthcare infrastructure, and workforce deficits. These issues reflect broader systemic challenges in managing elective care demand across Wales.

Conclusions and Recommendations: To address these concerns, the research recommends increased funding for healthcare infrastructure, more strategic workforce planning to address staff shortages, and targeted interventions aimed at increasing elective care capacity across HDUHB.

Keywords: NHS Wales, Planned Care, Elective Care, RTT, Waiting Times.

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Introduction

Project Scope

The following paper seeks to examine the challenges surrounding Planned Care recovery in Hywel Dda University Health Board (HDUHB) and to put forth actionable recommendations for improvement. The analysis will delve into the underlying fundamental issues which contribute to these challenges.

By thoroughly assessing the current state of Planned Care services in HDUHB the paper seeks to identify areas where transformation is already being and could be implemented to enhance recovery across the Health Board.

The recommendations provided will be grounded on the findings analysed in the main body of the paper, with an aim to provide an outcome that will explore methodologies for improved planned care recovery going forward.

Background

Described as a pandemic by the World Health Organisation in March 2020, the enormous strain of Covid-19 has transformed the way in which Healthcare services are delivered in the United Kingdom and globally. The pandemic had a profound impact on Elective Care services across each Health Board in Wales, which lead to catastrophic disruptions that continue to resonate throughout the entire Healthcare system today. On 23rd March 2020, National Health Service (NHS) Wales made the decision to post-pone all non-urgent surgery (including cancer surgery), in aid of providing care to those critically unwell as a result of Covid-19. It is predicted that across England and Wales the number of surgical procedures cancelled because of the pandemic was 2.4 million by the end of 2021 (Dobbs et al.,2021). The consequences of this remain today as Referral to Treatment (RTT) times continue to stagger across Wales. The concept of RTT was introduced in the NHS in 2004 where the objective was for no patient to wait longer than 18-weeks from GP referral to Hospital treatment (Department of Health, 2004). As the primary tool used to measure elective performance, the RTT measure used across the NHS is calculated as the proportion of patients waiting for consultant-led care that have been waiting since original referral. To qualify, rules state that a patient must be on an *open pathway*, defined by a referral having been received (a *clock start*) but no treatment (*clock stop*) having yet occurred. What constitutes a clock stop varies by specialty and patient condition, and could involve a consultation, procedure or perhaps no activity at all if the patient is discharged from the waiting list (Wood, 2021).

Wales RTT Targets

In July, the number of patients waiting to start treatment increased from 791,000 to over 796,600 – the highest figure on record (Welsh Government, 2024). With demand continuously increasing in Wales for elective care, the Welsh Government (WG) have implemented performance targets across all of Wales. Published in the Planned Care Recovery Plan in April 2022 these are as follows:

- No patient in Wales should await >1 year longer for their first Outpatient Appointment (OPA) following a referral from a Primary Care provider.
- No patient in Wales should await >8 weeks for access to Diagnostic Testing.
- No patient in Wales should wait >14 weeks for access to Specified Therapy Services
- No patient in Wales waiting >2 years in most specialties by March 2023, and no patients waiting longer than one year in most specialties by Spring 2025. (Welsh Government, 2022).

RTT times within HDUHB

As of July 2024, `there were 100,448 patients residing in HDUHB locality on a RTT pathway (Stats Wales, 2024).

- 58,278 patients were waiting for their first OPA appointment, with 12,377 of these waiting >36 weeks.
- 22,116 patients were awaiting admitted diagnostic or treatment intervention, with 12,416 of these waiting >36 weeks. (Stats Wales, 2024)

Identification of Project Requirements

Literature Review

As RTT times in Wales continue to surpass WG targets for elective procedures and outpatient consultations, both policymakers and healthcare professionals are exploring a range of models and strategies to mitigate the problem. This literature review seeks to draw upon significant data on NHS waiting times in Wales and examines a plethora of factors contributing to prolonged delays, alongside potential models aimed at improving the situation.

When conducting initial searches, a significant number of varying literatures was readily available. A systematic approach was used to identify and evaluate relevant academic literature relating to the subject in question as the process involved utilising multiple academic databases, including PubMed, Google Scholar, and JSTOR, to locate peer-reviewed articles, governmental reports, and relevant studies.

Key words and terminology including Waiting Times, Surgery, Covid-19, NHS Backlog Wales and Elective Care were searched and after gathering a preliminary set of literature, their relevance and quality was assessed based on inclusion criteria such as publication date, and academic design. This critical appraisal helped narrow down the literature to the most pertinent and informative sources, allowing for a comprehensive analysis of existing research and identification of gaps in the literature (Pope et al., 2007). This method facilitated a clearer understanding of the overarching themes within the literature as scoped in the paper.

Current Position of RTT times in Wales

As outlined in section 1.2, many data and policies underscore the severity of patient waiting times in Wales. Whilst NHS Wales has implemented performance improvement strategies across all health boards, waiting times for elective care often continue to exceed recommended targets (Bevan, 2021). Bevan and Hood (2006) previously argued that NHS performance management measures introduced in England during the early 2000s, failed to address long waiting times in Wales. The "targets and terror" approach in NHS England, which relied on strict performance metrics and penalties for non-compliance, led to significant reductions in RTT times in England from 2010. However, in recent years, England has faced challenges with increasing treatment demand due to the COVID-19 pandemic. In contrast, Wales adopted a more flexible, collaborative approach to healthcare management, but this has not resulted in significant improvements in waiting times, with Welsh NHS services continuing to face persistent delays (Bevan et al., 2020).

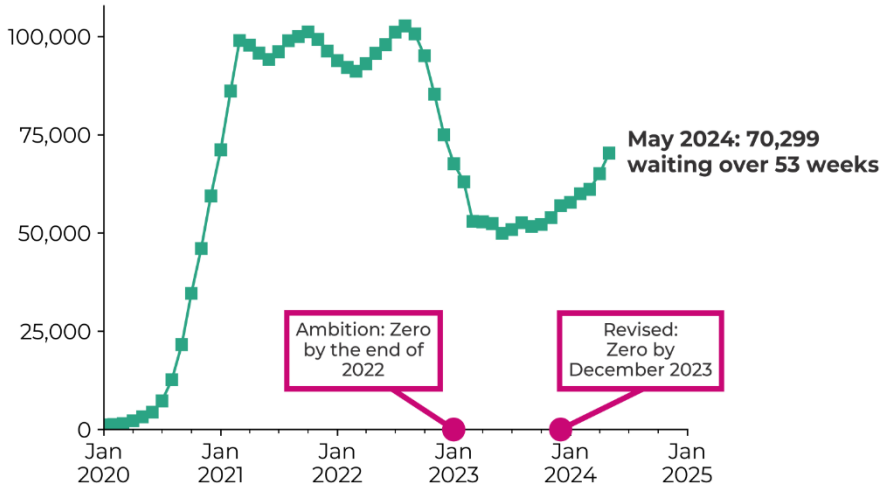


Figure 1. Patient Pathways waiting over 52 weeks for their first OPA (Source: Stats Wales, 2024).

Recent findings from Stats Wales (2024) highlight the inability for NHS Wales to meet WG performance targets around RTT. As highlighted in Figure 1. across Wales 70,299 patients were waiting >52 weeks for

their first OPA, failing to meet the objective highlighted in the Planned Care Recovery Plan. Similarly, highlighted in Figures 2. And 3. the figures suggest that 22,455 patients were waiting >104 weeks for treatment, and 14,827 waiting >52 weeks as of May 2024.

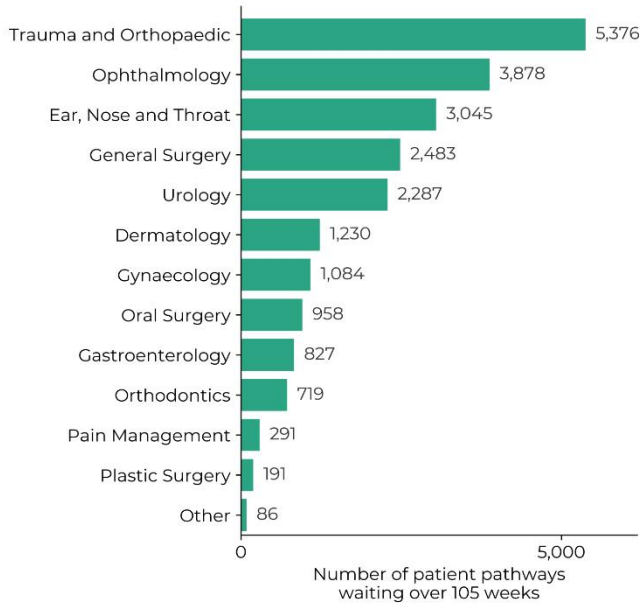


Figure 2. Patient Pathways waiting over 104 weeks for Treatment (Source: Stats Wales, 2024).



Figure 3. Patient Pathways waiting over 52 weeks for Treatment (Source: Stats Wales, 2024).

Trauma and Orthopaedics (T&O) and Ophthalmology are two specialties that experience some of the longest RTT times, particularly in Wales. Orthopaedic surgeries are often categorised as non-urgent making them susceptible to delays in favour of more urgent and complex cases. During the pandemic, elective orthopeadic, inpatient procedures declined by 80% in Wales. (Hampton et al., 2021). Similarly, Cataract surgery is often a highly in demand procedure and like orthopedic elective surgery is usually delayed causing an immense backlog. The high demand usually coincides with the demographic of patients awaiting elective treatment within these specialties.

Contributing Factors to Long RTT times

Growing Population

> *A growing population along with increasing numbers of people with multiple long-term health conditions mean that pressures on the Welsh NHS and our Social Care System will keep rising"* (Welsh Government, 2023).

Several interconnected factors contribute to the growing waiting times within NHS Wales. One significant contributing factor identified by Phillips and Davies (2018) is an ageing population that places increasing demands on healthcare services. It is estimated that within the next 15 years near 20% of the population in Wales will be aged 70 and over, with 22% more people are expected to have diabetes and the number of people with four or more long-term conditions could double (Welsh Government, 2023).

Wales has a higher proportion of elderly residents than other parts of the UK, and this demographic shift has led to greater pressure on hospitals, especially for conditions requiring specialist care and long-term management. It is often, age-related illnesses increase the demand for elective procedures and outpatient consultations, further straining already limited resources.

Geographical Disparities

The COVID-19 pandemic has also had a greater detrimental effect on hospital waiting times in rural and remote trusts across the UK than for more urban areas (Palmer and Rolewicz, 2020, therefore geographical disparities must be highlighted when considering RTT times in Wales. Rural areas in Wales face greater challenges when accessing timely healthcare services. There are nine authorities in Wales that can be defined as 'rural': Anglesey, Gwynedd, Conwy, Denbighshire, Powys, Ceredigion, Pembrokeshire, Carmarthenshire and Monmouthshire (Woods et al., 2021; Welsh Government, 2008). Research suggests that 32% of the Welsh population live in these nine local authorities (Office for National Statistics, 2020), which make up 82% of the land area of Wales (Woods et al., 2021). There are several factors associated with living in rural environments which have significant impact on health and well-being and can lead to poorer health (Welsh Government, 2016). Factors such as infrastructure, digital access and exclusion, access to health and related services, transport, community support, isolation and social exclusion and housing and fuel poverty.

Living rurally can often make attending appointments difficult for those who do not own or have ready access to a car, or who cannot drive for a range of reasons including ill-health (Baird and Wright, 2006). It takes considerably more time for those residing in rural communities to access services due to travel distances or the nature of the transport infrastructure, which in turn can sometimes deter patients from utilising health services as frequently as those living in urban communities, resulting in delayed diagnosis and treatment (Welsh Government, 2018).

Healthcare provision in rural Wales also poses challenges when recruiting and retaining appropriate and skilled workforce (Woods et al., 2021). For access to major and often complex services (such as specialist hospital facilities) residents residing rurally often have to travel to cities in Wales, or larger urban centres across the English border (Bauchinger et al., 2021).

Resource Deficits

It is evident that NHS Wales has lacked sufficient investment and resource, both pre- and post-pandemic. Currently one in four consultant posts in Wales remains unfilled (BMJ, 2022) with recent statistics from the Organisation for Economic Co-operation and Development (OECD) highlighting that compared to other OECD nations, the number of Secondary Care doctors (per headcount) in Wales is below average, as there are around 2.5 secondary doctors per 1000 people in Wales, compared to the OECD average of 2.7, and in order to meet this average, Wales would need an additional 647 secondary doctors (BMA, 2022).

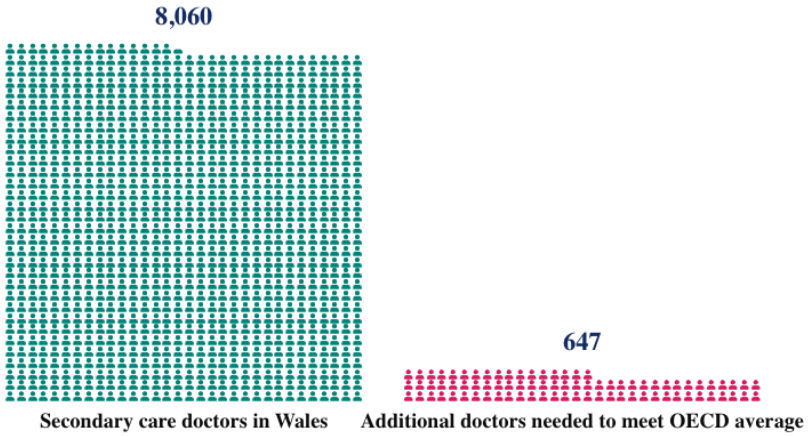


Figure 4. Secondary Care doctors needed to meet OECD average (Source: Stats Wales, 2022).

Medical staff shortages in Wales are prevalent in a multitude of specialties including Anaesthesiology, Trauma and Orthopaedics, ENT and Ophthalmology having a significant impact on planned care recovery in Wales. impact on elective care. Statistics by the Royal College of Surgeons (2022) highlight that the NHS facing a shortage of 2,500 consultant surgeons before the pandemic, which has made it difficult to reduce the elective surgery backlog effectively. Furthermore, without significant investment in staff training and retention, the long-term sustainability of elective care in NHS Wales remains under threat.

Summary

The literature poses that NHS Wales continues to face significant challenges with regards to planned care recovery. Non-urgent procedure demand, patient demographic and lack of resources and infrastructure were thematic findings when analysing the available literature. Additionally, financial constraints posed significant when analysing the ability to meet growing healthcare needs (Welsh Government, 2022). Consequently, RTT times continue to breach targets, pro-longed waiting times persist, and backlogs in elective procedures persistently grow across Wales.

Limitations

The literature review was undertaken to analyse the readily available literature and data regarding RTT times in Wales in order to provide context for primary research and findings. The literature surrounding RTT times in HDUHB presented limitations. During the data collection process, whilst useful information was readily available, more focused studies could be conducted, particularly on RTT pathways as this is a critical component of planned care operations. According to research that explores RTT Pathways, no official, academic papers can be found, despite the introduction of the standard in 2004 (Wood, 2019). Furthermore, there too is a lack of publicly accessible data which specifically addresses RTT within individual health boards in Wales. Much of the available research focuses broadly on NHS Wales or UK-wide trends, which may not fully capture the unique challenges faced by HDUHB.

Research

Research Methodology

As previously stated a literature review was undertaken to ensure relevant literature was sourced in the first instance to support findings. With reference to the absence in RTT Literature surrounding HDUHB the research methodology was a participant-centred questionnaire compromising of open-ended and closed-ended questions. The combination of open-ended and closed-ended questions allowed the collection of both quantitative and qualitative data from respondents. Closed-ended questions ensured structured and easily comparable data, whilst open-ended questions offered detailed insights into the proposed research question.

According to Creswell (2014), questionnaires are suited to research that requires data collection in a short period. Additionally, the ability to distribute the questionnaire via Microsoft Forms further enhanced its suitability for this paper, as according to Bryman (2016), self-administered questionnaires reduce the potential for interviewer bias and provide respondents with the flexibility to answer within their own time, which can ultimately improve response rates and data accuracy.

Participation and Data Collation

The decision was made to focus the research on specific respondent groups with direct RTT involvement. The questionnaire was distributed electronically via Microsoft Forms to staff within the Planned Care directorate at HDUHB, with the option for respondents to share the form outside of the directorate for additional relevant response if they felt necessary. Responses from the questionnaire were retrieved via e-mail and collated through Microsoft Forms.

Limitations of Study

A significant limitation of the study was the potential for the low response rate. The questionnaire was distributed to 36 members of staff within the planned care directive. With 18 responses, generating a response rate of 50%. It is important to note that a lower response rate can reduce overall quality of data and generalise findings (Bryman, 2016). The lower response rates may not accurately reflect the views of the wider population. Additionally, questionnaires rely on ones willingness to participate ang the impersonal nature can often lead to misunderstandings of the questions, and without the ability to clarify misunderstandings in real-time this can compromise the quality of responses (Fowler, 2014).

Ethical Considerations and Data Protection

The study has gained ethical approval from the Swansea University ethics committee. Responses from the questionnaire have been anonymously recorded, and data securely stored for analysis in compliance with GDPR guidelines. All data has been collated and stored on a secure, encrypted HDUHB device - with only non-identifiable information stored. Participants were provided with the Participant Consent Forms (appendix A) and Participant information sheet (appendix B) and were guided through clear instructions within the questionnaire, with additional support available if required.

Findings

Scope

The following chapter will present the findings and analysis from the distributed *Hywel Dda University Health Board (HDUHB) Planned Care Recovery Insights Questionnaire* for discussion and recommendations. The chapter will focus on thematic analysis from respondents with a view to influence discussion around the research subject. The findings will form the basis for the recommendations aimed at improving planned care recovery in HDUHB.

Participation Engagement

As mentioned, the questionnaire was distributed to a cohort of staff members within the Planned Care directorate. Planned care HDUHB is a multi-disciplinary team where a breadth of Administrative and Clinical staff is employed. Participants of the questionnaire were asked to identify their job-role and the results highlighted varied expertise.

The questionnaire generated a higher response from administrative and clerical staff. This was to be expected as a large proportion of Planned Care staff in HDUHB fall into this category of employment. The Service Management Team (compromising of Service Delivery Managers, Service Managers and Service Support Managers) generated 61.1% of the results within the questionnaire, where 22.2% of the results generated from clinical staff (Senior Nurse Managers and Sisters). The remaining 16.6% results were generated by further administrative staff working directly within the Planned care team (see figure 5.).

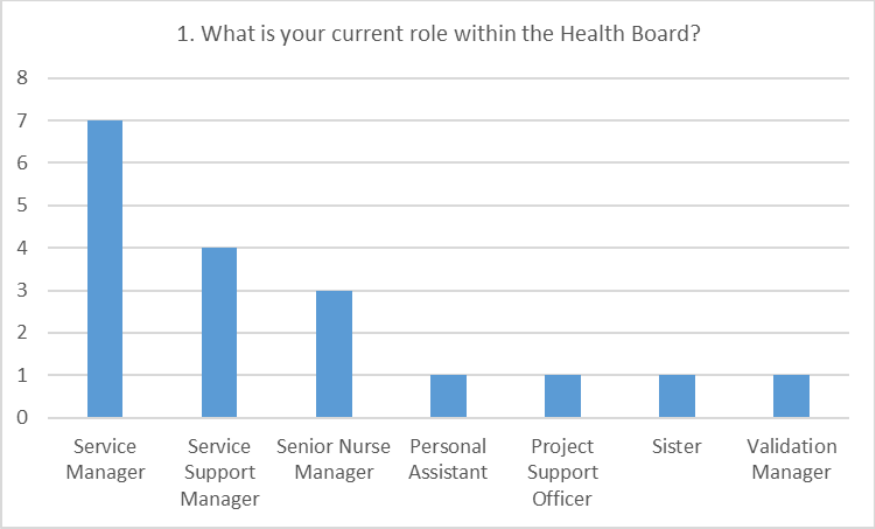


Figure 5. Findings corresponding to Question One of distributed Questionnaire (Source: Authors Own).

Context Surrounding RTT Targets

Participants were asked in question 2. if they believed RTT targets outlined by Welsh Government were acheiveable. The responses are highlighted below (see figure 6.). 78% did not believe these were acheieveable, 11% were unsure, 6% were unaware of the targtes outlined and 5% believed they were achieveable.

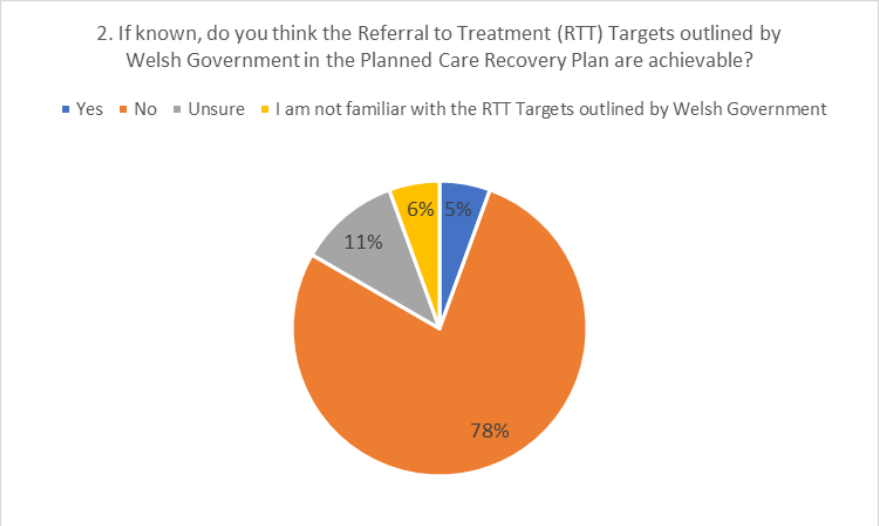


Figure 6. Findings corresponding to Question Two of distributed Questionnaire (Source: Authors Own).

If participants answered 'Yes', 'No' or 'Unsure' to the question 2. They were prompted to answer the following question: *If you selected 'Yes', 'No' or 'Unsure' to the question above, please expand on your answer.* A thematic analysis of answers was undertaken and can be seen in Table 2.

Table 1. Thematic Analysis of Question Three (Source: Authors Own).

Recurring Theme	Number of occurrences within responses
Funding	12
Elective Capacity	8
Workforce	7
Infrastructure	4

Identifying Challenges and Improvements

Participants were asked to select all factors which posed significant challenges on planned care recovery within HDUHB (please see figure 7.). Participants were then asked presented with a variety of statements in which they had to agree or disagree (please see figures 8. and 9.).

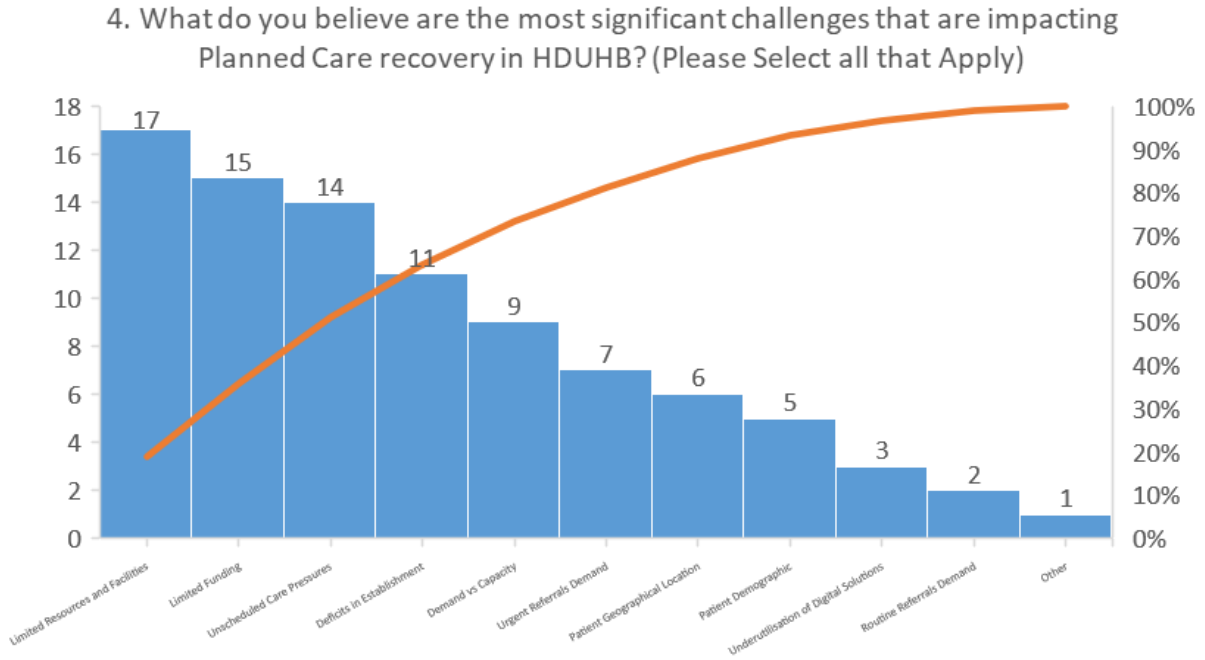


Figure 7. Findings corresponding to Question Four of distributed Questionnaire (Source: Authors Own)

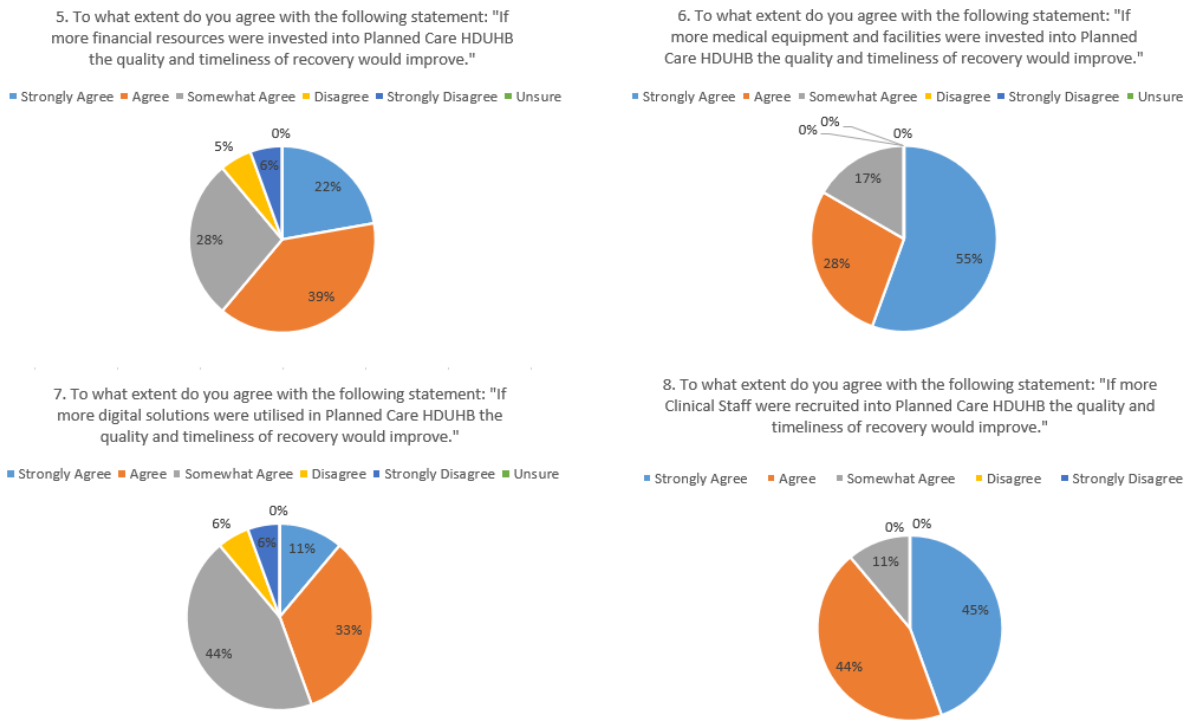


Figure 8. Findings corresponding to Questions Five, Six, Seven and Eight of distributed Questionnaire (Source: Authors Own).

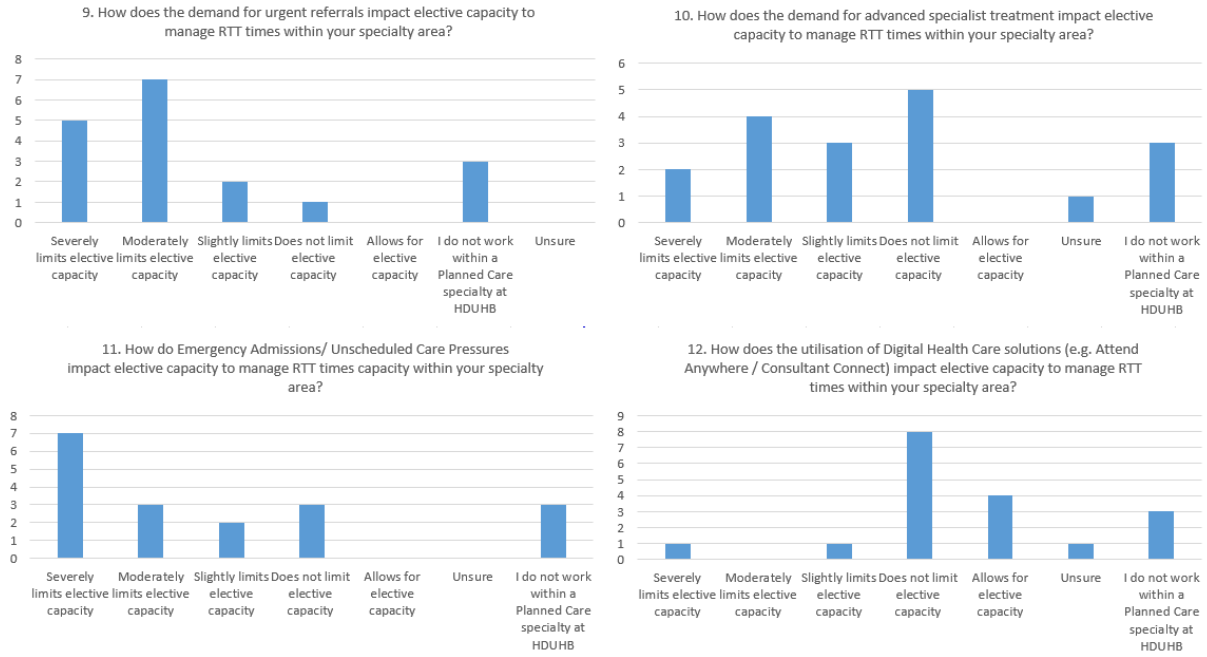


Figure 9. Findings corresponding to Questions Nine, Ten, Eleven and Twelve of distributed Questionnaire (Source: Authors Own).

Further Contributing Factors

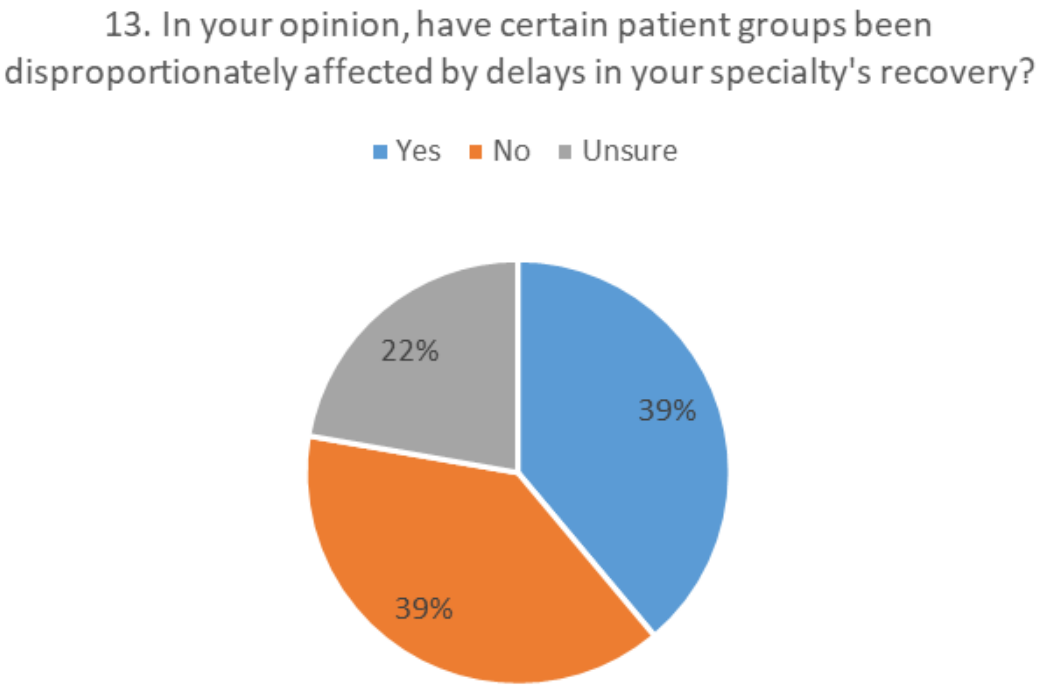


Figure 10. Findings corresponding to Question Thirteen of distributed Questionnaire (Source: Authors Own).

If participants answered 'Yes' to question 13. they were prompted to answer the following question: *If you selected 'Yes' to the question above, please expand on your answer.* Statements from participants have also been identified as below:

> *" Rural patients who have to travel further distances to receive treatment. For example, certain consultants within the Health Board provide their care East of the Health Board in Prince Phillip Hospital in Llanelli, and patients who live in Pembrokeshire must travel distance for this care. With the majority of patients living in these rural areas being elderly it often affects their ability to receive timely appointments"* (Questionnaire Respondent, 2024).

> *" Children waiting times are causing increased absence from school, effecting key development and could have social impact in their future"* (Questionnaire Respondent, 2024).

> *"A number of patients have waited in excess of 2-years for treatment for a potentially reversible condition treatment"* (Questionnaire Respondent, 2024).

Exploring Further Challenges and Improvement

Participants were asked in question 15. *"What further factors do you think hinder Planned Care recovery in HDUHB?*" to provide further information, they felt relevant to support the research question. A thematic analysis of suggestions via participant responses can be seen below:

> *" Some state of the art equipment is unavailable and specialist staff within certain specialties are not available within Health Board to treat complex patients."* (Questionnaire Respondent, 2024

> *" Patient inability to travel across Health Board to appointments. Lack of Hospital transportation available for rural patients. High DNA (Did Not Attend) rates in certain specialties"* (Questionnaire Respondent, 2024).

> *"Low staff morale"* (Questionnaire Respondent, 2024).

Participants were asked in question 16. *"What further action do you think could be taken in order to improve Planned Care recovery in HDUHB?"* to provide further information, they felt relevant to support the research question. A thematic analysis of suggestions via participant responses can be seen below:

> *" Increased workforce - especially consultant level"."* (Questionnaire Respondent, 2024

> *"Transformation of system and support for clinical staff.""* (Questionnaire Respondent, 2024).

> *"Invest to save by improving current infrastructure"* (Questionnaire Respondent, 2024).

Discussion

Thematic Analysis

Throughout the study, four prominent themes emerged as major barriers impacting Wales and HDUHB's ability to meet current RTT targets issued by WG, the four common themes were funding, elective capacity, workforce and infrastructure. These themes were identified through the analysis of both existing literature and questionnaire responses.

Lack of Financial Resources

Lack of financial resources was consistently cited as a challenge posing impact on HDUHB's planned care recovery. Of 18 questionnaire respondents, 15 believed that limited funding was a significant challenge impacting planned care recovery (see figure 7.) and 39% respondents strongly agreed that if more financial investment was allocated to HDUHB the quality and timeliness of planned care recovery would improve (see figure 8.).

The financial challenges in HDUHB reflect broader issues within the Welsh Government's healthcare budget. With ongoing resource constraints, health boards across Wales have faced significant shortfalls, making it difficult to allocate sufficient funds to meet growing elective care demands (Bevan Commission, 2021). WG informed that budget allocations for NHS Wales were not growing in line with rising costs and demand (Welsh Government, 2023). It is evident that this has had a direct impact on HDUHB, where the need for capital investment in planned care recovery is evident.

Elective Capacity

Another common theme identified in the primary and secondary research was the impact of sufficient elective capacity on planned care recovery. There are numerous inhibitors in managing elective care capacity at HDUHB. Of the 18 respondents 14 respondents highlighted that Urgent Referrals limit elective capacity with 12 of 18 respondents noting limited elective capacity due to Unscheduled Care pressures and admissions (See figure 9.). One respondent added notable commentary around the subject matter:

> *"Increased elective beds within the Health Board would have a direct impact on emergency admissions, however would significantly ease elective pressures across the system"* (Questionnaire Respondent, 2024).

As emergency cases increase and Unscheduled Care pressures intensify, it is not uncommon for the reallocation of staff and hospital beds to meet urgent care demands. This has a direct impact on elective care throughput and capacity, and in some instances, delaying scheduled surgeries and treatments, leading to prolonged waiting times for elective procedures.

Workforce Challenges

89% of questionnaire respondents 'strongly agreed' or 'agreed' that an increase in clinical workforce would allow for quality and timely planned care recovery in HUDHB (see figure 8.). Workforce shortages within HDUHB are a significant barrier to delivering elective care, mirroring challenges seen across NHS Wales. The shortage of healthcare professionals, including doctors, nurses, and allied health staff, is exacerbated by difficulties in recruitment, and retention issues (Palmer & Rolewicz, 2020). High levels of staff burnout and sickness further strain the already limited workforce, leading to delays in elective treatment, and frequent cancellations of non-urgent surgeries, particularly when unscheduled care pressures rise (Dobbs et al., 2021).

Infrastructure and Resource Allocation

The conclusive research from the questionnaire highlights that Infrastructure and resource limitations was the most impacting factor on planned care recovery in HUDHB, as 17 of 18 respondents highlighted so (see figure7.) In addition 100% of respondents chose to strongly or somewhat agree to the statement *"If more medical facilities and equipment were invested into HUDHB, the quality and timeliness of recovery would*

improve" (see figure 8.). HDUHB urgently requires improved infrastructure to meet growing healthcare demands, as respondents noted:

> *" Equipment is outdated and certain resources are unfit for purpose in order to meet demand"*

Insufficient bed space, inadequate operating theaters, and outdated equipment all contribute to delays in treatment, with significant impact on RTT times (Phillips & Davies, 2018). Welsh Government (2023) have highlighted that digital infrastructure is also underdeveloped, impeding the efficiency of patient management and communication systems.

Recommendations

By analysing the readily available data and literature, it is no surprise that addressing the challenges facing planned HDUHB requires a comprehensive and multi-faceted strategy to aid recovery and diminish backlogs. The thematic analysis has identified that focus on four critical areas is necessary: increasing funding, expanding elective care capacity, bolstering the healthcare workforce, and improving infrastructure as each of these factors play a pivotal role in helping the health board meet RTT targets and improve patient outcomes. The proposed recommendations are as follows:

1. Increasing financial support for elective care is essential to resolving many of the issues currently facing HDUHB. Without adequate funding, efforts to mitigate backlogs will be severely limited.

2. Expanding elective care capacity is critical. Current demand for elective care far exceeds the capacity within the health board, which has been further exacerbated by unscheduled care pressures. A real focus should be implemented on ring-fencing elective wards/beds to guarantee capacity for elective treatment throughput.

3. Recruitment and retention efforts must be intensified, with targeted programs to attract healthcare workers to the health board. An increased workforce, especially at Consultant-Level into services with demanding backlogs (e.g. Trauma and Orthopaedics, Ophthalmology and ENT) will help alleviate pressure and tackle prolonged backlogs.

4. Investment into physical and digital infrastructure is crucial for increasing elective care capacity. Many healthcare facilities in Wales, especially in rural areas, are outdated and unable to cope with the current demand (Welsh Government, 2023). Investments in new technology, modern facilities, and improved logistics are essential to ensure that patients receive timely and efficient care.

Conclusion

Although recommendations are based on thematic analysis derived from the questionnaire and supporting literature, it is also recommended that further research is undertaken with Service Users and Management to scope a breadth of resources to help address and improve RTT pressures in planned care HUDHB. These recommendations, if implemented cohesively, will provide the necessary framework for long-term improvements in elective care delivery.

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Appendix C: Participant Information Sheet

Swansea University
Prifysgol Abertawe

PARTICIPANT INFORMATION SHEET

Navigating Consultant-Led Elective Care: An Analysis of Referral to Treatment (RTT) Challenges in Hywel Dda University Health Board.

You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?

We are conducting research to identify the primary challenges faced by Hywel Dda University Health Board (HDUHB) regarding Referral to Treatment (RTT) times within the Planned Care directorate. The purpose of this study is to employ both qualitative and quantitative research methodologies to uncover the complexities involved in reducing RTT waits. By engaging a diverse cohort of staff within the directorate, we aim to critically analyse the factors contributing to waiting times within the Health Board.

Your participation in this study will take approximately 15 minutes.

Who is carrying out the research?

The data are being collected by Carys Rees, on behalf of the Department of Humanities and Social Sciences at Swansea university.

The research has been approved by the Swansea University, School of Management Research Ethics Committee.

What happens if I agree to take part?

We kindly ask you to complete a brief questionnaire, which should take approximately 15 minutes. The questionnaire will include a range of questions, from simple tick-box answers to those requiring more detailed responses. These questions will cover various factors impacting your field of work and their frequency of occurrence. Additionally, we will request some background information. Please note that all data collected will be anonymised.

Are there any risks associated with taking part?

The research has been approved by the Swansea University, Department of Humanities and Social Sciences Research Ethics Committee. There are no significant risks associated with participation.

Data Protection and Confidentiality

Your data will be processed in accordance with the Data Protection Act 2018 and the UK General Data Protection Regulation (UK GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected computer file. All paper records will be stored in a locked filing cabinet. Your consent information will be kept separately from your responses to minimise risk in the event of a data breach.

Please note that the data we will collect for our study will be made anonymous, thus, it will not be possible to identify and remove your data at a later date, should you decide to withdraw from the study. Therefore, if at the end of this research you decide to have your data withdrawn, please let us know before you leave.

Please note that if data is being collected online, once the data has been submitted online you will be unable to withdraw your information.

What will happen to the information I provide?

An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable*.

Is participation voluntary and what if I wish to later withdraw?

Your participation is entirely voluntary – you do not have to participate if you do not want to. If you decide to participate, but later wish to withdraw from the study, then you are free to withdraw at any time, without giving a reason and without penalty.

Data Protection Privacy Notice

The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data and can be contacted at the Vice Chancellors Office.

Your personal data will be processed for the purposes outlined in this information sheet.

Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you.

The legal basis that we will rely on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the Swansea University, School of Management Research Ethics Committee, Swansea University.

The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

How long will your information be held?

Data will be preserved and accessible **for a minimum of 10 years after completion of the research**. Records from studies with major health, clinical, social, environmental or heritage importance, novel intervention, or studies which are on-going or controversial should be retained for at least 20 years after completion of the study. It may be appropriate to keep such study data permanently within the university, a national collection, or as required by the funder's data policy.

Automated decision making and profiling

What are your rights?

You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer:-

University Compliance Officer (FOI/DP)

Vice-Chancellor's Office

Swansea University

Singleton Park

Swansea

SA2 8PP

Email: dataprotection@swansea.ac.uk

How to make a complaint

If you are unhappy with the way in which your personal data has been processed, you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied, then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -

Information Commissioner's Office,

Wycliffe House,

Water Lane,

Wilmslow,

Cheshire,

SK9 5AF

www.ico.org.uk

What if I have other questions?

If you have further questions about this study, please do not hesitate to contact us:

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Appendix D: Participant Consent Sheet

Participant Consent Form

Project title: Navigating Consultant-Led Elective Care: An Analysis of Referral to Treatment (RTT) Challenges in Hywel Dda University Health Board.

Name and Contact details of the principal researcher:

Carys Rees

Swansea University School Of Management

2382867@swansea.ac.uk

	Participant initial
I (the participant) confirm that I have read and understand the information sheet for the above study which is attached to this form.	
I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reasons.	
I understand what my role will be in this research, and all my questions have been answered to my satisfaction.	
I understand that I am free to ask any questions at any time before and during the study.	
I have been informed that the information I provide will be safeguarded.	
I am happy for the information I provide to be used (anonymously) in academic papers and other formal research outputs.	
I am willing for my information to be audio recorded.	
I have been provided with a copy of the Participant Information Sheet.	
I agree to the researchers processing my personal data in accordance with the aims of the study described in the Participant Information Sheet.	

(For paper consent use the following):

Thank you for your participation in this study. Your help is very much appreciated.

Print name of participant	Signature	Date
Print name of researcher	Signature	Date

This study is being conducted by Swansea University.
When complete: Original copy for participant, one copy to be retained by researcher if paper copy.

(For electronic consent use the following):

If you agree with all statements listed above, click YES.
If you disagree with any of the statements above, click NO and you will be taken to the end of this survey.
This study is being conducted by Swansea University

Thank you for your participation in this study. Your help is very much appreciated.

Appendix C: Questionnaire

Hywel Dda University Health Board (HDUHB) Planned Care Recovery Insights Questionnaire

The Questionnaire is aimed at gaining insights on Planned Care Recovery in HDUHB. The findings will contribute to the wider Research Project I am undertaking for Swansea University. All those who undertake the questionnaire will do so anonymously, unless stated otherwise. Thank you for your participation.

* Required

1. What is your current role within the Health Board? *

2. If known, do you think the Referral to Treatment (RTT) Targets outlined by Welsh Government in the Planned Care Recovery Plan are achievable? *

- ◯ Yes
- ◯ No
- ◯ Unsure
- ◯ I am not familiar with the RTT Targets outlined by Welsh Government

3. If you selected 'Yes', 'No' or 'Unsure' to the question above, please expand on your answer.

4. What do you believe are the most significant challenges that are impacting Planned Care recovery in HDUHB? (Please Select all that Apply) *

- [ ] Limited Funding
- [ ] Limited Resources and Facilities
- [ ] Deficits in Establishment
- [ ] Demand vs Capacity
- [ ] Urgent Referrals Demand
- [ ] Routine Referrals Demand
- [ ] Unscheduled Care Pressures
- [ ] Patient Demographic
- [ ] Patient Geographical Location
- [ ] Underutilisation of Digital Solutions
- [ ] Other

5. To what extent do you agree with the following statement: "If more financial resources were invested into Planned Care HDUHB the quality and timeliness of recovery would improve." * Strongly Agree

- ◯ Agree
- ◯ Somewhat Agree
- ◯ Disagree
- ◯ Strongly Disagree
- ◯ Unsure

6. To what extent do you agree with the following statement: "If more medical equipment and facilities were invested into Planned Care HDUHB the quality and timeliness of recovery would improve." *

- ◯ Strongly Agree
- ◯ Agree
- ◯ Somewhat Agree
- ◯ Disagree
- ◯ Strongly Disagree
- ◯ Unsure

7. To what extent do you agree with the following statement: "If more digital solutions were utilised in Planned Care HDUHB the quality and timeliness of recovery would improve." *

- ◯ Strongly Agree
- ◯ Agree
- ◯ Somewhat Agree
- ◯ Disagree
- ◯ Strongly Disagree
- ◯ Unsure

8. To what extent do you agree with the following statement: "If more Clinical Staff were recruited into Planned Care HDUHB the quality and timeliness of recovery would improve." *

- ◯ Strongly Agree
- ◯ Agree
- ◯ Somewhat Agree
- ◯ Disagree
- ◯ Strongly Disagree

9. How does the demand for urgent referrals impact elective capacity to manage RTT times within your specialty area? *

- ◯ Severely limits elective capacity
- ◯ Moderately limits elective capacity
- ◯ Slightly limits elective capacity
- ◯ Does not limit elective capacity
- ◯ Allows for elective capacity
- ◯ I do not work within a Planned Care specialty at HDUHB
- ◯ Unsure

10. How does the demand for advanced specialist treatment impact elective capacity to manage RTT times within your specialty area? *

- ◯ Severely limits elective capacity
- ◯ Moderately limits elective capacity
- ◯ Slightly limits elective capacity
- ◯ Does not limit elective capacity
- ◯ Allows for elective capacity
- ◯ Unsure
- ◯ I do not work within a Planned Care specialty at HDUHB

11. How do Emergency Admissions/ Unscheduled Care Pressures impact elective capacity to manage RTT times capacity within your specialty area? *

- ◯ Severely limits elective capacity
- ◯ Moderately limits elective capacity
- ◯ Slightly limits elective capacity
- ◯ Does not limit elective capacity
- ◯ Allows for elective capacity
- ◯ Unsure
- ◯ I do not work within a Planned Care specialty at HDUHB

12. How does the utilisation of Digital Health Care solutions (e.g. Attend Anywhere / Consultant Connect) impact elective capacity to manage RTT times within your specialty area? *

- ◯ Severely limits elective capacity
- ◯ Moderately limits elective capacity
- ◯ Slightly limits elective capacity
- ◯ Does not limit elective capacity
- ◯ Allows for elective capacity
- ◯ Unsure
- ◯ I do not work within a Planned Care specialty at HDUHB

13. In your opinion, have certain patient groups been disproportionately affected by delays in your specialty's recovery? *

- ◯ Yes
- ◯ No
- ◯ Unsure

14. If you answered 'Yes' to the above question, please expand on your answer.

15. What further factors do you think hinder Planned Care recovery in HDUHB? *

16. What further action do you think could be taken in order to improve Planned Care recovery in HDUHB? *

17. Please add any further comments you feel necessary.

This content is neither created nor endorsed by Microsoft. The data you submit will be sent to the form owner.

Microsoft Forms

Acknowledgments

I would like to extend my gratitude to Swansea University for their support and academic guidance throughout this research project. Special thanks also go to Hywel Dda University Health Board (HDUHB) for granting me access to invaluable data and resources, which have been instrumental in shaping the outcomes of this study. Additionally, I am deeply grateful to the CLIMB Programme for their commitment to nurturing research initiatives and providing a platform to enhance my skills. This research would not have been possible without the contributions and support from these institutions.

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Exploring possibilities for sharing data across the public sector in West Wales to improve decision making in relation to harm prevention and safeguarding for vulnerable children

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Abstract:

Child Practice Reviews often identify that better information sharing and improved multi-agency working could help to prevent significant harm to vulnerable children and families. This research explores the data that practitioners would like to access to help inform their decision making. It also explores the impact that this would have on their ability to act and intervene. It also explores how emerging technology can help support information sharing, data triangulation and improve visibility of whole system activity. It also explores the challenges and barriers faced in doing so.

Keywords: Safeguarding, harm, data, technology, information sharing, data triangulation

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Introduction

Background and context

Serious case reviews in the UK have identified failures in data sharing between public sector bodies as a significant issue contributing to child deaths. These reviews often reveal that better communication and information sharing could have potentially prevented these tragic outcomes. Some notable examples include Victoria Climbie (2000), Baby P (Peter Connelly) (2007), Hamzah Khan (2009), Logan Mwangi (2021). These reviews have invariably made recommendations about data sharing and have done for the past 20 years. The recently published child practice review in 2024 from Pembrokeshire regarding Lola James's murder, concluded that that it was 'disappointing' that information sharing between multiple agencies continued to feature as a factor in reports. The safeguarding of children requires a multi-faceted approach across any organisation known to the child, the family and associates.

This research explores the possibilities of how technology can help support practitioners to access information to support safeguarding decision making, specifically for children on the:

- **Child Protection Register:** The child protection register lists all children in a local authority area who are suffering or likely to suffer significant harm and who are currently subject of a care and support protection plan.
- **Children Looked After:** A child looked after is a child or young person who is being cared for by their local authority. They might be living in a children's home, or with foster parents, or in some other family arrangement, and
- **Children subject to a section 47 strategy discussion:** A section 47 of the Children Act 1989 is a requirement to hold a strategy discussion meeting to decide whether to initiate enquiries as they consider necessary to enable them to decide whether they should take any action to safeguard or promote the child's welfare.

The research aims to gather views from practitioners within public sector organisations in West Wales to explore data-sharing between public bodies as part of an action-research approach.

The literature outlines a number of key themes that need to be considered from a data perspective. This includes the data and its quality, transparency, bias and ethics. The research also explores the use of data within decision making and the role of the professional and organisational collaboration.

Literature Review

There are statutory obligations for the public sector to share data and information in relation to safeguarding. Under Section 130 of the Social Services and Well-being (Wales) Act 2014, there is a statutory duty to report on children at risk. The Wales Safeguarding Procedures, outline that Safeguarding children is a responsibility shared by everyone in contact with children and that safeguarding is everyone's responsibility. For services to be effective each practitioner and organisation must play their full part both individually and in collaboration.

Information sharing is central to good safeguarding practice. Practitioners must share information in accordance with data protection legislation. Data protection legislation allows for the sharing of information. One of the specific circumstances which provides for information sharing is to prevent abuse or serious harm to others. When information is not shared in a timely and effective way, decisions about how to respond may be ill informed and this can lead to poor safeguarding practice and leave children at risk of harm. When a Child's name is placed on the Child Protection Register, practitioners have a duty to inform the social worker of significant events or changes of circumstance relevant to the child.

Child Practice Reviews have been undertaken within the Mid and West Wales area. These reviews have been analysed as part of this research to pull out the issues associated with information sharing. A summary of these findings can be seen in Figure 1 below.

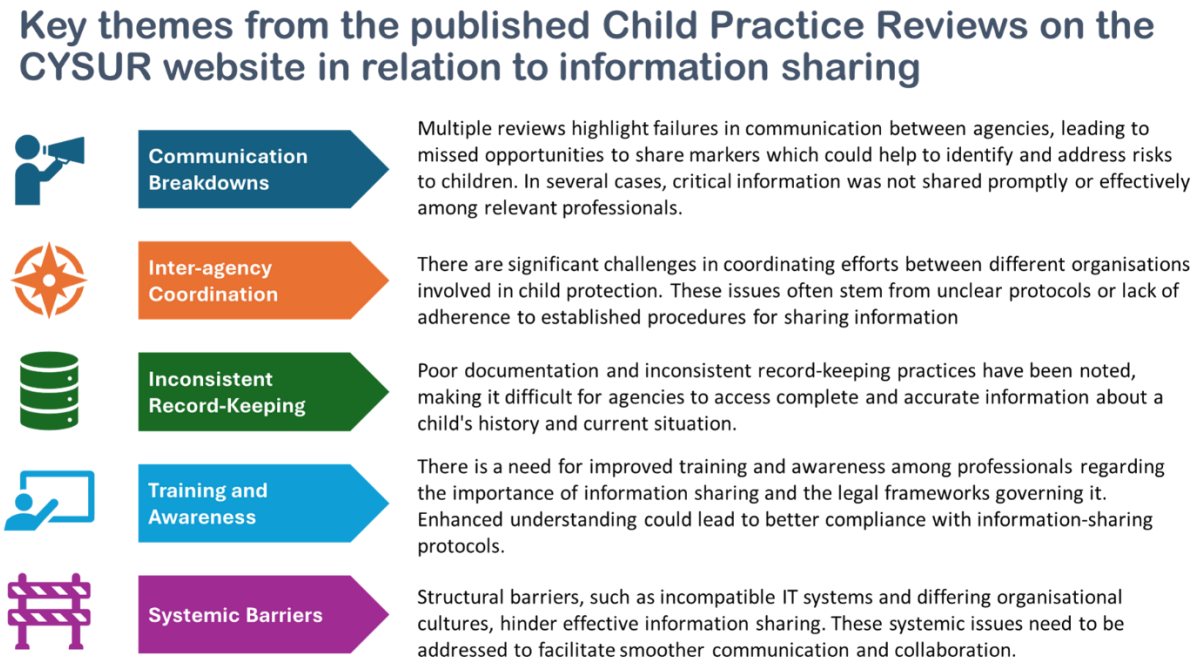


Figure 1: A summary of key themes from Child Practice Reviews from CYSUR which is the Mid and West Wales Regional Safeguarding Children Board.

The child practice reviews highlight the importance of data markers and sharing of information. From reviewing the child practice reviews published on the CYSYR website, there are a number of markers that are extremely important to consider in relation to child safeguarding. Markers are extremely important as the early indentation of potential safeguarding risks could lead to avoided adverse outcomes.

These data markers include:

1. **Health Information**: Sharing details about a child's health, including diagnoses, medications, and medical history, is crucial. This information helps in understanding the child's physical and mental well-being and ensures that any medical needs are promptly addressed.
2. **Family and Social History**: Information about a child's family background, including any history of domestic abuse, neglect, or involvement with social services, is essential. This helps in understanding the child's environment and any potential risks they may face.
3. **Behavioural and Emotional Information**: Observations about a child's behaviour, emotional state, and any incidents of substance misuse or risky behaviour are critical. This information helps in identifying any immediate risks and planning appropriate interventions.
4. **Multi-Agency Involvement**: Information about the involvement of various agencies, including health services, education, social services, and law enforcement, is vital. This ensures coordinated efforts and comprehensive support for the child.
5. **Educational Records**: Information about a child's educational needs, attendance, and any special support they receive is necessary for ensuring continuity of care and appropriate interventions.

By identifying and prioritising the sharing of these key markers, public sector partners can work together more effectively to safeguard vulnerable children and provide the necessary support and interventions.

The following section outlines some of the key themes found within the literature in 2 parts. The first section concentrates on what markers might be relevant to practitioners when it comes to safeguarding discussions.

The second section concentrates on the key factors to consider when integrating data sets.

Part 1: Markers and indicators of child safeguarding concerns

Markers are crucial in safeguarding as they enable early identification of potential risks, which can prevent adverse outcomes. Studies have shown that indicators such as physical health, behavioural changes, and social factors can be used to prioritise resources effectively, ensuring timely intervention and support for vulnerable children

The literature identifies various indicators associated with child protection concerns, including physical health, behavioural, psychological, emotional, educational, social, family, caregiver, socioeconomic, community, school environment and healthcare indicators.

Physical Health: Wilhelm et al. (2022) and Tuthill et al. (2021), reference frequent or unexplained injuries, such as bruises, burns, and fractures, poor hygiene, or consistent lack of medical care, including dental care and developmental delays not attributable to medical conditions as significant indicators.

Behavioural: Hurren et al. (2018), and Church & Fairchild, (2017) reference the following as key behavioural indicators of potential child protection concerns: sudden changes in behaviour or performance at school, withdrawal from friends or usual activities, and fearfulness around certain adults or in specific settings.

Psychological and Emotional: Peckover (2014) and Restivo & Lanier (2015) reference the following as key psychological and emotional markers: signs of depression, anxiety, or extreme anger, age-inappropriate sexual behaviour or knowledge, and frequent absences or running away from home.

Education: Kotch et al. (1995), and Lees, (2017) reference the following as significant educational indicators: Chronic absenteeism or truancy, significant drop in academic performance, and reports of hunger, stealing food, or begging.

School Environment: King et al., (2014) and Lees, (2013) reference the following as important indicators; reports from teachers or school counsellors regarding neglect or abuse, incidents of bullying or peer violence involving the child, and chronic absenteeism

Social Indicators: Lees, (2017) and Kotch et al., (1995) outline the following as important social indicators: Difficulty in forming relationships with peers, aggressive or antisocial behaviour, and destructive behaviour, such as self-harm or harming others.

Family and Caregiver Indicators: Cuganesan et al., (2017) and Machura, (2016) outline behavioural indicators such as a history of domestic violence or child abuse, substance abuse or addiction, and mental health issues that impair caregiving capacity. Parental engagement indicators include a lack of involvement in the child's education or healthcare, frequent changes in caregivers or primary residence, and unwillingness to cooperate with social services or medical professionals (Pearce & Buck, 2024; Jahans-Baynton & Grealish, 2022).

Socioeconomic Indicators: Cearns & Knox, (2024) and Gillingham & Graham, (2017) reference poverty or economic hardship, unstable housing or frequent relocations, and unemployment or underemployment of caregivers as important. There are several studies that also correlate poverty and neglect including a study by Bywaters & Skinner (2022). They reference the contributory causal relationship between the economic circumstances of families and Child abuse and neglect.

Community Indicators: Saltiel, (2016) and Pinnock, (2011) reference high crime rates in the neighbourhood, lack of access to healthcare, education, or social services, and community reports of child neglect or abuse as significant community indicators.

Healthcare and Service Use: Wilhelm et al. (2022) and Forge, (2010) reference frequent emergency department visits or hospital admissions for preventable conditions, records of missed medical appointments, and high utilisation of social services as potential underlying issues.

By having a way to align and integrate these indicators to help inform the assessment of a case, professionals can take a more comprehensive and holistic assessment of the risk of harm or escalation of a case.

The literature identifies a wide range of indicators related to child safeguarding, including physical health, behavioural, psychological, educational, family, and socioeconomic factors. While all these indicators

provide valuable insights into potential risks, not all are equally important or easily measurable in every case. For example, physical health markers, such as unexplained injuries, may provide immediate red flags, whereas socioeconomic indicators like poverty or housing instability might reveal longer-term risks that are less immediately visible. Existing decision-making systems, while helpful, often struggle with integrating these diverse data points comprehensively. Current systems are typically siloed within specific sectors (health, education, social services), meaning that while some indicators are used, they are not always aligned or shared across agencies, limiting the holistic assessment of risk. There is significant potential to improve safeguarding outcomes by integrating these indicators into more unified, cross-sectoral decision-support systems.

Part 2: Integrating data sets

The literature available outlines several different issues that need to be considered when developing an integrated approach to data sharing.

Public-Sector Collaboration and Information Sharing: Cuganesan and Steele (2017) highlight the critical role of information sharing in public-sector collaboration, noting that it "*enables the creation of public value because it allows joint planning, coordination of activity and organisations learning how to work together more effectively*" (p. 863). They emphasise the potential of shared information as a public asset, contrasting this with the consequences of information-sharing failures, such as those seen in the intelligence lapses during incidents like 9/11 (Dawes, Cresswell, & Pardo, 2009; Desouza, 2009).

The Necessity and Moral Imperative of Data: Cearns and Knox (2024) underscore the consensus on the necessity of data, even amid ambiguities about its specific forms and uses, stating, "*data was accepted as being necessary, even as its specific form and uses were not always agreed upon (or even broadly understood*)" (p. 26). They further suggest that the use of data is seen as inherently moral, suggesting that not utilising available data effectively could be viewed as a failure in the council's duty to serve its community (p. 28).

Decision Making with Data: Saltiel (2016) argues that poor decision-making is exacerbated when information is vague and time pressures are high, particularly when decision-makers are not exposed to the long-term outcomes of their decisions. Cearns and Knox (2024) discuss the internal support for integrated systems designed to monitor and flag vulnerable children, suggesting such systems protect social workers from increasing caseloads and reduce the risk of mistakes (p. 31). They emphasize that data should support, not displace, professional expertise: "*it's not a decision-making tool, it's a decision-supporting tool"* (p. 33).

Data Governance and Ethical Considerations: Effective data governance is essential in balancing privacy with the public good in child protection services. Cearns and Knox (2024) discuss the dual imperatives of safeguarding data privacy while ensuring data use serves the public good, highlighting the ethical challenges involved. Pearce and Buck (2024) also emphasise the complexities of maintaining children's autonomy under data protection laws.

Transparency and Bias in Algorithmic Decision-Making: Church and Fairchild (2017) argue for transparency in algorithmic decision-making, noting that a lack of transparency can lead to distrust and misunderstanding. They state, "*the public and state actors should demand that developers tune algorithms to minimize and/or over-compensate unwanted disparities*" (p. 74). Ballantyne (2018) raises concerns about data sources that may omit certain groups, resulting in biased algorithms that over-identify poorer populations while missing risks among more affluent groups.

Quality and Algorithms in Predictive Analytics: The debate over the use of predictive analytics in child protection is ongoing. Church and Fairchild (2017) caution against over-reliance on these tools due to potential inaccuracies and biases. Keddell (2015, 2018) critiques predictive risk modelling for reflecting neoliberal policy biases, which may reinforce existing inequalities. The broader implications of algorithmic decision-making are further explored by Shapiro (2017) and Shneiderman (2016), who highlight the dangers of biased or faulty algorithms.

Professional Collaboration and Information Sharing: The efficacy of safeguarding children heavily relies on inter-agency collaboration. Cuganesan et al. (2017) discuss management control approaches that facilitate effective information sharing within the public sector. King et al. (2014) illustrate how Multi-Agency

Safeguarding Hubs (MASH) have improved information sharing in London, leading to more coordinated responses to child protection issues. Machura (2016) and Lees (2013, 2017) emphasize the benefits of collaborative efforts and the practical challenges of sharing information across agency borders.

Data-Driven Governance and Ethical Implications: Dencik et al. (2019) explore the ethical dilemmas of data-driven governance in creating a "scoring society" that evaluates individuals based on data metrics. McQuillan (2018) calls for ethical frameworks for machine learning, stressing the need for public involvement and independent oversight. Restivo and Lanier (2015) apply labelling theory to understand the stigmatising effects of predictive analytics in child protection, advocating for a balanced approach that maximises benefits while mitigating risks.

Emerging Trends and Best Practices: Recent developments in child protection emphasise data-driven interventions and evidence-based practices. Stoneham et al. (2017) and Teixeira and Boyas (2017) highlight the importance of integrating evidence-based practices into child protection systems, enhancing the effectiveness of child protection measures through data-informed decision-making and community engagement.

Public Health and Policy Analysis: The intersection of public health and child protection policy is another critical area. Low et al. (2015) and Peckover (2014) analyse contemporary UK practices, emphasising the need for policies that align public health objectives with child protection goals, promoting a comprehensive approach to safeguarding children.

The literature on safeguarding children through data governance and predictive analytics reveals a complex landscape of ethical, practical, and collaborative challenges. While these tools offer promising opportunities for identifying at-risk children and improving welfare services, they also pose significant risks requiring careful management. Effective safeguarding necessitates robust data governance frameworks, ethical oversight, and strong inter-agency collaboration to ensure the welfare of children remains paramount in all data-driven initiatives.

An ideal technological solution for integrating data sets in child protection services should seamlessly enable real-time data sharing across agencies while ensuring robust data governance and privacy. It could also have the following features:

1. **Unified data platform**: to integrate diverse data from different partner organisations. This could allow seamless sharing and integration of information from multiple agencies, supporting real-time data updates and interoperability.
2. **Decision support tool**: enhancing professional expertise with actionable insights rather than making decisions autonomously.
3. **Advanced Analytics and AI**: Explore the use of AI to identify key markers which may signal higher risk cases.
4. **Robust Data Governance**: the system would feature stringent data governance policies to protect privacy while maximising public good.
5. **Ethical Oversight**: independent oversight to address ethical concerns, stakeholder engagement, and public consultations to align with community values and expectations.
6. **Evidence-Based Practices**: Similar to how the healthcare sector uses evidence-based guidelines for treatments, the model would continuously update its algorithms and decision-making processes based on the latest research and best practices to ensure effectiveness and relevance.
7. **Continuous Improvement**: Inspired by agile methodologies used in software development, the system would include feedback loops and iterative updates. This approach ensures that the model evolves based on user experiences and emerging trends.

By integrating these elements, the state-of-the-art model would create a highly effective, ethical, and adaptive system for child protection, addressing complex challenges while enhancing the ability to safeguard vulnerable children.

Research Methodology and Design

Methodology

The ROAMEF development cycle which is outlined in the Green Book 2022 has been used to structure this work and support the research. (HMT 2022). ROAMEF stands for rationale, objectives, appraisal, monitoring, evaluation and feedback. Figure 2 below.

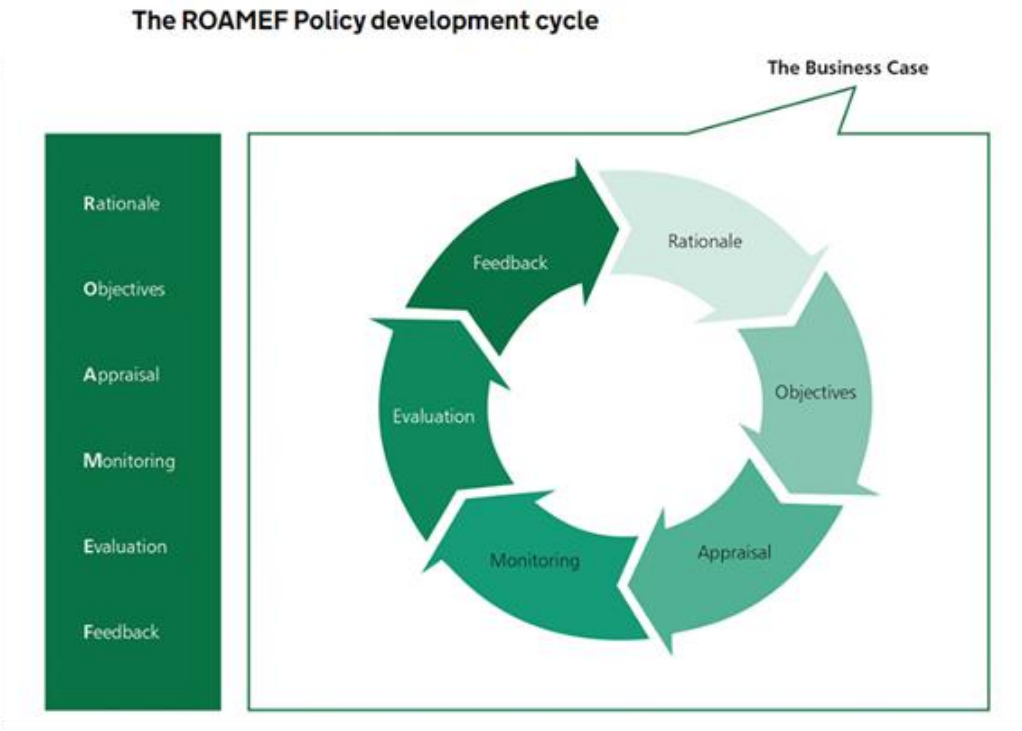


Figure 2: ROAMEF Policy Development Cycle.

To establish the rationale and objective for the work and this research study, a number of 1:1 interviews with key practitioners and stakeholders that are involved in the safeguarding of vulnerable children was undertaken. This will help inform the first stages of the development cycle which are rationale and objectives.

The intention is that this work and research study will then inform the subsequent stages of the ROAMEF policy development cycle, including appraisal, monitoring, evaluation and feedback.

Rationale

The need for improved data sharing in the public sector is critical for enhancing prevention and safeguarding measures for vulnerable children. Effective information sharing between agencies can significantly improve the identification and response to child protection concerns. Studies have shown that the lack of coordinated data sharing can lead to gaps in service provision and missed opportunities to safeguard children (Cuganesan, Hart, & Steele, 2017). Furthermore, integrated data systems allow for better tracking of children's well-being and can aid in the early identification of at-risk children, thereby enabling timely interventions (King et al., 2014). Research highlights that improving communication and data sharing among multi-agency professionals is essential for effective child protection (Jahans-Baynton & Grealish, 2022).

This research has sought views from practitioners across the public sector in West Wales to identify key data items that could be used as part of an integrated system aimed at safeguarding vulnerable children, specifically those on the Child Protection Register, or those subject to a Section 47 investigation.

Objective

The objective of the research is to identify and agree the markers that require an urgent response from the Children Social Services team, those that require a rapid review and data items that are helpful from a contextual perspective. These levels can be seen in figure 3 below. This research will take place between March 2024 and July 2024.

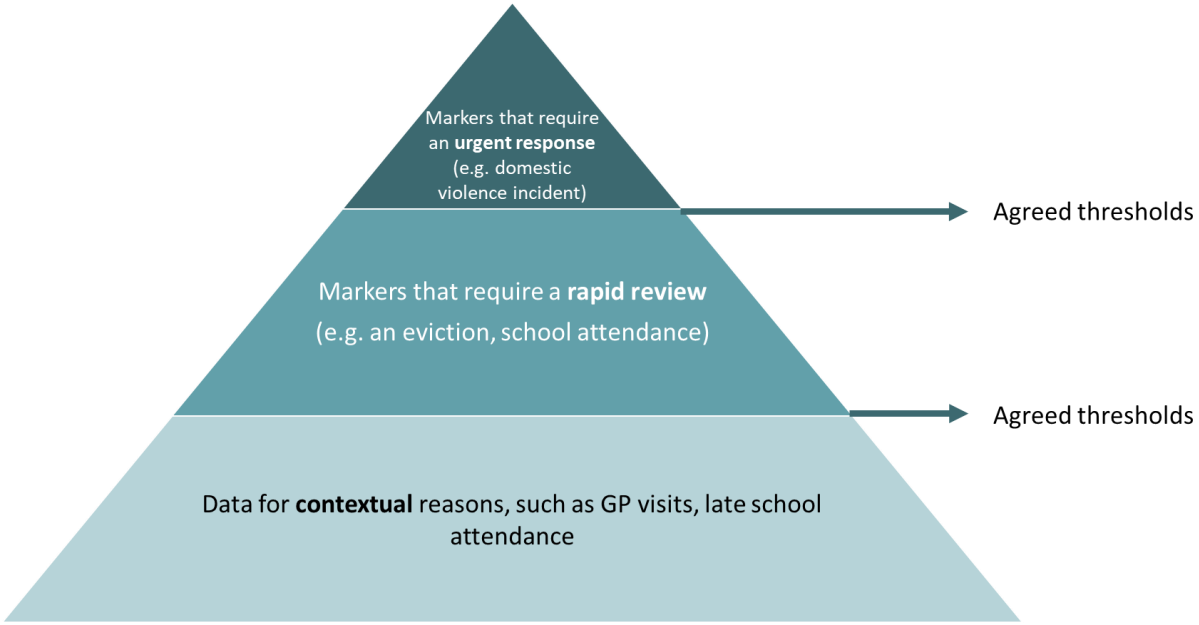


Figure 3: to show the objective of the research.

To gather potential markers, a number of 1:1 interviews were undertaken using a semi structured interview approach.

Interviews

A semi structured interview was developed to explore the decisions made in a practitioner's role, the data that supports that decision and how accessible the data is.

Interview method

- **Participant Selection:** The participants were selected across the different public sector bodies. Interviewees were selected based on their job role and their knowledge of Child Safeguarding. Not all participants were known to the researcher. They were purposely selected based on their expertise, insight and experience.
- **Interview length:** Up to a maximum of 60 minutes
- **Question Areas:** The discussions were based around the following five areas:
    1. In your current role, what decisions do you need to make in relation to harm prevention and safeguarding for vulnerable children?
    2. What data currently supports your decision making?
    3. Is the data available to you in a format that supports timely decision making?
    4. What data is not available to you, which could help support decision making?
    5. What would you want from an ideal system?
- **Form of recording:** All interviews were conducted via teams. Notes were taken during the interviews.

Analysis of the data

The notes of the meetings were reviewed, and a summary of the points raised were captured. The findings from the research study were compared to the literature for validity and to assess any outliers.

Ethical considerations

Research ethical approval for the research study was acquired through Swansea University School of management Research Ethics Board in March 2024.

Chapter Summary

The previous chapters have highlighted that the markers and considerations for data sharing are complex and multifaceted. Interviews were conducted to try and distil down the key decisions and therefore markers needed and required in a safeguarding case. The next chapter will present the findings from the interviews.

Research Findings

Introduction

The purpose of this chapter is to provide a review of the findings from the study.

Key stakeholders were interviewed and table 1 provides an overview of the key responses. These participants provided insights into the types of decisions they must make in relation to safeguarding, the data they use, and gaps in available data that could support more informed decision-making.

Table 1: What decisions do you need to make in relation to harm prevention and safeguarding for vulnerable children?

	Key Decisions	Data Currently Used	Data Gaps	Ideal System
Children Services (3 interviewees)	Decisions on out-of-county & commissioned placements Restructuring services for earlier intervention Handling referrals for safeguarding, and professional abuse allegations Conferences and CLA (Children Looked After) decisions Information gathering for decision-making	Referral data Child records Family composition and significant relationships Historical social care involvement Custody arrangements Safeguarding records Parenting capacity assessments Social isolation indicators Case recordings Referral team's data (police, health visitors, schools) Behavioural observations and outcomes of interventions	Wider indicators such as frequent house moves, rent arrears, and behavioural changes Early intervention data from third-sector organisations Full integration of health data, especially for those on the Child Protection Register (CPR) GPs' awareness of children on the CPR	Integrated system where all agencies contribute and access critical safeguarding data One database for quick retrieval of information from different agencies (police, social services, schools, health) Ensure shared understanding of safety assessments, while maintaining professional judgment and client confidentiality
Housing (1 interviewee)	Decisions on evictions based on tenant behaviour and vulnerability Assessing suitability of accommodation for vulnerable individuals and assessing local risks	Rent arrears Housing stability records Environmental health complaints Rechargeable repairs data Inspection reports and property MOT	Lack of data from other agencies to understand tenants' vulnerabilities better	Integration of housing data with broader social services information to assess risk and vulnerability more comprehensively

Health Safeguarding Leads (4 interviewees) & Mental Health Senior Team (4 interviewees)	Logging safeguarding concerns Decisions on cases without comprehensive data across health sectors	Pharmacy and dental records Child protection register status Mental health indicators Child at risk of exploitation (sexual/other) Physical health and mental capacity assessments Records of attendance at hospitals, health visitor/school nurse reports OT assessments (declined equipment, appointments)	Limited access to the Child Protection Register (important for emergency services) Lack of joined-up information across health (mental health, primary care) No routine access to data on fathers and wider family context	Comprehensive access to safeguarding data across health sectors (Welsh Patient Administration System (WPAS), Welsh Nursing Care Records (WNCR), Welsh Community Care Information System (WCCIS) Automatic notifications about critical health-related safeguarding issues System to flag and de-flag individuals under Clare's Law (domestic violence cases) Clear data-sharing protocols with social services to provide a full picture of the child's wellbeing
Education Representatives (2 interviewees)	Managing referrals for earlier interventions Assessing risk factors based on educational markers	School attendance and performance data Social, Emotional, and Behavioural Difficulties (SEBD) daily checks Lateness, exclusions, school movement data Additional Learning Needs (ALN) information - Gathering disclosures and sharing through Multi-Agency Referral Form (MARF)	Lack of access to broader safeguarding information held by Children's Services, limiting holistic risk assessment Lack of shared information with education departments	A system that integrates educational, health, and social services data to support multi-agency risk assessment and personalised interventions for learners
Police (1 interviewee)	Referrals when encountering vulnerable children Exercising section 46, Children Act powers Detaining young people who are in crisis or those who have committed crime Decisions under the bail act to restrict parental / guardian contact Decisions at Multi Agency Public Protection Arrangements (MAPPA)	Child protection register (CPR) register checks Police National Computer Police National Database Multi Agency Public Protection Arrangements records Multi Agency Risk Assessment Conference (MAPPA) records His Majesty Prisons (HMP) data Probation updates Intelligence reports Referrals Experian and finance data Call data from devices	Partner data Routine flagging only usually occurs reactively rather than proactively Child Protection register information is not hosted by police	Integrated system that flags contact with agencies across a shared platform Intelligent shared system with automated risk grading matrix to escalate cases for proactive interventions

The key themes from the interviews reveal a consensus on the need for integrated data systems to improve safeguarding outcomes. Most sectors are currently operating with fragmented data systems, leading to delays in decision-making and missed opportunities for early intervention. Children's services depend heavily on historical and referral data to determine next steps but often lack timely access to updated health and education data. Housing, health, and education also face similar challenges with data fragmentation, creating inefficiencies in the safeguarding process.

Health professionals face specific challenges regarding access to the Child Protection Register and collaboration across health sectors. This siloing of information can lead to incomplete assessments of children and families in need. Education representatives also emphasise the lack of access to critical data on children at risk, hindering their ability to provide comprehensive support in school settings.

At the core of the research findings is a shared need across sectors for more efficient and integrated data-sharing mechanisms. The key themes that emerged are:

1. **Data Fragmentation**: Siloed information across sectors impedes timely decision-making and risks leaving vulnerable children unprotected.
2. **Interagency Collaboration**: Stronger cross-sector collaboration is essential for effective safeguarding, as many agencies hold critical pieces of information.
3. **Technological Integration**: Existing systems like My Concern, Care First, and Teacher Centre are useful but need to be more widely integrated across sectors to facilitate a more holistic approach.
4. **Timeliness of Data Access**: The 24-hour window for decision-making, especially in children's services, requires immediate access to relevant data from health, education, and housing sectors. While trust and good relationships currently support this timeframe, digital tools to help support the timeliness of data sharing could help practitioners.

The findings align with the literature, particularly regarding the importance of integrated data sharing for safeguarding.

Importance of Information Sharing in Safeguarding

The literature review emphasises the statutory obligation to share data among public-sector agencies in safeguarding children, as outlined in the Wales Safeguarding Procedures and the Social Services and Well-being (Wales) Act 2014. The need for collaboration is critical to ensure timely and effective safeguarding decisions. This is reflected in the research findings, where multiple sectors, such as Children's Services, Health, and Education, acknowledged the critical role of shared data in informing decisions related to harm prevention and early intervention.

However, the research also revealed the difficulties these agencies face in accessing timely and comprehensive data. This resonates with Cuganesan and Steele's (2017) findings, which highlighted how failures in information sharing can lead to poor safeguarding outcomes, as seen in historical cases like the intelligence lapses that led to tragic outcomes (Dawes et al., 2009). Both the literature and the research findings advocate for integrated data-sharing systems to prevent such lapses.

Fragmentation of Data Systems

The research findings indicate that each sector operates within its own siloed data system, making collaboration and comprehensive risk assessments difficult. Children's Services, for example, depend on historical referral data but lack access to real-time updates from health or education sectors. Similarly, education professionals highlighted their inability to access information from Children's Services, limiting their capacity to provide holistic support to students.

This challenge corresponds with the literature's discussion on integrating data sets, particularly the ethical and logistical difficulties of combining data across sectors. Saltiel (2016) and Cearns and Knox (2024) argue that poor decision-making arises when information is fragmented, vague, or inaccessible. The findings from this research strongly support this, as professionals in all sectors expressed a need for more seamless data integration to ensure timely interventions.

Ethical Considerations in Data Sharing

The literature discusses the ethical dilemmas surrounding data-sharing in child protection, particularly balancing the need for information against privacy concerns (Cearns & Knox, 2024; Pearce & Buck, 2024). This theme emerged in the research, where professionals from health and social services expressed concerns about the appropriate use of data. For instance, while many advocated for more open data-sharing to improve safeguarding outcomes, there was also recognition of the potential risks of oversharing, such as breaching confidentiality or misinterpreting sensitive information. Cearns and Knox (2024) highlight

the moral imperative of utilising available data to prevent harm, a theme echoed by interviewees frustrated with the lack of integrated systems.

This aligns with the caution raised in the literature, where Church and Fairchild (2017) argue for transparency in data-sharing protocols, particularly to avoid distrust or bias in safeguarding decisions. The literature and research both recommend careful governance and ethical oversight of data-sharing practices to strike the right balance between privacy and the need for safeguarding information.

The Role of Predictive Analytics and Data Governance

Both the literature and research emphasise the importance of data governance to ensure that safeguarding tools, such as predictive analytics, are used effectively and responsibly. In the literature, Church and Fairchild (2017) and Keddell (2018) caution against over-reliance on algorithms that may reinforce biases, while Cearns and Knox (2024) highlight the necessity of data governance frameworks that respect privacy while ensuring public safety.

The research findings echoed these concerns, particularly in health and social care sectors, where professionals highlighted the challenges of managing data responsibly without compromising privacy. There was widespread agreement that data systems should support, rather than replace, professional judgment, a sentiment shared in the literature. Cearns and Knox (2024) describe data as a "decision-supporting tool" rather than a "decision-making tool," a distinction that was mirrored in the participants' desire to maintain professional autonomy while benefiting from better data.

Interagency Collaboration and Shared Accountability

The literature review also highlights the need for interagency collaboration as essential to safeguarding efforts, with Cuganesan et al. (2017) and King et al. (2014) emphasizing how effective collaboration can lead to better outcomes in child protection. This aligns with the research, where all sectors identified interagency collaboration as critical but noted that the current lack of integrated systems hampers this effort.

Education representatives mentioned the need for more robust partnerships with Children's Services, while housing officers noted the absence of access to social service data that could enhance their ability to safeguard vulnerable tenants. The literature's call for shared accountability and better interagency systems is therefore strongly reinforced by the research findings.

The research findings correspond closely with the literature review, reinforcing the importance of integrated data-sharing, ethical data governance, and interagency collaboration in safeguarding children. Both the literature and the research emphasise the risks posed by fragmented systems and the need for clear, transparent, and ethically sound data-sharing protocols to improve safeguarding outcomes. Additionally, the integration of data from various sources such as the Child Protection Register (CPR), Police National Computer, Police National Database, Multi Agency Public Protection Arrangements records, and intelligence reports is crucial for proactive interventions and decision-making.

Next Steps

Introduction

The research clearly demonstrates the need for better interagency collaboration and data-sharing mechanisms to improve safeguarding outcomes. The current fragmentation of data across sectors leads to inefficiencies and poses a risk to vulnerable children. By creating a more integrated data platform and strengthening interagency cooperation, safeguarding efforts can be significantly enhanced.

Based on the research, the next steps for improving safeguarding practices include:

Developing an Integrated Data Platform: A shared platform that consolidates information from health, education, housing, and children's services would significantly support decision-making. This platform would need to be accessible to all relevant stakeholders and include clear guidelines on data governance to protect privacy while ensuring necessary access to safeguarding information.

Expand Access to Child Protection Data: Relevant health and education practitioners should have streamlined access to key safeguarding information, such as the Child Protection Register, to support early intervention and timely decision-making.

Training and Cross-Sector Collaboration: Cross-agency training on data-sharing protocols and safeguarding decision-making will enhance collaboration and ensure that professionals are equipped to use integrated systems effectively. Regular interagency meetings and knowledge exchange will also build trust and improve communication. The Mid and West Wales region can also utilise the findings from this study to help tailor its training to support the technological solution.

Monitor and Evaluate Data-Sharing Practices: Regular monitoring and evaluation of data-sharing practices are essential to ensure that the system is functioning as intended and to make adjustments where necessary.

Next phases of work

This research has helped to inform the rationale for the future work and helped shape the objectives. Following the ROAMEF policy development cycle, the following stages will be appraisal, monitoring, evaluation and feedback.

The Mid and West Wales region has already made a commitment to explore technological solutions to improve visibility of whole system activity and increase the ability to act and intervene. This needs to be progressed and the findings from this research study incorporated into its design.

The phases should include:

1. Approval on objectives: Confirmation on the scope and purpose of a system, collaboration with stakeholders on the key data markers that need to be incorporated into a system
2. Appraisal: Work with practitioners to identify the markers that matter to them. Data scientists would need to map out this data and identify how we make this data available to support practitioners and by when.
3. Build: develop a prototype data integration solution in collaboration with IT teams from each partner organisation utilising historical data. Explore how the use of AI could support our understanding of correlating factors that increase the likelihood of harm
4. Implement: identify children services team who will review the findings from the integrated system solution, and work with them to identify how the integrated flagging solution can be embedded in practice. This will then help inform the training and guidance that needs to be developed to support roll out.
5. Operate and evaluate: the effectiveness of the solution in enhancing early identification and intervention for at-risk children, improving outcomes for vulnerable children will need to be reviewed and evaluated. This will help inform how the successful elements of the proposal will be integrated into local practices through policy and practice updates and staff training programs
6. Feedback: Consider how the outcome of this work is feedback to service users.

The scalable data integration model developed through this project could serve as a blueprint for other regions, enhancing outcomes nationally.

The primary outcomes which could support practitioners to act and intervene if implemented successfully, could include:

1. **Ability to respond in a whole systems way at point of risk identification:** the visualisation of flags / markers across public sector partners will allow a joined-up approach, ensuring responses are not siloed.
2. **Improved Data Integration:** Establishment of a robust data integration layer across public sector partners, supporting joint working and improving communication
3. **Enhanced Early Intervention:** Earlier identification of factors that might put vulnerable children at risk through integrated data analytics.
4. **Cross-Sector Collaboration:** Strengthened partnerships among public sector agencies to support coordinated child safeguarding and harm prevention efforts and increase capacity for collaborative working.
5. **Evidence-Based Policies:** Data-driven insights to inform policy development, improve service delivery and inform future service design.

6. **Child Outcomes:** Reduction in incidences of harm and improved well-being outcomes for vulnerable children.
7. **Earlier intervention, preventing more costlier intervention at a later stage:** Prevention could help to change the trajectory of a child or family's case, avoiding the need for complex intervention from across public sector partners
8. **Innovation:** Exploring how emerging technology and advanced data analytics, can support this agenda, with refinement from practitioners. It makes any resultant tool, very scalable.

There are over 80 practitioners across the public sector in Wales who would have an interest in continuing this work as part of a full public sector wide approach. This group can help further refine this work moving forward. These include practitioners from across the following partner organisations.

Leadership positions: Executive directors in health, the police and local authorities.

Health: Practitioners include: GPs, School Nurses, Mental Health, OTs, Head of safeguarding, safeguarding nursing leads, paediatricians, health visiting, midwifery, Occupational Therapist for Children and Young People,

Police: Detective Chief Inspectors and police mental health leads

Local authority, Social Services: Head of Children Services, Head of Adult Services, Senior managers for complex needs, safeguarding, children services team managers, (including Social Care – adults and children, education – teachers and ALN staff and Housing).

Local Authority, Education: Lead Officer for Behaviour Support & PRUs, School Effectiveness, Youth Support Services Manager, Secondary School Heads and Primary School Head Teacher

Local Authority, Housing: Housing Services Manager, Housing Hwb Manager, Housing Management Lead: Tenancy, Head of Housing and Public Protection

Data: Data representatives from each organisation.

Welsh Government: Artificial Intelligence lead

Conclusion and recommendations

Key findings from the study

The research highlights critical gaps in safeguarding practices across sectors due to fragmented data systems and limited interagency collaboration. All sectors recognise the need for better access to shared data to improve decision-making in safeguarding vulnerable children. Developing an integrated data-sharing system that connects health, social services, education, and housing is essential to improving safeguarding outcomes. Moreover, cross-sector training on data governance and ethical considerations is required to ensure that data is used effectively and responsibly.

Reflections

The number of people interviewed as part of this study was quite low, therefore, additional interviews, including interviewing more officers from the Police, and seeking views from government could help to strengthen this study and its recommendations.

Future research

There are lots of options for additional research this includes:

Longitudinal Impact of Integrated Data Systems: Studies could explore how the introduction of integrated systems affects safeguarding outcomes over time, particularly focusing on early intervention rates and reductions in case escalation.

Cross-National Comparisons: Exploring best practices in data integration from other regions or countries could provide valuable insights and benchmarks for system development.

Conclusion

This study underscores the critical need for improved data-sharing and interagency collaboration in safeguarding vulnerable children, aligning closely with the key insights from the literature. The findings from the research reveal that fragmented data systems and a lack of timely access to comprehensive information hinder decision-making across sectors like Children's Services, Housing, Health, Police and Education. The literature supports these observations, highlighting the consequences of poor information-sharing, as well as the ethical and logistical challenges that come with integrating data sets. Both the research and literature emphasise the importance of data governance and the ethical management of sensitive information, while stressing that data systems should support, not replace, professional judgment. The data protection act should not be a barrier. The Human Rights Act Article 2, right to life places a positive obligation on public sector bodies to act to save life. This should take precedence over data sharing concerns which can be suitably mitigated and managed through appropriate controls.

Ultimately, the study highlights that the current safeguarding processes are insufficiently aligned across sectors, reinforcing the literature's call for integrated systems that enable real-time data sharing. To enhance safeguarding outcomes, future efforts should focus on building these systems, fostering interagency trust, and ensuring that ethical data-sharing frameworks are in place to protect both privacy and public safety.

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Insourcing the Manufacture of Pre-Filled Elastomeric Devices to NHS Pharmacy Technical Services in Support of Outpatient Parenteral Antimicrobial Therapy (OPAT).

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Abstract:

The insourcing of manufacturing capability to create a responsive and preferable alternative to buying from suppliers. The academic debates concerning the 'make' versus 'buy' dilemma is dominated by economics and transaction costs and has favoured outsourcing to large scale organisations or foreign locations where labour costs are cheaper. However, more recently the debate has focused on how best to manage NHS supplies and supply chains in an era which now prioritises responsiveness, lowest environmental impact, and a reduced risk to supply chain disruption. This has created a movement to localise production even if it means operating at a lower scale of automation and technology. This research explores a case study of such an internalisation of manufacturing and product supply for secondary care operations. The study finds significant support for this new model of local production which yields significant benefits for NHS organisations in total cost terms.

Keywords: Insourcing, NHS, Technical Services, OPAT, Automation, Elastomeric Devices

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INTRODUCTION

Background and Context

Policy and Guidance

In 2018 the Welsh Government first published "A Healthier Wales: our Plan for Health and Social Care" (Welsh Government, 2022), which described a 10-year plan for the transformation of health and social care across Wales. Their vision is "that everyone in Wales should have longer healthier and happier lives, able to remain active and independent, in their own homes, for as long as possible … when people need support, care or treatment, they will be able to access a range of services which are made seamless and delivered as close to home as possible". As part of this holistic approach to healthcare, the Government recognised that hospital–based services are resource intensive, and that most people would prefer to be treated closer to home. They, therefore, proposed new models of partnership between different providers, and individuals, which would enable people to minimise their hospital stay.

In response to this strategy, the Royal Pharmaceutical Society of Wales published "Pharmacy: Delivering a Healthier Wales" (Royal Pharmaceutical Society, 2019) in 2019, which defined a roadmap to 2030 along four broad themes:

- Enhancing the patient experience
- Developing the pharmacy workforce
- Seamless pharmaceutical care
- Harnessing innovation and technology

In addition to this ambitious paradigm shift in the way healthcare is delivered within Wales, these documents also published short term policies for the reform of existing services. One such policy is the "Six Goals for Urgent and Emergency Care: A policy handbook 2021 – 2026" (Welsh Government, 2022). Within this document, six goals are outlined for the "delivery of the right care, in the right place, first time for physical and mental health," three of these goals are:

1. Clinically safe alternatives to admission to hospital
2. Optimal hospital care and discharge practice from the point of admission
3. Home first approach and reduce the risk of readmission

Similar documents and policies have been issued for adoption in NHS organisations in England, this was spearheaded by the "Transforming NHS Pharmacy Aseptic Services in England" written by Lord Carter of Coles (Lord Carter of Coles, 2020).

One method of treatment that can help achieve the ambitious targets of these policies, provide significant benefits to patients, and is a popular component of the 'Hospital at Home' model of healthcare is **Outpatient Parenteral Antimicrobial Therapy** (OPAT).

Outpatient Parenteral Antimicrobial Therapy

Outpatient Parenteral Antimicrobial Therapy is a method of treatment that delivers antibiotics, and other medicines, intravenously to patients who are suffering from an infection but are well enough to be discharged from hospital. This enables patients to receive their treatment within their own home, either through daily visits from nurses (or other suitable healthcare providers e.g. carers), or through self-delivery after receiving training in how to do so. An alternative model for OPAT delivery is for the patients to return to hospital day units where they can receive their medication from trained nurses (Chapman, 2013).

The use of elastomeric devices, where appropriate, can provide further advantages for an OPAT service as they are able to hold multiple doses of a treatment plan and provide a continuous delivery of drug to the patient with minimal technological or human intervention. The photograph (Figure 1) below provides examples of a range of elastomeric devices currently available for use in OPAT.



Figure 1. Example elastomeric devices.

Pharmacy Technical Services

Pharmacy Technical Services is the section of hospital pharmacy that is responsible for the aseptic dispensing and preparation of medicines as well as quality assurance and control. In these departments, pharmaceutical products can be manufactured within a controlled environment, using isolators or laminar flow cabinets. This reduces the inherent risks in the preparation of intravenously delivered medicines when compared to the preparation of such medicines by nurses on a ward.

Whilst many of these facilities operate under the rules and guidance for "Section 10 Pharmaceuticals" which is defined as a medicinal product prepared for a named patient under supervision of a pharmacist (Medicines Act, 1968), there are many aseptic manufacturing units throughout the NHS that hold a 'Specials' Manufacturing Authorisation (MS) Licence.

These Specials licences enable the manufacture of medicinal products 'that cannot be met through the administration of medicines with a UK marketing Authorisation' (Medicines & Healthcare products Regulatory Agency, 2023). This may be to either meet an individual or a group need. Under these Licences and associated Wholesale Distribution Authorisation (WDA), facilities are able to manufacture large batches of medicinal products that can then be distributed to other organisations for example other hospitals.

Betsi Cadwaladr University Health Board (BCUHB) hold both an MS licence and a WDA.

Research Question, Aims and Objectives

RQ1: **Is there a role for technical services in the insourcing of production of pre-filled elastomeric devices for the optimised delivery model of Outpatient Parenteral Antimicrobial Therapy?**

Hypothesis 1: The introduction of automation to NHS Aseptic Units will enable the successful insourcing of elastomeric device production, leading to increased robustness in the supply chain, cost reduction and efficiency savings. This will support the delivery of an optimised OPAT service and ultimately lead to better patient outcomes and equality of treatment across regions.

Aims

The aim of this research project is to demonstrate the insourcing of pre-filled elastomeric manufacture to technical services leads to a more optimal pathway for the delivery of an OPAT service.

Objectives

The objectives of this research project are:

O1: Identify the current barriers and requirements for delivery of an OPAT service.

O2: Determine the current role of Pharmacy Technical Services in the delivery of an OPAT service.

O3: Determine the role of automation in filling of elastomeric devices.

O4: Demonstrate proof of concept for the insourcing of elastomeric manufacture by technical services.

Literature Review

Insourcing vs Outsourcing

In the literature, the terminology regarding insourcing is not clearly established, with authors often using different definitions encompassing a wide range of processes and activities. It should be noted that the form of in-sourcing discussed in this project work differs with the in-sourcing approach defined by the NHS Shared Business Services in Framework Agreement 10203 (NHS Shared Business Service, 2023). In this agreement, a third party is given permission to utilise Trust resources e.g. equipment and premises during periods in which they would normally be dormant. For this project, the definitions of insourcing proposed by F. Damanpour and S. Chakrabarty most closely align with the intended scope and hypotheses proposed in this work; these definitions are given below:

> *"Insourcing is a managerial decision to abandon outsourcing and bring the production of the products back in-house" (Damanpour. F. et al, 2020)*

> *"Insourcing means that the service provider is a client entity, this equates it with the concept of in-house production … it is not necessary to transfer activity from outside of the company to inside it and the process could be carried out inside from the beginning" (Chakrabarty. S. 2006),*

In its simplest terms, we can refer to insourcing as bringing process and expertise into an organisation rather than outsourcing to an external organisation or entity. Some of the lack of clarity in this definition may lie in the fact that outsourcing has been thoroughly researched and studied, whereas literature on insourcing is much less common. This is reinforced by searching for the respective terminology on Scopus, a search for 'insourcing' provides 544 matches compared to 33, 585 for 'outsourcing', a ratio of over 60:1 for outsourcing over insourcing (searches carried out September 2024).

Despite the relative low amount of research into this process, the advantages and disadvantages have been documented, and these are seen across a range of case studies investigated both in industry (Coons. G. 2019) and public sector (Jackson. M. 2009). The advantages of insourcing processes are generally recognised as (Knowledge Centre, 2024):

1. **Control**: Insourcing enables an organisation to control the product and/or process to ensure that it meets its own requirements and standards. Additionally, it free's the organisation from external factors that may influence the delivery of the product, such as a disrupted supply chain. Since the COVID-19 pandemic in 2020, this has become a much more important factor when determining whether to in-source.
2. **Cost**: By manufacturing the product in-house an organisation eliminates the on costs associated with the use of a Contract Manufacturing Organisation (CMO) or external provider, this often enables the service or product to be provided at a reduced cost. This is particularly important if there is a consistent and continuous demand, whereby the manufacturing process will be insulated from changing prices, unexpected longer lead times and other hidden costs.
3. **Development**: Insourcing also provides an opportunity for staff development by bringing a new process in-house. New skills, roles and potential career advancement have been demonstrated to raise morale in the workforce, leading to increased staff retention and productivity.

In contrast to these upsides there are also recognised disadvantages and reasons by which an organisation may choose not to in-source, these include:

4. **High initial investment**: The introduction of a new process may require significant upfront investment, this may include new equipment, staff, or premises. Due to the potential cost of entry, consideration of the expected return on investment and the feasibility of the project should be undertaken. During this evaluation it may be determined that these costs are greater than those of outsourcing.
5. **Management challenge**: When insourcing, a challenge may arise for the current operational structure of an organisation. This may be due to a change in the relationship between existing teams or functions, or even a change in the regulatory requirements needed.
6. **Limited expertise**: Processes are usually outsourced to specialist organisations with specialist expertise and expertise in the required service. When in-sourcing, the internal teams may not

have the same level of knowledge and experience. This may lead to difficulties when trying to replicate these services in-house.

Pharmacy Technical Services

In 2020, the Department of Health and Social Care published a report titled, Transforming NHS Pharmacy Aseptic Services in England (Lord Carter of Coles, 2020). In this document, 18 recommendations were made that, if implemented, would drive improvements in patient experience and safety, increase the productivity of healthcare providers and the assigned budget, and increase the resilience of the sector. It was recognised that "to achieve this will require an industrial step change in production, using advances in technology including automation." Of the 18 recommendations given the following three are of particular note to this project:

1. NHS England and NHS Improvement should incentivise contracts for outpatient antimicrobial therapy (OPAT).
2. The NHS should undertake a rapid evaluation of new aseptic technologies. Processes for introducing these new technologies should be further developed and communicated to relevant regulators, colleges, and professional bodies.
3. Automation should be embedded in hub sites for high volume products with suitable stability data.

Within this document the top fourteen antibiotics (by volume issued) was published. In this list Flucloxacillin occupied both the 5th and 14th position for 1g and 0.5g vials, respectively.

On the back of this report NHS England is set to open five "Pathfinder Hubs" across England to regionalise production and to help achieve these goals. Whilst this report has a primary focus on Aseptic Services within England, this programme was pre-dated by the Transforming Access to Medicines (TrAMs) initiative within Wales, whereby three regionalised hubs will be opened to regionalise aseptic manufacture in Wales.

Additionally in 2023 the Welsh Government published its response to the "Independent Review of Clinical Pharmacy Services at NHS Hospitals in Wales" which took place in the same year. Highlighted by these reports was the requirement to "reduce time spent by pharmacy professionals on non-clinical activities," "improve pharmacy support to meet NHS stated priorities" and evaluate "pharmacy's role in optimising patient flow" (Royal Pharmaceutical Society, 2023)(Welsh Government, 2023).

A New Conceptual Model

The figure below outlines the new conceptual model constructed in this research.

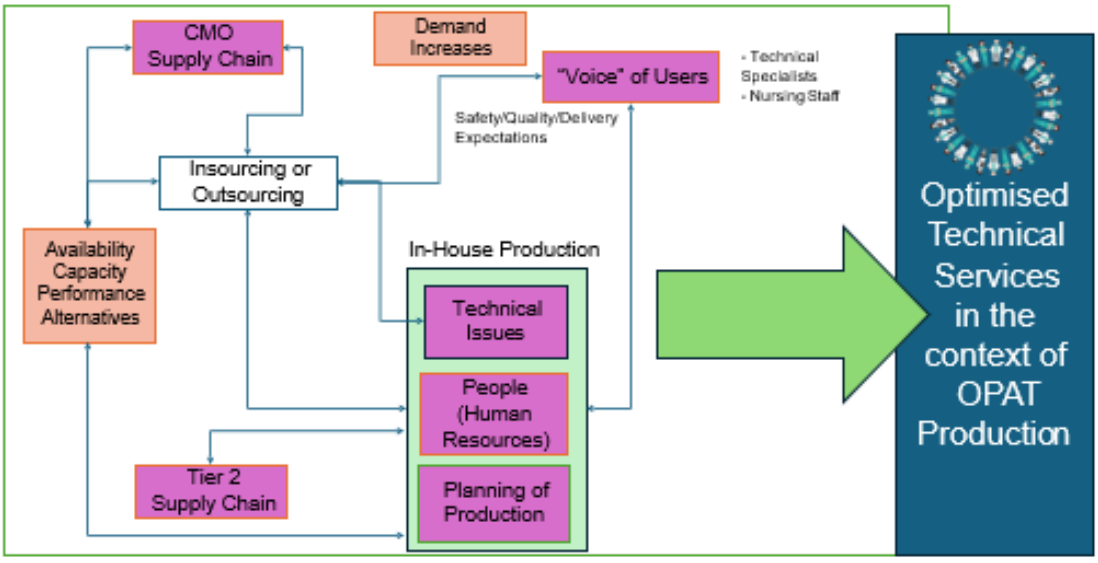


Figure 2. Conceptual Framework.

The framework shows that the key decision on whether to insource or not is dependent on a number of factors. These include the performance and capacity of the CMO supply chain, the voice of the users e.g.

healthcare providers and whether the organisation is able to resolve technical, HR and planning issues associated with a new service.

Summary and Conclusions

This chapter has presented the main conclusions of the published work in this subject area and has provided a conceptual model which summarises the key elements required for the optimisation of Technical Services into a new or existing OPAT service that fits the modern healthcare environment, improves patient satisfaction, and offers value for money.

Research Design

This section details the methods used in conducting the research required for this project.

Epistemology and Approach

This research takes a multi-facetted approach in order to gain an understanding from a range of stakeholders in the delivery of OPAT services within the NHS and to determine the role that technical services and automation may have in optimizing its delivery.

Methods

To collect the data used in this research the following methods were used:

1. **Case study:** the case study was carried out at the author's place of work, Betsi Cadwaladr University Health Board (BCUHB). This study was carried out for 12 months during 2023 and 2024.
2. **Secondary data:** Secondary data from the case study organisation dating from 2017 onwards, this data has been used to develop an understanding of the current status and scope of the use of elastomeric devices within the OPAT service.
3. **Interviews:** Unstructured interviews were conducted with key personnel in the case study organisation. The purpose of these interviews was to identify the current challenges to the respective departments in regard to OPAT services and future enablers
4. **Questionnaires:** Two mixed questionnaires were used in this study; these were distributed via professional working groups to the two distinct cohorts outlined below. In addition to the points below, the questionnaires were also used to determine whether the experiences of the OPAT service in the case study organisation are representative of similar teams across the UK.
    a. Healthcare professionals: This cohort included nurses, pharmacists and healthcare providers who are presently involved in the coordination and delivery of OPAT services to patients. The objective of this questionnaire was to gather data on the current models of delivery of OPAT services to identify the challenges to the successful delivery of these services.
    b. Technical services personnel: This cohort included all members of hospital technical services departments. The objective of this questionnaire was to determine whether these departments are being used in the delivery of OPAT across the NHS, and what barriers are preventing their utilisation.
5. **Proof of concept laboratory studies:** Studies of the current manual production method for filling elastomeric devices were evaluated to determine key parameters and identify limitations. A new production method was developed and validated using automation to enable the filling of elastomeric devices with an 'in-demand' drug molecule. Laboratory stability studies were carried out according to guidance laid out by the International Conference for Harmonisation (ICH) (International Council for Harmonisation, 2003) and the NHS Yellow Cover Documents (Santillo. M. et al, 2019).

Limitations

NHS organisations in Scotland and Northern Ireland did not respond to the survey. It is therefore not possible to include these regions in the analysis. However, literature review indicates that these organisations will be using similar delivery models with similar levels of technology and staff to NHS England and Wales.

Additionally, the case study was carried out at a single hospital location. The results, therefore, may not be representative of other hospitals in NHS England and Wales.

Ethics

Ethical permission for this study was granted by Swansea University in June 2024.

Findings

Case study BCUHB

OPAT utilising elastomeric devices has been used on a small scale within BCUHB since 2020. It focused on the Eastern IHC of the Health Board with a select number of medical indications being treated (bone and joint infections, endocarditis, soft tissue infections) and drug molecules (e.g. flucloxacillin).

The pre-filled elastomeric devices used in this service are purchased from a sole Contract Manufacturing Organization (CMO), Baxter Healthcare Ltd. Each device is purchased at a cost of ~£103.00 plus an additional £41.50 for 24-hour delivery and a further add-on cost of £10.00 for further deliveries of additional devices in the treatment course. This gives an average cost of a 7-day course of flucloxacillin at £822.50

The statistics for this service to date are provided in the table below. The calculated cost saving is based on a comparison to the equivalent treatment being provided as an in-patient:

Table 1. Statistics for YMW elastomeric OPAT service 2020 to date.

Financial Year	Elastomeric Devices Purchased	Cost Saving (compared to inpatient treatment)	Bed Days Saved
2020/ 2021	46	£19, 202	46
2021/ 2022	88	£39, 492	88
2022/ 2023	331	£149, 050	331
Total	465	207, 744	465

The OPAT service offered by BCU East has encountered numerous barriers to expansion and wider adoption across the rest of BCUHB. These barriers are given below with descriptions of the impact this is having on the service:

1. Inconsistent supply of filled elastomeric devices from the CMO. As elastomeric driven OPAT gains popularity in the UK demand for pre-filled elastomeric devices increases also. In the past 12 months, there were numerous occasions whereby the lead time for the required elastomeric devices was longer than the proposed treatment duration. As a result, the patient received their treatment in the hospital environment as an in-patient, the opportunities for early discharge were missed.
2. In order to receive pre-filled elastomeric devices the following day, orders must be received by the CMO before midday Monday to Thursday. This deadline has resulted in delayed starts to treatment via OPAT or in some cases led to treatment as an in-patient. This deadline generates the greatest barrier for those patients identified on
3. Thursday afternoon or Friday as deliveries are not received by the hospital over the weekend. Nursing staff capacity and availability within BCU East has proven a significant barrier to the delivery of OPAT in this region. The specific challenge in this regard is the availability of nurses or healthcare professionals trained to safely install a Peripherally Inserted Central Catheter (PICC line). A PICC line is the ‘gold standard’ for the delivery of antimicrobials via elastomeric.

From information provided in the interviews with the Antimicrobial Pharmacists in BCUHB East IHC the following process pathway has been identified for the delivery model used to currently deliver the OPAT service to patients.

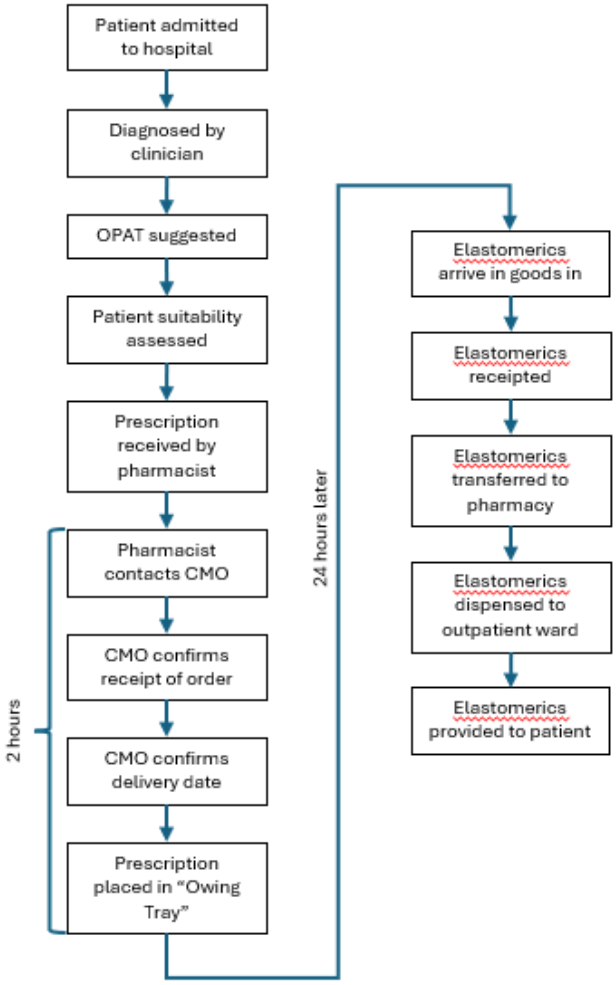


Figure 3. Process pathway for the delivery of OPAT in BCUHB East IHC.

Questionnaire Healthcare Professionals

The questionnaire was disseminated to healthcare professionals and responses were collected during August 2024. In total 38 responses were received; the demographics of the respondents are shown in the charts below.

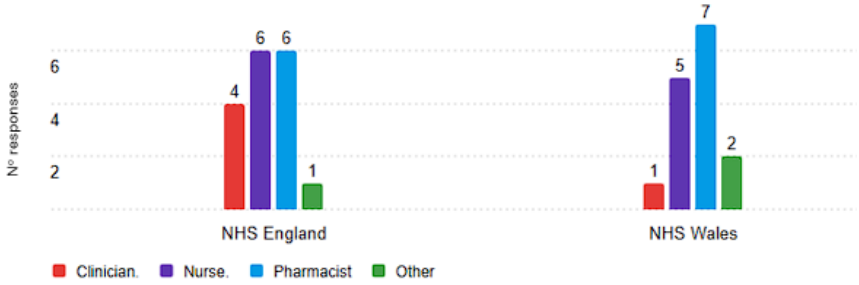


Figure 4. Role and organization of participants.

Of those that responded to the questionnaire, 87.5% are currently working in a department/ healthcare organisation that offers an OPAT service. For these OPAT services sampled in this research the responsibility for the preparation of the dosage forms used in these services is shown in the following chart:

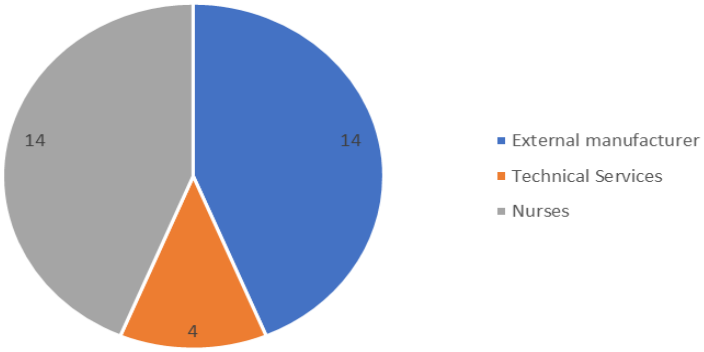


Figure 5. Preparation of OPAT drug dosage forms.

The current OPAT services provide the following drugs and types of dosage forms:

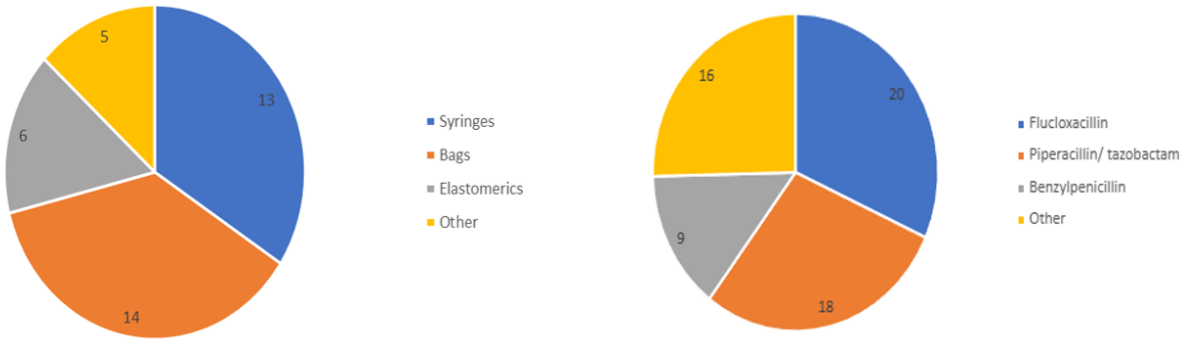


Figure 6. Drug molecules and dosage forms offered by OPAT services.

The drug molecules displayed in the pie chart above were determined to be the most popular through the case study and the literature review. This is why they were given named status in the questionnaire. The responses for "other" indicate that the drug molecules offered across the range of sampled OPAT services samples varies greatly outside of these three primary molecules. The most frequent molecules named in 'other' were:

4. Teicoplanin
5. Ceftriaxone
6. Daptomycon

In terms of the 'other' answers for the type of drug dosage form they were primarily either descriptions of the type of infusion delivered via mini-bags or described the potential use of elastomeric devices in a future planned OPAT service. There were however two dosage forms stated that had not been anticipated by the researcher and serve to highlight the broad range of treatments encompassed by the term "OPAT." These drug dosages were:

7. Provision of powder vials and diluent for reconstitution by a healthcare worker and/ or patient.
8. Oral antibiotics requiring complex monitoring, specifically Linezolid.

Of the active OPAT services, only 58.3% were able to meet the current demand, yet 75.0% are looking to expand their OPAT offering in the near future. The reasons given for the failure to meet demand can also be interpreted as the barriers to expansion. The summary of the reasons given for the inability to meet demand is given in the chart below (For all rank response charts in this report, the x-axis is the ranking given (1 = most important, 7 = least important), the y-axis is the number of responses).

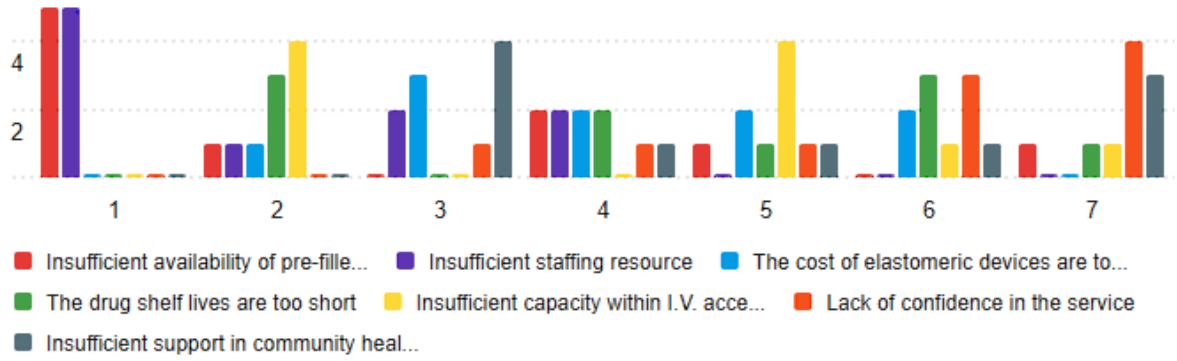


Figure 7. Ranking data for inability to meet demand.

From this data, it can be seen that the top three reasons for the inability of OPAT services to meet demand are:

1. Insufficient staffing
2. Unavailability of ready-to-administer devices
3. High cost of elastomeric devices

An additional point raised by a healthcare provider, in regard to the distributed questionnaire was that 'nurses may not perceive the lack of availability of pre-filled devices as a barrier due to the accepted norm that they are to prepare the elastomeric devices themselves.' This raises the possibility that some healthcare providers are unaware that the pre-filled elastomeric devices can be sourced from alternative manufacturers.

Questionnaire Technical services

The questionnaire was disseminated to healthcare professionals and responses were collected during August 2024. In total 62 responses were received; the demographics of the respondents is provided in the charts below.

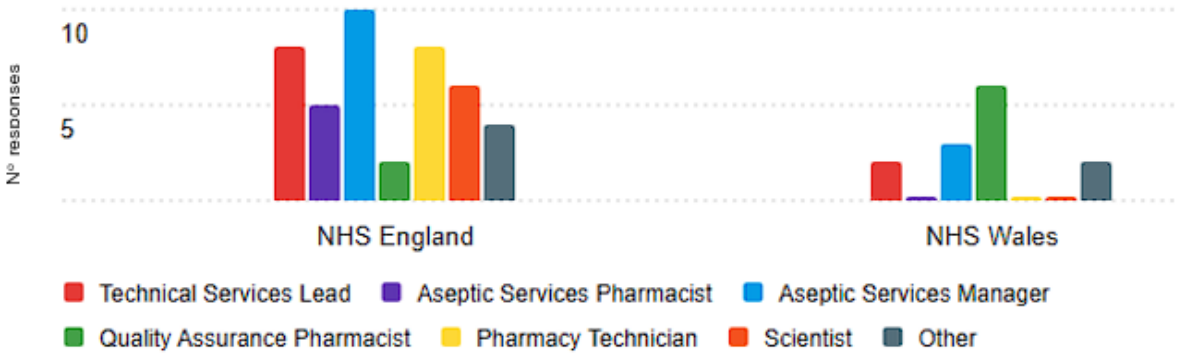


Figure 8. Role and organization of participants.

In contrast to the results obtained for the Healthcare providers only 17.7% of the Technical Services respondents were currently working in a department that provided pre-filled devices for an OPAT service. The reasons given for this are given in the chart below:

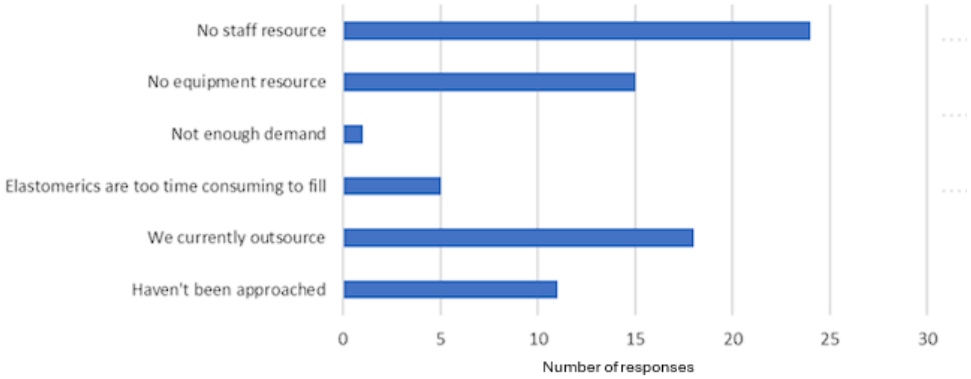


Figure 9. Reasons why Technical Services do not produce for an OPAT service.

The three most common reasons provided are:

1. Lack of staffing resources
2. The service is outsourced
3. Lack of equipment capacity

For those Technical Services teams that stated that the provision of devices for an OPAT service is outsourced, 78.6% are of the opinion that the demand is currently being met. Conversely this opinion is only shared by 33.0% of Technical Services departments that are directly involved in the supply of pre-filled OPAT products. For those unable to meet demand the following factors are ranked as barriers to this:

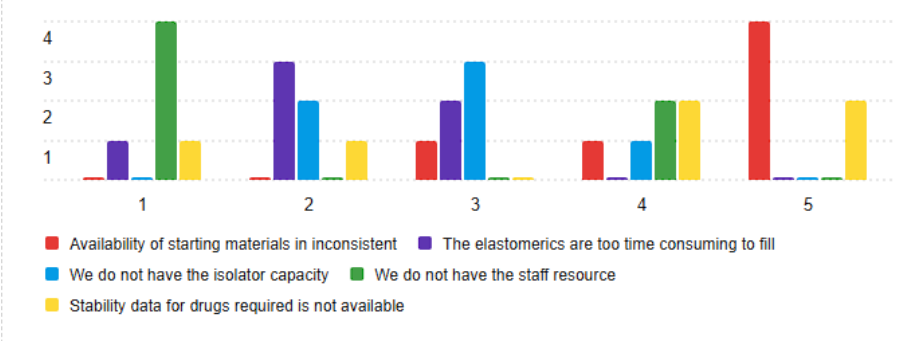


Figure 10. Reasons why Technical Services are unable to meet demand for pre-filled OPAT devices.

The top 3 reasons given can be determined from the data as:

1. Insufficient staffing resource
2. Time consuming manufacturing method
3. Lack of isolator capacity

Outsourcing manufacture is virtually always carried out through Baxter, with only two locations using additional contract manufacturing organizations (CMO), in Bath ASU and Qualasept. For those Technical Services departments filling their own devices Baxter elastomerics were used with 67% of the market share. The answers to these questions identify a single point of failure in the supply of the majority of UK OPAT services, and highlights the fragility of the supply chain, with much of the NHS reliant on a single CMO for both pre-filled and empty elastomerics for OPAT. This is an issue that is not without precedent. For example, in 2019 Calea, at the time one of the UK's largest providers of home care TPN (Total Parenteral Nutrition) revised their production process causing significant service disruption, despite the publication of "Risks associated with the outsourcing of the aseptic compounding of parenteral nutrition" in 2015 (Bateman. R. *et al*, 2015).

In stark contrast to the recommendations made in Transforming NHS Pharmacy Aseptic Services in England, all of the technical services departments that responded use a manual filling process to provide pre-filled elastomerics for OPAT.

90% of technical services teams are looking to increase their involvement in the supply of OPAT services and have identified the following as enablers to their prospective expansion:

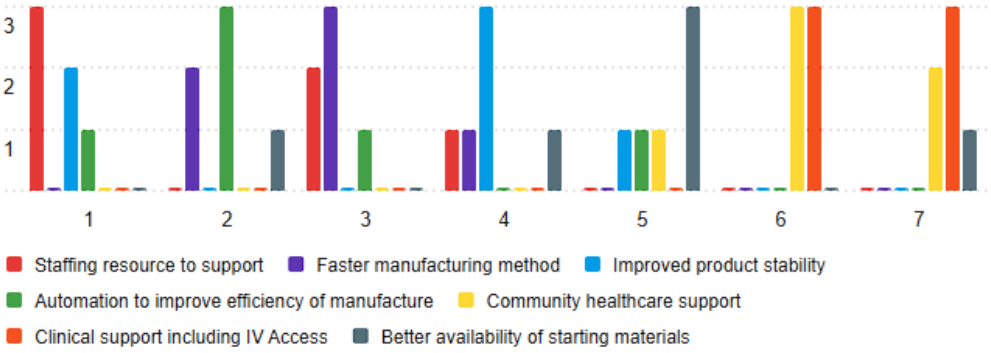


Figure 11. Identified barriers for expansion of production of pre-filled OPAT devices.

Outside of better staffing resource, automation enabled faster manufacturing methods are by far the next most significant enabler in the opinion of the technical services teams.,

Proof of concept studies

Based on the data obtained from interviews with the Antimicrobial Pharmacists for BCU East, it was determined that flucloxacillin 8g/ 240 mL elastomerics would be the most advantageous system to investigate and would enable a like-for-like comparison with the current service offering.

The Aseptic Manufacturing team were invited to fill batches of these devices following an entirely manual production process. This manufacturing process was observed and was determined to take approximately 5 hours to fill 4 Baxter Infusor LV 10 elastomeric devices with 8g flucloxacillin dissolved in 240 mL 0.9% Saline solution. This process involved 121 aseptic manipulations. This high number of manipulations is significant as each one introduces a point of potential contamination and risk to the final product and patient.

The Technical Services department for BCUHB has ownership of a Grifols Gri-Fill 4, this is a semi-automated compounding machine that has been designed to be used for the manufacture of sterile/ aseptic preparations.



Figure 12. Grifols Gri-Fill 4 semi-automated compounder.

Within the BCUHB Quality Control laboratory, a proof-of-concept study was conducted to determine the feasibility of using this device for the filling of batches of elastomeric devices for OPAT. A manufacturing method using this device was developed and validated within the laboratory. The process timing and mapping study was then repeated for this process. It was determined that the time to fill 4 elastomeric devices was approximately 50 minutes and contained 45 aseptic manipulations. The validation batches were determined have a weight uniformity of ± 0.6% of the target fill weight, a pH of 6.5 ± 0.8% and an average flucloxacillin concentration of 8g/ 240 mL ± 2.5%.

Discussion

Expectation vs Reality

The answers to the questionnaires obtained as part of this research have highlighted that the delivery of OPAT services in order to meet the targets outlined in the numerous policy documents is actively underway. There are either established services or early-stage services in place across the majority of Health Boards and Trusts. However, the role of Technical Services is relatively small and falls well short of the objectives laid out in Transforming NHS Pharmacy Aseptic Services in England and the various Welsh policy documents.

It is evident from the results is that there is a disconnect in the narrative surrounding the delivery of OPAT services between healthcare providers delivering the service and their associated technical services departments. This is highlighted by the differences in opinion on how successful the demand for OPAT is being met. Where nurses prepare the elastomerics but are not meeting demand, they are not approaching technical services for assistance.

This fact may infer that pharmacy technical services remain a relatively unknown entity within the hospital environment. It may be beneficial for technical services departments to raise their profile within their respective organisations and raise awareness with other healthcare workers, so that they may become more involved in the changing landscape of hospital care.

In addition, there was a common theme amongst all respondents that there are large gaps in the workforce and organisation structure that are inhibiting the expansion and growth of these OPAT services. This is reflected in the answers from both cohorts stating a lack of staffing and equipment capacity. A good example of this is the lack of an intravenous (I.V.) access service, which is required to put the correct (PICC) delivery line into the patient. This is often stated as a barrier for expansion. In the case study hospital, this service is currently being provided by anaesthetists rather than by nurses, this is not only introducing an additional cost into the service but is also a further source of inconsistency into service delivery.

Insource vs Outsource

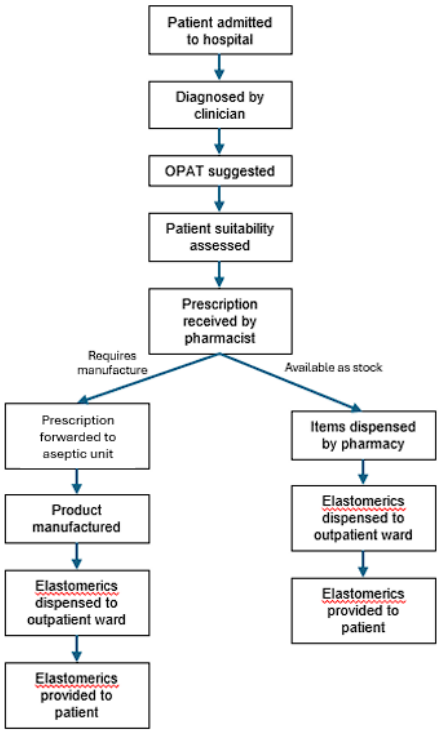


Figure 13. Process flow for delivery of OPAT services using insourced manufacture.

The processes developed during the laboratory studies can be paired with the information gathered in the case study and interviews, in order to generate a new process map for the delivery of OPAT services using insourced manufacture. This new delivery model is outlined in the process map given below:

During this work a hybrid model for delivery was considered, whereby technical services teams would provide prefilled elastomerics to cover the initial dose, thereby reducing the initial delivery costs, and covering weekends where pre-filled elastomerics would not be provided by the CMO. This model whilst providing some advantages has been discounted for the following reasons.:

1. **Minimal cost and efficiency saving**: a significant percentage of the cost barrier to insourcing is the initial purchase of equipment and training of staff to operate these effectively; and the efficiency savings for pharmacists lie in the long administrative periods associated with ordering from a CMO. By adopting a model, the costs incurred are equivalent to full insourcing model, with reduced benefits of economy of scale and staff management.
2. **Prescribing complications**: the differences between the elastomeric used by the insourced and outsourced products would cause complications in the prescribing habits of pharmacists. Devices sourced by the differing methods would require separate unique entries on the electronic prescribing system. This increases the risk of prescribing error.
3. **Diminished patient experience**: both sourcing methods would use differing styles of elastomeric device. This would require the employment of differing training procedures for the use of the devices for both nurses and patients introducing unnecessary duplication. Furthermore, the differing appearances between the elastomeric may cause confusion amongst patients about the continuity of their treatment, this phenomenon has been discussed in (Tranchard. F *et al*, 2019).

During this study, the unit cost for an 8g flucloxacillin elastomeric device manufacture within Technical Services in BCUHB has been calculated to be £46.12 compared to an undelivered cost of £103.06 when purchased from a CMO. A summary of these associated costs is given in the table below.

Table 2. Unit cost breakdown for in sourced 8g flucloxacillin elastomeric devices.

	Item Name	Units Required	Total Cost (£)
Ingredients	Flucloxacillin 2g Vial	18	36.00
	Citrate buffer concentrate	1	9.40
	1L NaCl 0.9% bag	1	5.00
Consumables	50mL luer lock syringe	1	1.00
	30mL luer lock syringe	1	1.00
	Codan spikes	20	19.90
	GriFill 2-way set	1	8.93
	GriFill peristaltic set	1	16.02
	GriFill 6 in 1 set	1	54.00
	Elastomeric devices	4	12.60
QC Testing	TSA plates	2	1.00
	SAB plates	1	0.49
Overhead Cost of Session		0.25	19.15
		Total / Batch of 4	£184.49
		Unit Cost	£46.12

In addition to the unit cost reduction, efficiency savings for the prescribing pharmacist can be approximated at ~£24.74/order based on an average band 7 pharmacist wage. This is due to the differences in ordering from an CMO and the use of an internal electronic prescribing system. The current ordering system employed to receive product from the CMO is also more likely to come under strain as the service offering expands with an increased number of eligible patients with additional administration time and risk to the 24-hour delivery time.

The role of automation

The role of automation has the potential to revolutionise the way pharmacy technical services operate throughout the NHS. Two significant limitations affecting technical services highlighted by this research are both equipment and staff capacity. Increasing equipment capacity such as isolator space is a very expensive endeavour with the average cost of a conventional positive pressure isolator approximately £50,000 and the cost of increasing building facility space to incorporate these machines even higher. Furthermore, many Health Boards and Trusts (including the case study location) are suffering in both staff retention and recruitment which is leading to a shortage of both staff and skills.

Using automated manufacturing processes provides a way to utilise both staff and equipment time more efficiently and at lower expense, with semi-automated filling machines costing between £20 and 30,000. Automation can be used to reduce the manufacturing time of existing process enabling the current service to be provided with less staff resource and less strain on equipment capacity.

Conclusions

This research provides new context into the application of automation within pharmacy technical service in reaching the targets set out by current English and Welsh Government policy. A unique aspect of this research is that it has:

a) assessed the state of current OPAT services and the role of technical services departments in their delivery

and

b) proposed a new delivery model based on proof-of-concept studies that demonstrate viability.

The research here is supported by previous works on insourcing suggesting that when properly executed the insourcing of processes are a low-risk investment that are capable of providing a stable return.

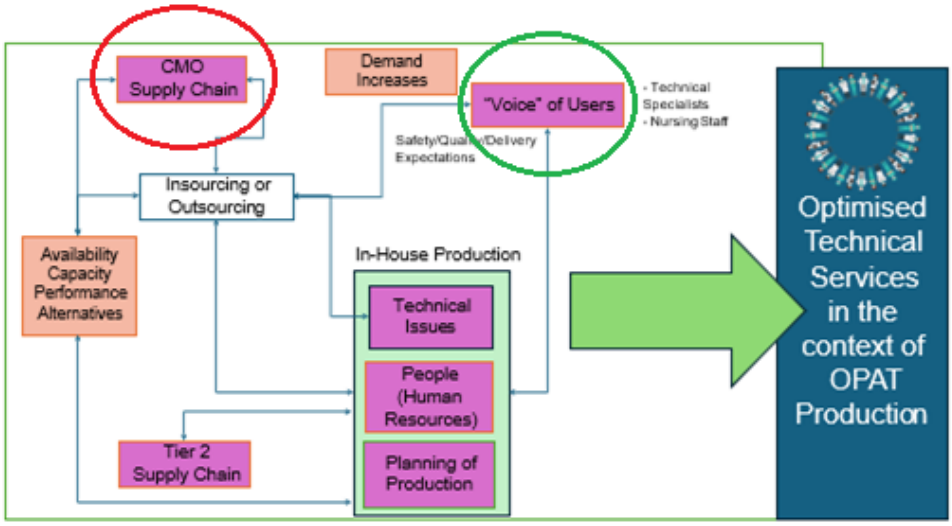


Figure 14. Conceptual framework.

This project has shown that the users (circled in green) are expecting demand to increase and are forecasting an expansion in OPAT services. This is being driven by Government Policy and changes in patient expectations. Expansion of the existing outsourcing model (CMO circled in red) is undermined by the inherent disadvantages of this approach.

This research has shown that the main obstacles to insourcing are shortage of trained staff and capacity. These can be partially overcome by the increased involvement of technical services and their use of automation in the manufacture of pre-filled elastomerics. The main benefits of this are:

1. Shortages in manufacturing capacity and staff within technical services are overcome by the ability of automated process to manufacture equivalent doses in much shorter times.

2. The change to elastomeric devices increases capacity for healthcare providers by allowing multiple doses to be delivered.

This work has illustrated a proof of concept for the insourcing of pre-filled elastomerics with much reduced manual intervention, shorter production times and greater product availability. Despite the relative high cost to entry of this model e.g purchase of equipment, the stability it provides to the supply chain, product cost savings, and process efficiency improvements justify the investment. You would expect a short time for return on investment given the increasing demand for the OPAT service and associated products.

Whilst this research looks at automation in the context of a single product range, the fact that the machinery used for this process will have applications in the delivery of other drug products and dosage forms demonstrates the potential for expansion.

This potential has been recognised by the Welsh Government through the Smart Innovation Fund. They have awarded BCUHB technical services a grant to establish a robust insourced manufacturing capability. Over the next 12 months the proposed insourcing model will be trialled within BCUHB, using automation for the production of pre-filled elastomeric devices to be distributed to patients via the existing OPAT service within BCUHB.

Where next?

This research has exposed gaps in the current academic understanding of localised and on-site manufacturing. The study can be expanded in the following ways to yield greater benefits for the academic and practitioner communities:

1. A research programme looking at other forms and cases of in-house manufacturing to confirm the benefits derived from this research and case study (cross comparative case research).
2. A longitudinal study of change at the focal case study to see how it evolves, and which other products are insourced.
3. A comparative study of other countries and the methods/performance of their insourced operations to learn the methods for operational excellence in production.

Final Words

This study represents many hundreds of hours of thinking, research, and fieldwork. The findings offer a new insight into an area of management and clinical support that has often been neglected. It is hoped that other researchers will find this work of interest and develop it further.

Christopher Goodwin

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What Matters in Neurorehabilitation and How Could We Put this at the Centre of Value-Based Governance?

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Abstract:

Person-centred and value-based healthcare both purport to put the person at the centre of efforts to maximise the impact of health provision. Despite this shared ambition, the literature suggests that there are inconsistencies between these two approaches both at the level of underlying principles and the way these principles are operationalised. While the recent field of person-centred value-based healthcare offers some suggestions to aid alignment, these are arguably largely at the surface level and do little to address the gulf in underlying principles. This paper presents a novel way of exploring value in healthcare that is consistent with the underlying principles of person-centred care as derived from the concept of personal recovery. The paper uses the context of a neurorehabilitation service to illustrate and explore the potential of this method to support the development of high value person centred health care. The findings of the paper are explored within a spirit of action learning in which they are seen as a test of a minimal viable product with the learning from this study being used to further refine the method.

Keywords: Neuro Rehabilitation, Recovery College, Person Centred Care, Personal Recovery Most Significant Change, Value-Based Healthcare.

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Introduction

> *"The organism is a unitary system, but what is a system to a real living thing? Neuropsychology speaks of 'inner images', 'schemata', 'programmes' etc: but patients speak of 'experiencing', 'feeling', 'willing' and 'acting'. Neuropsychology is dynamic, but it is still schematic; whereas living creatures, first and last, have selves – and are free. This is not to deny that systems are involved, but to say that systems are embedded in, and transcended by, selves."*
>
> Oliver Sachs (1984) P164

The above quote relates to Oliver Sacks' reflections on his personal learning from the experience of what would be described today as a 'functional neurological disorder' arising from a traumatic injury (Baizabal-Carvallo, Hallett & Jankovic, 2019). The Key to these reflections and his subsequent work, was the recognition of the need to develop an approach to neurorehabilitation that focuses on people's experience (Sachs, 1983).

The need to focus on personal experience is also captured in an anthropological study of healthcare undertaken by a group of researchers at the Mayo Clinic in Boston (Kottke, 2011). This study conducted at an internationally renowned centre of healthcare excellence in the United States, observed that members of the community experience health as the ability to meet the needs of the people who depend on them, not as defined by the medical community as the absence or presence of disease, a risk score, or a description of comorbidity.

One potential consequence of the misalignment between practitioner and public perspectives is that people don't get what they need from services. This concern is supported by the 2021 review into overprescribing conducted by the Department of Health and Social Care in England. Citizens contributing to this review reported that they did not feel that they were listened to, meaning that the prescription they received didn't really address their issue or preference. Interestingly practitioners also indicated that they often did not feel as though they got to the root of people's problems, as a result the treatment they offered dealt more with the symptoms than the cause. The Department of Health review highlights how this misalignment has serious implications for effective use of the NHS's limited resources. The executive summary of this review emphasises that overprescribing is a serious problem in health systems internationally that has grown dramatically over the last 25 years. It notes that as well as the resource implication and physical and mental impact on patients, overprescribing can lead to more hospital visits, preventable admissions, premature deaths.

It seems clear that the above observations have important implications for the meaning and practice of Person-Centred Care (PCC) and value in healthcare. This includes the care provided in the field of Neurorehabilitation. The overarching aim of this paper is to explore the gap between what practitioners (providers) and citizens (patients) see as responsive and high value healthcare. Addressing this question is important because this gap offers fertile ground for dissatisfaction and waste. It is perhaps no wonder then that public satisfaction with the NHS across the nations of the UK is at an all-time low (Jeffries et al., 2024), and that there is a growing deficit between budget and spend within the NHS in Wales (Clarke, 2023; Rees & Duffy, 2024) and more widely (Haslam, 2022).

Justification for study

The introduction hints at a gap between the perception of PCC as experienced and conceptualised by people accessing and providing health and care services. This has implications for the measurement of value in health care. This section seeks to justify the need for further research into the links between person centredness and value in health and care. It begins by critically reviewing the literature on PCC. This leads into a discussion about the distinction between clinical and personal recovery and a proposal that PCC is best conceptualised in terms of the latter. The section ends by considering the implications of a shift in focus to personal recovery for models of Value Based Healthcare (VBH).

What Matters in Neurorehabilitation: Person Centred Care

The psychologist Carl Rogers is often credited with being the first person to use the phrase 'person-centred' in his work as a psychotherapist in the 1950's and 60's (The Health Foundation, 2016). A key element of his use of the term was to highlight the importance of empathy for the service user's perspective. Alongside

empathy, PCC is typically characterised as involving working collaboratively with people who use services, and supporting them to develop the knowledge, skills and confidence that they need to manage and make informed decisions about their own health and health care. The aim is to ensure that their care is coordinated, tailored to their individual needs, and provided in a way that treats them with dignity, compassion and respect (The Health Foundation, 2016).

Research indicates that PCC practices can contribute to a range of VBH outcomes. For instance, De Silva (2011) demonstrated improved clinical outcomes for people with long term health conditions, reduced demand for emergency hospital services, and enhanced compliance with treatment plans and medication regimes.

A vast array of initiatives has been reported to contribute to PCC. Examples include Experience-based co-design toolkit (The Point of Care Foundation); 'Hello, my name is…' (Hello My Name is Organization); House of Care (The Coalition for Collaborative Care); Person and family-centred care (Institute of Person and Family Centred Care); and Shared Decision Making (Elwyn et al, 2012). These initiatives all share a focus on changing the way that health care professionals interact with the people they are trying to assist with a greater emphasis on partnership working.

The above approaches also share a primary focus on the experience of the person or people accessing services (aka patients). Other researchers comment on the experience of providing care. Whitby (2015) notes the stressful nature of direct personal care and the impact of this stress on the ability of people to provide responsive care. As well as current resource pressures, these stresses include the challenges of providing personal and intimate care to people who are confused, ill, challenging, distressed, or difficult to understand or make sense of (Benner & Wrubel, 1989; Smith, 1992). Similar pressures have been identified in the provision of person-centred rehabilitation (Kayes & Papadimitriou, 2021).

The challenges identified in the previous paragraph point to a need for a broader focus for PCC which includes consideration of the needs of the people providing care and rehabilitation, as well as those accessing it. This broader focus is acknowledged in several PCC frameworks. These include the Enabling Environments Initiative (Royal College of Psychiatry, 2024), the Senses Framework (Nolan, 2006), and Care Aims Intended Outcomes Framework (Malcomess, 2000). These initiatives all focus on creating environments in which all participants are supported to thrive.

These frameworks also share an emphasis on wellbeing. They emphasise that health is more than the opposite of illness. Instead, it is the ability to meet personal life plans that are underpinned by human needs. These needs speak more to the way that the members of the public in the Mayo Clinic study talked about health (see above Kottke, 2011). For instance, in relation to the impact of ill-health on their sense of purpose, connection, achievement, intimacy, creativity, safety, and/or autonomy (Malcomess, 2000; Nolan, 2006). The literature on wellbeing and human needs emphasizes that although there is a set of needs that are universally important, the relative importance and personal meaning attached to these human needs is highly individualized (Griffin & Tyrrell, 1998; 2003). The personalised nature of what matters and to who brings us back to a central issue in PCC – what does Person Centred mean and to who? Saunders and Roxburgh (2023) acknowledge this point when they question whether a complex system with multiple, and sometimes competing, stakeholders can achieve a shared view of what matters in PCC. This is the first research question addressed by this paper.

The question posed at the end of the last paragraph points to a deeper challenge to the current conceptualisation of PCC. This is that, with the exceptions of the Care Aims and Senses Frameworks, the approaches to PCC and rehabilitation presented above typically offer behavioural prescriptions. Kayes and Papadimitriou (2023) suggest that we have fallen into a pattern of reducing person-centred rehabilitation to a set of key actions and activities centred on activating people to be involved in their rehabilitation. In this respect these approaches can be thought of as prescription or framework centred rather than person centred (Malcomess, 2024). Put simply they focus on doing person centredness as a verb rather than experiencing it as a state or outcome.

Within most contemporary person-centred frameworks, the rationale for 'doing' person-centredness is largely in support of clinical (e.g. better symptom management) (Holstein and Minkler, 2003) or functional (e.g. Activities of Daily Living) (Porter, 1995) outcomes. Kayes and Papadimitriou (2023) suggest that in rehabilitation this means that increasing patient capacity for self-management has become a proxy for

person-centred rehabilitation. Saunders and Roxburgh (2023) suggest that an alternative is to consider person centeredness as a shift in thinking. They propose a shift away from the thinking underpinning transactional models of care which focus on activities to address illness or disease, to an approach which contextualises care decisions within a focus on the patient as a unique being, understanding their functional, spiritual and value-based needs. A similar call has been made by Hansson & Fröding, 2020) and by Kayes and Papadimitriou (2023) with respect to rehabilitation, and more broadly by Malcomess (2000, 2004) in relation to decision making in health and care.

The shift in thinking proposed in the last paragraph parallels the shift from clinical recovery to personal recovery advocated by some academics and practitioners in mental health (Slade, 2009; Repper & Perkins,2003; Perkins & Repper, 1996). The next section explores the distinction between clinical and personal recovery and its relevance to the question of what matters in neurorehabilitation.

What Matters in Neurorehabilitation: Clinical vs Personal Recovery

Repper and Perkins (2003) note how a focus on deficits and dysfunction in mental health rehabilitation services has led to a primary focus on symptoms and problem reduction. As a result, service provision targets assessment of need in terms of symptoms to be alleviated, which focuses interventions on difficulties, and evaluation of effectiveness on symptom removal. In contrast to this deficit focus, Repper and Perkins note that while people with mental health problems may desire freedom from debilitating symptoms, this is only part of the story, with people accessing services typically placing at least equal weight on the importance of decent lives. Indeed, a study conducted by the Mental Health Foundation explored common themes in the things that people were seeking from services. A noticeable absence on this list was the removal of symptoms. Instead, the self-identified needs included acceptance, shared experience, emotional support, a reason for living, meaning and purpose, peace of mind and relaxation, taking control and having choices, security and safety, and pleasure (Faulkner & Layzell, 2000). Personal recovery refocuses services on these needs and away from a practitioner led focus on symptoms, deficits, and impairments (Slade, 2009; Repper & Perkins, 2003; Perkins & Repper, 1996).

The distinction between personal and clinical recovery points to different conceptions of what matters in care and rehabilitation. The former focusses more on what traditionally matters to practitioners, the latter on what matters to citizens (Slade, 2009; Repper & Perkins, 2003; Perkins & Repper, 1996; Anthony, 1993). Other key differences between clinical and personal recovery are summarised in the table below.

Clinical Recovery	Personal Recovery
Is an output or a state, generally dichotomous	Is more of a journey than a state
Is objective and observable – i.e. not subjective	Is subjective
Is rated by the expert clinician, not the 'patient'	Is defined by the patient
Is invariant across individuals	Is highly personalised

Figure 1. Key Differences Between Clinical and Personal Recovery – adapted from Slade (2009)

The next section explores the implications of the differences between clinical and personal recovery for the theory and practice of VBHC.

What Matters Most in Neurorehabilitation: Value-Based Healthcare

Porter and Teisberg (2006) define value in health care as the outcomes that matter to people relative to the cost of achieving those outcomes. A central premise of this approach is that standardised outcomes can and should be measured and compared with other institutions to establish high and low value practices and pathways (Lewis, 2022). The characteristics of clinical recovery presented in Figure 1 (adapted from Slade, 2009), support the collection of clinically defined outputs that are relatively easy to describe, observe, rate, and compare. This approach to value portrays healthcare as a 'complicated' rather than 'complex' business (Plsek & Greenhalgh, 2001). 'Complicated' because it typically involves sophisticated procedures that require considerable skill to exercise, but not 'complex' in that these procedures can be reduced to a set of repeatable and predictable steps and operations (Martin, 2007). This in turn provides the rationale for the

allocation of people to largely predetermined procedures or pathways of care with largely foreseeable outputs.

Pslek and Greenhalgh (2001) note the influence of Newton's "clockwork universe" on pathway-centred healthcare. They suggest that this machine metaphor is most apt when it is applied to situations characterised by constancy and predictability. These requirements seem to fit well with the observable, binary, and invariant outputs that are assumed by models of clinical recovery. In contrast, 'clockwork pathways' seem less applicable to the fluid, subjective, and variable outcomes assumed by models of personal recovery (see Figure 1 above). Pslek & Greenalgh (2001) argue that these types of outcomes can more reasonably be seen as emerging from complex adaptive systems. They suggest that these systems are characterized by fuzzy rather than rigid boundaries; inherent non-linearity; unpredictability; embedded systems; agents and systems that are adaptive; and agents that act on internalized rules.

Kidanemarian et al. (2023) searched the Cochrane Library, EMBASE, MEDLINE and Web of Science databases for papers assessing the effect of the implementation of VBHC. They then reviewed these studies to identify the measures they employed. The 39 studies they included in their analysis used a total of 94 unique study measures. The most frequently used study measures (n=72) were process indicators, cost measures and clinical outcomes with patient centred outcomes rarely being used. They concluded that their study shows limited evidence for research into VBHC supporting PCC. Instead, the focus was typically on measuring the quality of care as defined by provider, institution or payer perspectives.

Kidanemarian et al's findings are perhaps not surprising given the proposal made above that truly PCC is best conceptualised as arising from complex systems which are made up of agents that are adaptive, embedded, and who act on internalised rules. This implies that the things that are valued by these agents will be dynamic, contextualised, and hidden. This in turn means that any measure of value will be time limited, context specific, and require exploration of the subjective personal meanings and values of individual agents. This seems at odds with the central premises of VBHC as a means of facilitating the comparison of standardised outcomes across institutions to establish high and low value practices and pathways. (Lewis, 2022).

This brings us to the second question addressed by this paper. This question relates to whether there are meaningful ways of measuring and comparing values in health that are consistent with the transformative principles of personal recovery.

Person-centred Value-Based Healthcare

The interface between PCC and VBHC has been referred to as Person-centred Value Based Healthcare (PCVBHC) (Kelly, 2023; Beddlington et al., 2021). Advocates of PCVBHC note that whilst the original aim of VBHC was to put the person with a specific condition at the centre, the way it has been implemented jeopardises the focus on the person (Beddlington et al., 2021). They highlight how in its current form VBHC relies on standardised definitions of success that will not always reflect what currently matters to the person (Beddlington et al., 2021). They acknowledge that unless measurement reflects personal goals and preferences, it is impossible to know whether an intervention is achieving the outcomes that matter to an individual (Kelly, 2023; Beddlington et al., 2021).

The answer to the measurement problem typically proposed by advocates of PCVBH takes the form of generic or condition specific Patient Related Outcome Measures (PROMS). These are frequently described as measuring outcomes that matter to patients but instead tend to ask standardised questions about patients' or caregivers' perspective on the impact of the condition on their lives and how illness is experienced (Makrinioti, Bush & Griffiths, 2020). These stop short of deeper outcomes in terms of what matters on a personal level that supports true PCC.

PCVBHC also places heavy store in Shared Decision Making (Kelly, 2023). This approach to PCC highlights the need for collaborative decisions about care. This includes providing people with information about the options that are available and the potential clinical impact of each of these options (e.g. Elwyn et al., 2012). This seems to stop short of a truly person-centred approach which would necessitate a process of making sense of what matters most to the person and those close to them and then working with them to explore what they (and the practitioner) think is most likely to help them achieve these things (Malcomess, 2000, 2024).

The field of PCVBHC is a new development in the wider landscape of value in healthcare. Given its early stage of development, it is perhaps not surprising that it currently stops short of addressing the tensions between PCC and VBHC identified earlier in the review. This tension is explored more fully below.

What Matters in Neurorehabilitation: The Problem Space

The literature reviewed above leads to at least five conclusions. First, there is a gap between what matters to health care providers and citizens. Second, this gap poses important questions about how and who defines PCC. Third, the impact of health care stretches beyond the people we traditionally label as patients, extending to the positive and negative impacts on providers and other people who are proximal to the identified person (aka the patient). Consideration about person-centredness should arguably extend to these other people. Fourth, the experience of PCC is closely related to measurements of value in health and care. Fifth, there are significant conceptual misalignments between PCC and traditional conceptualisations of VBHC.

Drawing the above five observations into a single conclusion, the literature review points to clear challenges for the pioneering field of PCVBHC, these include paradoxes in current theory, gaps in research, and inadequate methodology.

Research Aim, Questions and Objectives

Aim

This paper uses the context of neurorehabilitation to explore the relationship between PCC and VBHC. The paper seeks to identify areas of alignment and contradiction in the principles, theories, and practices that currently define these two concepts. The overall aim is to add to the emerging and important field of PCVBHC by exploring ways of reconciling contradictions in its component parts.

Research Questions

This paper seeks to address two related research questions. These are:

RQ1: What matters most to the various stakeholders in neurorehabilitation, and can this information be organised into a shared view of value in PCC?

RQ2: Can what matters to stakeholders in neurorehabilitation be measured in a way that informs VBHC, whilst also maintaining integrity to the principles of PCC and personal recovery.

Objectives

In addressing the above questions, this paper seeks to achieve the following three objectives:

1. To review the literature on the principles and practices of PCC, personal recovery, and VBHC to explore the parallels and contradictions.
2. To describe and critically review the current state of the emerging field of PCVBHC including the conceptual and practical challenges.
3. To explore an innovative approach to reconciling the conceptual and practical barriers to PCVBHC.

Methodology

Research Design

This paper uses secondary analysis of qualitative data as part of an action research design. It also draws on financial data to explore return on investment. The choice of qualitative data reflects the subjective and personal nature of what matters in PCC and the individualised nature of personal recovery (Slade, 2009). The choice of action research as the methodology reflects the dynamic nature of the complex adaptive systems underpinning personal recovery (Lowe & Padmanabhan, undated).

The qualitive data used in this study was collected using the Most Significant Change (MSC) Technique (Davies & Dart, 2005). MSC was chosen because it allows for the collection of highly personalised accounts of what matters from a range of stakeholders, and the subsequent exploration of this information to identify

a consensus view across subject experts (Andrew, 2023). These aspects of MSC offer the potential to support both of the research questions and the third objective of this study, as outlined above.

The MSC method has 3 stages: (1) Gather stories of change from the frontline; (2) Explore and learn from the stories in story selection panels attended by managers and people who can influence policy and practice development, and (3) Provide feedback on what has been learnt and the implications for policy and practice development (Davies & Dart, 2005). Findings from the first two of these steps provide the secondary data used in this paper. The initial collection of this data is summarised below as part of the description of the sample set.

Sample Set

The secondary data used in this paper was originally collected as part of a wider evaluation of the Neuro-Stute Recovery College (Harris & Tremain, 2024; Harris, 2024). This evaluation was supported by the Bevan Commission Exemplar Programme.

The Neuro-Stute (Niwrostiwt) forms part of the provision of the Community Neurorehabilitation Service within the Aneurin Bevan University Health Board. A core principle of the Neuro-Stute is that professionals and people with lived experience are learning with and from each other about how to live and work well. This spirit of collective enquiry extended to the selection of subjects in the Most Significant Change (MSC) study. Ten subjects were selected for the MSC study with at least one subject being drawn from each of the oval shapes shaded in pink and blue in Figure 2 below. This figure maps all the groups of people participating in the Recovery College. The aim of the map was to ensure that what matters to members of each group of participants was included in the study.

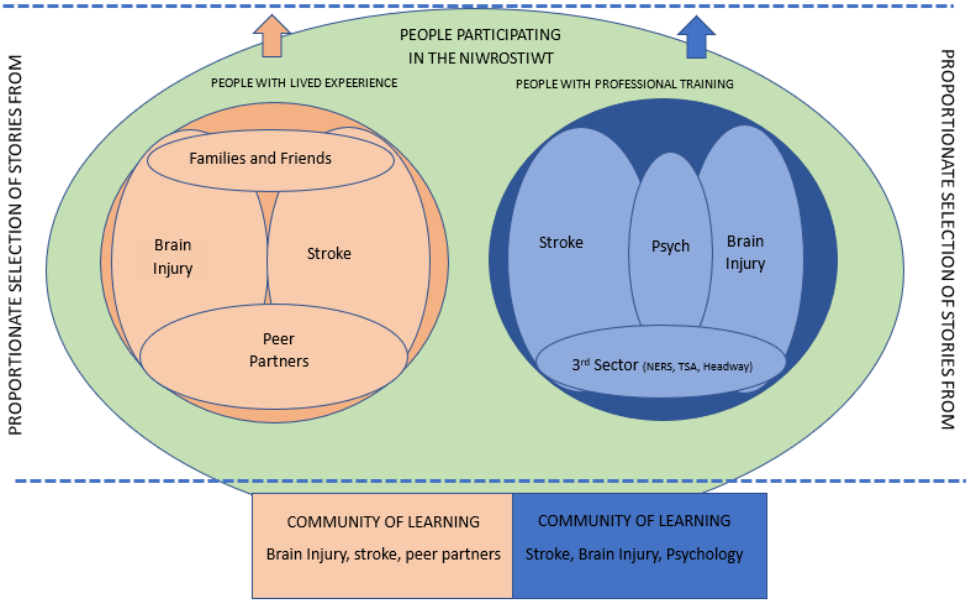


Figure 2. Map of Participants in the Recovery College.

Participants were chosen who were thought likely to offer a positive experience of change because of their participation in the Neuro-Stute. The rationale for this positive focus was that the aim of the study was to explore what matters (i.e. what is valued) by participants in the Recovery College.

Data Collection

In the original study, stories were collected by three researchers who were all members of the Aneurin Bevan University Health Board Community Neurorehabilitation Service. These stories were collected either in person or via MS Teams. Prior to collecting a story, the researcher read through an information sheet, gave space for the participant to ask any questions arising from this information, and obtained consent from the participant. Appendix 1 contains copies of the information and consent forms. It also contains a copy of the proforma used to collect stories. This proforma starts by asking for demographic information and then enquires about significant changes arising from participation in the Recovery College. As noted above

the study focused on the collection of stories of positive change. Researchers asked participants to identify a handful of positive changes and then to reflect on which of these was the most significant change. This then became the focus of the remainder of the interview. This part of the interview asked about the person's reasons for choosing that change, how things were before the change, how things are now, and what they thought made the changes come about.

To ensure and strengthen ownership of their story, researchers recorded stories in the person's own words and read their notes back to the storyteller to check they had accurately captured the essence of the story. In addition, subjects were sent a written copy of their story with an invite to make any edits or changes that they felt were needed to accurately reflect their experience and views. As a final stage of the process storytellers were asked to give their story a short 'snappy' title, and to think of a picture or image to accompany it.

Seven of the ten stories collected were selected for consideration by the story selection panel. This was in accordance with MSC standard practice which suggests that a maximum of 7 to 10 stories can reasonably be considered by a panel (Andrew, 2023; Davies & Dart, 2005). The stories that were included in the panel were chosen because they each represented a different set of themes and also to ensure a coverage of each area of participation in the Recovery College (See Figure 2 above). Each of the stories considered by the panel were one page in length.

Data Analysis

Data analysis consisted of three stages. These are outlined below.

Story Selection Panel

The second step in the MSC technique is to explore and learn from the stories in a story selection panel. In accordance with the MSC process panel members were selected for their knowledge about and ability to influence policy, strategy, and practice in the field of neurorehabilitation (Davies & Hart, 2005). Collectively the panel offered experience and influence within national and international third sector organisations, Welsh Government, health board senior management, academia, and clinical leadership. Panel members also included people with lived experience of stroke and brain injury.

During two meetings the panel members listened to and reflected on the seven stories selected for their consideration. After hearing each story, they explored what they found significant in them. The panel facilitator supported participants to collectively decide on which story they experienced as the most significant and to articulate why. This included encouraging different opinions and exploring these differences, with the aim of helping participants to deepen their understanding of the stories and each other. These panel meetings were video recorded and then transcribed with the explicit consent of panel members.

Thematic Analysis

The goal of thematic analysis is to identify themes or patterns in the data that are important or interesting (Maguire & Delahunt, 2017). These themes are then used to address research questions or issues of interest (Braun & Clarke, 2006). This method was chosen because it goes beyond simply summarising the data, instead supporting interpretation and sense making of the information provided by participants (Maguire & Delhunt, 2006). Braun & Clarke (2006) distinguish between two levels of themes: semantic and latent. Semantic themes reference explicit or surface meanings. When looking at these themes, researchers do not look beyond what a participant has said. In contrast, the latent level looks beyond what has been said to identify or examine the underlying ideas, assumptions, and concepts that are then theorised as shaping or informing the semantic content of the data. The exploration of latent themes fits with the proposal made in the literature review about the subjective and personal meanings attached to what matters in PCC (e.g. Slade, 2009).

Braun and Clarke (2006) propose six steps that contribute to a full thematic analysis. These steps are summarised in Figure 3. All of them were followed in the analysis of the transcripts from the story selection panel discussions.

Step 1	Become familiar with the data
Step 2	Generate initial codes
Step 3	Search for themes
Step 4	Review themes
Step 5	Define themes
Step 6	Write-up

Figure 3. Steps in Thematic Analysis (Braune & Clarke, 2006).

Calculations of Value-Based Healthcare

The aim of these calculations was to explore the value added by the Recovery College model in relation to each of the themes identified in the thematic analysis, and then to explore ways of relating this to return on investment. Three sets of calculations were used to explore value and return on investment.

Value as rated adherence to the 'Customer Voice':

The approach used to calculate value in this aspect of the study draws on the 'Voice of the Customer' (VOC) approach used in lean thinking (Feldman, 2023). This approach was selected because it focuses directly on what is most critical in understanding and satisfying 'customer' needs (in this instance the needs of participants and stakeholders) (Rich, 2024). The key aim of the VOC approach in leadership is to support organisational wellbeing and sustainability by increasing the likelihood that 'customer' needs and expectations are being satisfied, by reducing the disruption and delays caused by needless arguments and disputes arising from misunderstandings, and by reducing waste caused by focussing on things that 'customers' don't really want (Feldman, 2023).

To calculate alignment with the 'Voice of the Customer' (i.e. what matters to stakeholders and participants) in the Neuro-Stute, adherence to the themes identified in the thematic analysis was rated on a scale of 1 – 100, where 1 = no adherence, 20 = minimal adherence, 40 = some adherence, 60 = reasonable adherence, 80 = high adherence, and 100 = full adherence. As noted above, these themes were distilled from the stories of most significant change, the analysis of these stories through discussion at the Story Selection Panel, and the subsequent thematic analysis of these discussions. Ratings of adherence to these themes are referred to as the 'Voice of Customer Value', as a shorthand.

Calculation of Value Added

Value added was calculated by comparing the 'Voice of Customer Value' for Recovery College provision and comparing this to ratings of the 'Voice of Customer Value' for the equivalent provision provided according to 'Business as Usual'. The mean rating for the 'Voice of Customer Value' attached to the Recovery College was then divided by the equivalent figure for Business as Usual. This fraction was then multiplied by 100 to give a calculation of the percentage value added. This calculation is summarised in the following equation.

$$\text{Value Added} = \frac{\text{Ratings of Value from Recovery College}}{\text{Ratings of Value from Business as Usual}} \times 100$$

Calculation of PCVBHC

VBHC essentially rests on a comparison of outcomes with the costs attached to achieving these outcomes (Lewis, 2022). It was noted in the literature review that in traditional approaches to VBHC outcomes are typically assumed to be repeatable, observable, stable and predictable. It was argued that these assumptions become questionable in approaches to PCC where the outcomes being sought are

individualised, subjective, difficult to measure, and vary across stakeholders, context and time (Malcomess, 2000; 2017; Slade, 2009; Pslek and Greenhalgh, 2001). The average ratings for 'Voice of Customer Value' (VOC Value) for the Recovery College and Business as Usual derived in the previous section were used as proxies for person-centred value. The following equation was then used to calculate PCVBHC.

$$\text{Person Centred Value} = \frac{\text{Ratings of Adherence to VOC Value Themes}}{\text{Unit Cost}}$$

Two calculations were made. The first of these explored value in terms of adherence to VOC Value for the Recovery College as a function of the estimated cost per participant for a typical Neuro-Stute group module. The per participant (unit) cost was calculated as the cost for a single place on a six-session on-line group with each session costed for 1.5 hours of two staff members' time. One staff member's time was calculated at the mid-point of Band 5 and the other at the mid-point for Band 8a on 2023-24 Agenda for Change Pay Scales. This equates to the grading of a Registered Principal Grade Psychological Practitioner and a Higher-Grade Assistant Psychologist. These parameters represent the average operating conditions for each of the group modules in the Living Well Faculty of the Recovery College. The ideal group size for these modules is 8 participants, meaning that dividing total staff costs per module by 8 provides a calculation of per unit cost.

The second calculation explored value in terms of adherence to VOC Value for business as usual as a function of cost per participant. In this calculation cost was estimated in terms of a clinic-based intervention of equal intensity to a typical Neuro Stute group intervention (i.e. 6 sessions). These sessions were costed as being provided by a single member of Band 8a. A shorter session time of 60 minutes was used to adjust for the greater intensity of one-to-one input.

Findings

Story Collection

The seven stories selected and considered by the Story Selection Panel are presented below:



Collaboration is Key
If either side of the partnership wasn't there, the service wouldn't be successful. If you haven't got the National Exercise referral Scheme (NERS) team present, then you aren't getting people into the community, If the health professionals were not there, then the NERS team wouldn't have the confidence or experience to work with these complex individuals. There have been problems along the way, but the team work together to learn from this and improve the service as they go.



Bouncing from Amber to Red
Recognising when I am at risk of getting fatigued, recognising when I am in amber rather than bouncing between amber and red. This gave me more control over my fatigue so that I can engage in other helpful activities.



It's a Two-Way Street
Improved confidence in presenting - this was a challenge that I chose to take on and I feel proud of pushing myself out of my comfort zone. It has been an important learning experience and helped me in other aspects of my work.

Brain Fog Breakfast Club
Learning and building acceptance. I was fighting with the new version of myself to get back to the old version. Now I feel more comfortable and prepared to find peace with "version 2 of Dave"



Act Now
There is considerable demand for psychological support in people recovering from stroke and brain injury. My work within the Recovery College gives me more hope that we will be able to facilitate access to this support in a timely way.



Stuck on the Tracks
Understanding that this is how Jack's brain now works. It's like he is on a train from A to B and he can't get off.



Wendy's Lush Story
The most significant change for me was becoming a peer partner with the Recovery College.



Story Selection Panel

The Selection Panel chose two stories representing the most significant changes. The reason for selecting two stories rather than one was because one was told from the perspective of a member of staff and the other from that of a participant and peer partner. These stories were 'Collaboration is Key' and 'Brain Fog Breakfast Club'.

Thematic Analysis of Panel Discussions

Themes in the significant change stories valued by selection panel members		
	Labels and descriptions of themes seen as important by panel members	
Services	Inter-relationships and ripple effects	This theme recognises the interrelated nature of the impact of brain injury, stroke, and personal recovery on family, friends, the communities and communities of practice supporting people.
Services	Integrated care	This theme highlights the importance of integration across services and sectors.
Services	Integrating psychological & physical recovery	This theme highlights the value of integrating psychological and physical health and mental and physical health services.
Services	Flexible & responsive services	This theme recognises the need for practitioners to feel safe and supported to develop services and ways of working that are responsive to what matters to citizens and that can grow organically.
Services	Services embedded in local community	This theme relates to the value of embedding rehabilitation within everyday contexts.
Services	Sustainable focus on community capability	This theme recognises the importance of empowering people to use their experience and capabilities to support other people recovering from stroke and brain injury, and the impact of this on sustainability
Services	Shared spaces for learning and growth	This theme recognises the value of creating safe places for practitioners and people with lived experience to learn with and from each other.
Relationships	Sharing personal experience & expertise	This theme highlights the power of sharing stories of personal experience in making sense of the impacts of brain injury and in creating a sense of hope and being understood.
Relationships	Sharing power and influence	This theme highlights the importance of freeing professionals from unhelpful beliefs about responsibility and agency.
Relationships	Maximising personal autonomy and agency	This theme highlights the importance of flattening power dynamics and maximising opportunities for shared influence and decision making.
Outcomes	Facilitating Acceptance	This theme highlights the value of sharing personal stories in helping people to make sense of their situation and supporting self-acceptance.
Outcomes	Facilitating reinvention – rediscovery of self	This theme highlights the value of facilitating ways for people to reinvent themself as part of their recovery. Reinvention does not mean letting go of old me but finding ways of bringing old me into the current reality.
Outcomes	Increased sense of connection	This theme describes the importance of connection as an outcome supporting wellbeing, recovery and discovery.
Outcomes	Focus on sense of purpose, meaning, value	This theme describes the importance of (re)discovering a sense of purpose, meaning, and self-worth / pride.

Figure 4. Latent Themes from the Story Selection Panel.

Figure 4 presents the patterns and latent themes identified through thematic analysis of the discussions at the two meetings of the Story Selection Panel.

Value Based Healthcare

Three sets of calculations were used to explore value and return on investment. These are reported in Figures 5 and 6 below:

'Voice(s) of the Customer(s)' - What Matters to Stakeholders & Participants		
	Rated Adherence	
	Business as Usual	Recovery College
Inter relationships and ripple effects	65	85
Integrated care	65	80
Integrating psychological & physical recovery	70	85
Flexible & responsive services	55	85
Services embedded in local community	45	75
Sustainable focus on community capability	30	80
Shared spaces for learning and growth	20	75
Sharing personal experience & expertise	40	80
Sharing power and influence	35	65
Maximising personal autonomy and agency	40	80
Facilitating acceptance	75	85
Facilitating reinvention – rediscovery of self	75	85
Increased sense of connection	60	80
Focus on sense of purpose, meaning, value	60	80
Average rating	52.5	80

Figure 5. Ratings of Adherence to VOC.

Calculation of Value Added	
Voice of the Customer Value for Business as Usual = (65+65+70+55+45+30+20+40+35+40+75+75+60+60) ÷ 14 = 52.5 Voice of the Customer Value for the Recovery College = (85+80+85+85+75+80+75+80+65+80+85+85+80+80) ÷ 14 = 80 Value Added = 52.5 ÷ 80 x 100 = **66%**	$\text{Value Added} = \frac{\text{Ratings of Value from Recovery College}}{\text{Ratings of Value from Business as Usual}} \times 100$
Calculation of PCVBHC for Neuro-Stute group-based intervention	
Average VOC rating ÷ unit cost = 80 ÷ 83.83 = **0.95** [Recovery College Unit Cost = {(90 minutes band 8a time) x 6 + (60 minutes of band 5 time) x 6} ÷ 8 = (491 + 179.55) ÷ 8 = £83.83]	$\text{Person Centred Value} = \frac{\text{Ratings of Adherence to VOC Value Themes}}{\text{Unit Cost}}$
Calculation of PCVBHC for Business-as-Usual one-to-one intervention	
Average VOC rating ÷ unit cost = 52.5 ÷ 720.72 = **0.07** [Business as Usual Unit Cost = (60 minutes band 8a session time) x 6 = £327.42]	$\text{Person Centred Value} = \frac{\text{Ratings of Adherence to VOC Value Themes}}{\text{Unit Cost}}$

Figure 6. Calculations of PCVBHC.

Discussion

On the surface, PCC and VBHC are well aligned in that both seek to put what matters to people at the centre of care (Kelly, 2023). The former then seeking to achieve this at the lowest cost (Beddlington et al., 2021). The literature review highlighted that despite this shared ambition there are tensions caused by differences in underlying principles and how these principles are operationalised in practice. At its simplest level this tension reflects the individualised and subjective nature of PCC and the focus on objective aggregate data in VBHC.

Conclusions

The broad aim of this paper was to explore and offer a way of resolving the tensions between PCC and VBHC. In seeking to do this the paper attempts to answer two related questions. The first question is what matters most to the various stakeholders in neurorehabilitation, and can this information be organised into a shared view of value in person-centred rehabilitation? The literature review highlighted that in answering the first part of this question the paper would need to demonstrate a reliable method of collecting information about the subjective personal meanings and values (Saunders & Roxburgh, 2023; Slade, 2009; Malcomess, 2000; Nolan, 2006) of each person involved in an episode of care (Malcomess, 2000; Nolan, 2006). In addition, this would need to be done in a way that was sensitive to the time limited and context specific nature of information about what matters most (Pslek & Greenalgh, 2001). To answer the second

part of the question the method for data collection would also need to provide a means of standardising the information to support comparison (Lewis, 2022).

In line with the above criteria for success, the rich qualitative data captured in MSC stories is well aligned with the subjective personal meanings and values that support PCC. In addition, the approach supports the collection of information about what matters across the range of people participating in an episode of care. Moreover, as well as sampling what matters at a personal level to all participants, the MSC approach supports additional consideration of what matters to wider stakeholders through the Story Selection Panel Process. These panel discussions combine exploration of stakeholders' values, whilst at the same time anchoring this exploration in reflections about the personal experiences and meanings contained in the stories of people participating directly in the College (Andrew, 2023).

With respect to the second part of the first question, this paper demonstrates that thematic analysis of panel discussions can provide a way of identifying and articulating what was referred to as the collective 'Voice of Customer Value' (i.e. what matters most to stakeholders and participants). The themes identified within this voice were then used to create unified rating scales that offer a way of standardising or measuring collective person-centred value.

It was noted in the findings that the selection panel chose two stories as representing the most significant change. This reflected an initial difficulty in comparing stories from participants with professional and lived experience. This tension might be taken as evidence against standardising the voice of value across different stakeholders. However, the divide between provider and recipient was later questioned by the panel who recognised that many of the themes and changes discussed had relevance to everyone involved in the recovery college.

The second research question addressed by this paper explores whether the unified rating scales described above can inform VBHC, whilst also maintaining integrity to the principles of PCC and personal recovery. This question was addressed by rating the adherence of two different interventions from the same context to these scales. These were a typical intervention from the recovery college and an equivalent intervention representing business as usual. These adherence ratings indicated that the recovery college intervention offered greater (63% higher) alignment with what matters to the participants and stakeholders when compared with business as usual. This was interpreted as a higher level of person-centredness. The critical thing being that person-centredness in this context is being measured through a focus on what matters to participants as unique beings, rather than what person-centred behaviours matter to service providers (Malcomess, 2024; Saunders & Roxburgh, 2023).

Another set of calculations looked at the relationship between value in terms of adherence to customer voice and cost. These calculations were offered as crude measures of PCVBHC. They indicated that £1 of Neuro-Stute group interventions generated 0.95 units of value. This was compared with a significantly lower value to cost ratio of 0.07 units of value per £1 spent on Business as Usual. Although somewhat rudimentary the critical thing is that these calculations demonstrate a way of measuring PCVBHC that maintains integrity with the principles of PCC.

Recommendations

The method used to calculate PCVBHC in this paper is most aptly described as a Minimal Viable Product (MVP) (Robinson, 2001 cited in Perri, 2021). An MVP is a version of a new product which supports the collection of the maximum amount of validated learning with the least effort (Reis, 2011). The most important thing about an MVP is that something is developed, without an expectation that it will be perfect in the first round, but that it forms part of a process of learning (Perri, 2021).

Reflecting on the performance of the MVP suggests several immediate opportunities for building on the initial test. First, the ratings of adherence to customer voice could be made more objective and reliable by adding guidance or criteria to support standardisation of ratings. The degree of standardisation could be tested by checking test-retest reliability for the same rater, and if necessary, the guidance could be further improved.

Another consideration for further improvement of the MVP is the decision to only collect stories of positive change in this study. This reflected the focus on what people valued in their participation in neurorehabilitation. In hindsight the things that people do not experience as adding value are equally

important. In making the most of limited resources it is equally important to know what not to do or what to stop doing, as it is to develop a greater understanding of what is valued. Again, this issue could be easily addressed in future studies.

As a final reflection, it is important to reiterate that the voice of customer value forming the basis of PCVBHC calculations in this paper are context and time specific. What is valued by participants in the study community may differ from what is valued elsewhere or by the same community over time. This is of course entirely consistent with the principles of PCC outlined in the literature review. However, it does limit scope for comparisons across service contexts. This issue requires further consideration.

Notwithstanding the above limitation, the MVP proposed and tested in this paper provides a potentially powerful way of building value by supporting service leaders to learn about what matters to their customers (stakeholders, staff and participants) and then tracking changes in value and value for money as they make changes to move towards what matters within their service context. This capability is highly consistent with the ambitions of the National Clinical Framework for Wales which highlights the critical role of learning, PCC, and VBHC.

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Appendix A: Most Significant Change Story Collection Materials

Most Significant Change story sharing consent form

Background

Thank you for offering to share your story about what positive changes you have made or noticed from your involvement in the Neurostute Recovery College.

With your permission, your story will be shared with managers and other influential people representing the Health Service, Social Services, the Third Sector, and the community. Your stories will be shared in a Most Significant Change Story Selection Panel. The aim of this panels is for participants to read, explore and learn from the stories that are shared with them, with a view to applying their learning in improving policy and practice. We may like to use your story for other learning purposes (e.g. training) but will seek your permission if we do.

Your story belongs to you. We will not share it with anyone else without your consent. If you give consent, you will remain in control of how it is used and can withdraw it from being used at any time, by contacting the Community Neuro Rehabilitation Service on 01495 xxx xxx.

Your consent (please ring/sign each statement)

I have been told and understand the MSC process and how my story might be used.

Yes No

I consent to having my story recorded and shared with others for learning and development purposes.

Yes Yes, but with exceptions No

If Yes, but with exceptions, please state exceptions:

I wish my story to be anonymised.

Yes No

I understand that I can withdraw my story from being used at any time and know who to contact.

Yes No

Name:

Signature:

Contact details:

Appendix B: The Neuro Stute Recovery College

PARTICIPANT INFORMATION

We would like to invite you to help our learning by telling us about your experience with the Neurostute. Before you decide, it is important that you understand why the evaluation is being done and what it would involve for you. Please take time to read this information and discuss it with others if you wish. If there is anything that is not clear, or if you would like more information, please ask us.

What is the purpose of the Evaluation?

This evaluation is part of commitment to learning and continuous improvement. The purpose of this element of the evaluation is to collect the stories and experiences of people who have been involved in the Neurostute. The aim is to better understand the things that have been helpful, the things you value, and where things are going well.

The Most Significant Change method will involve recording your responses to open ended questions. These will then be used to create a single page "story". The stories we collect will be reviewed by a panel of senior members of the community and health, social, and third sector services. The goal of the panel is to promote learning and understanding about the things that people value about the Neurostute and its effectiveness in promoting change.

The stories and panel discussion will then form part of a written report.

Why have you been invited?

You have been invited to participate as you have recently engaged with the Neurostute as either a participant, peer partner (expert by experience), or as a professional (expert by training).

Do I have to take part?

No, you do not have to take part. Your participation is voluntary. Your decision to take part or not, will have no impact on your engagement with the service. This is regardless of your choice.

You may withdraw from the evaluation at any time within 8 weeks of participation. You will not be expected to give a reason. If you wish to withdraw at any point, please contact the researchers (details below). Your information will then be removed.

After 8 weeks, the stories are likely to have been analysed. This would make removal from the final report difficult. This is because this report is likely to combine themes from different stories.

You may also choose to provide your story anonymously. If you do this, all identifying

information will be removed from your story. This is except for information about whether you participated in the recovery college as a participant, peer partner, or expert by training.

What will happen to me if I decide to take part?

If you decide to take part in the survey, you will be contacted by one of our researchers to conduct a short open-ended interview where we will capture your story about a significant change that occurred as a result of engaging with our services. These stories are expected to take approximately 30 mins to capture by answering all questions.

The aim of the interview and stories is to explore what aspects of the service have had the biggest positive impacts in your experience. These stories will be collected using a brief interview schedule that will ask 4 open questions about an experience with the service that resulted in a meaningful change for the participant. These responses will then be summarised into stories that will then be reviewed by a panel of senior members of the community and health, social, and third sector services.

Panel members will attempt to select the most impactful stories and decide key themes for the service that arise from these submitted stories.

The aim is for future service development to learn from and build on the overarching themes highlighted from participant stories. This then provides a way of further embedding what is important to participants into the design of the service.

The themes identified by the Story Selection Panel will also be fed back to the Bevan Commission. This Commission is supporting the evaluation of the Recovery College as part of the Bevan Exemplar project.

The themes from the Selection Panels may also be included as part of publications or conference presentations about the Neurostute Recovery College.

How will my data and privacy be protected?

The responses you provide during the interview will be used as part of the evaluation of the Recovery College. This evaluation is being undertaken in the public interest to improve services. For this service evaluation, Aneurin Bevan University Health Board is the data controller for the information provided. This means that we, as ABHUB researchers, are responsible for looking after your information and using it properly.

As part of this study, you have the option to provide your information confidentially which will involve using the minimum personally-identifiable information possible. However, should you wish to provide personal details, this will be kept securely on the NHS database. Photos provided for the stories will also be stored within the NHS Wales firewall.

Data will be collected confidentially where requested.

What are the possible risks in taking part?

There are no foreseeable risks of taking part in the service evaluation. There may be the possibility that you find the recalling of aspects of your story difficult or distressing; if so, the interviewer will either offer a break, or discontinue the interview and assist you with any difficult thoughts or feelings.

What are the possible benefits of taking part?

The results of the service evaluation will inform future service development and improvement. Stories provided to the service through the evaluation may also be used to support publications exploring or celebrating the service's impact.

There is no direct economic benefit in taking part in the evaluation.

Who is organising and funding the study?

The service evaluation is being conducted as part of Aneurin Bevan University Health Board's drive for continuous improvement, and as part of the Bevan Commission Exemplar Programme.

Who has reviewed the study?

The Neurostute Recovery College evaluation has been discussed with the health board research and development team and reviewed by the Bevan Commission Exemplar Programme team.

What if I have any further questions or problems?

Please feel free to contact any member of the evaluation team with any further questions you might have regarding your involvement with the study.

If you do have an issue with any part of the evaluation, please contact the study lead (contact details below) to express either a concerns or complaints. Any complaint about the service evaluation will be taken seriously.

Thank you for taking the time to read this information sheet.

Contact details:

Appendix C: Most Significant Change Story Collection Pro-Forma

Date story gathered		
Name of person sharing their story		
Name of person gathering the story		
Contact details of person sharing their story		
Does the person sharing their story give consent for it to be shared with others? Note: For example by managers who want to learn from people's experience	**YES**	**No**
Details of consent (e.g. restrictions, request for anonymity etc)		
Background – a little bit about the person who is sharing their story (e.g. age, gender, location and situation) so that others can get a picture of them and their circumstances		
Opening question: Over the last 6 months, what good *changes* have come about from your participation in the Recovery College		
Second question: Which *one* of these changes is the most significant to you and why?		
Regarding this change - what it was like before?		
What it is like now?		
What do you think made the changes come about?		
Please give your story a snappy title for the story		

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About the Author

Dr Daryl Harris is a consultant clinical psychologist currently working within Community Neuro Rehabilitation. He has a BSc and PhD in cognitive neuropsychology from the University of Exeter and a Doctorate in Clinical Psychology from the University of Surrey. He is a Bevan Fellow and is a passionate advocate for the ideals and values of the NHS in Wales and the principes of Prudent Healthcare. He is also committed to updating these values and the practices they underpin to include a universal commitment to integrated care with a joined-up approach to physical and psychological wellbeing. In achieving this ambition, he is an enthusiastic advocate of outcomes focussed approaches to clinical and strategic decision making, continuous learning, and working in the citizens' space with everyone involved as active participants and equal partners in co-creating thriving communities.

Bringing joy and connection back at work in the NHS. What impact does co production work have on professional's wellbeing, practice and understanding of their purpose?

Dr Emma Johnston
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Abstract:

There is a need to bring back compassion, humanity and value into the Healthcare system. We also need to deliver care that considers staff wellbeing. Co-production is gaining popularity as a way to develop services to better meet the needs of the populations we are serving. But how might working alongside lived experienced people enhance how professionals work? This is a qualitative focus group study with 5 professionals who have trained alongside lived experience parent carers and then co facilitated groups together. The conversation is about their experiences of doing this and what effect it had on them. The main impacts were on understanding the perspectives of the families and their context better, their ability to bring more of 'themselves' into the work and to 'enjoy' work more. It also impacted on direct clinical delivery and created a sense of being in it together with others and not feeling the pressure of having all the answers. This has important implications for staff wellbeing and on prevention of staff burn out which is at the heart of the Health Education and Improvement Wales (2020) workforce strategy. Co-working and Co-learning and Co-delivering can have profound effects on professionals and on system change. Important directions for future recommendations are also provided.

Keywords: co-production, empathy, mutual learning, connection, belonging, burn out, well-being, system change

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Introduction

The purpose of this report is to explore what the impact of delivering co-facilitated groups (where there is an equal power balance for a professional and a lived experience practitioner) is for a professional. As a Clinical Psychologist I have been leading on the delivery of co-produced groups, called E-PAtS (Early Positive Approaches to Support) (Gore, Bradshaw et al, 2022) for over 4 years and have seen enormous value in them in various ways. They are designed to support families of children with developmental disabilities. This research report is about evidencing some of that impact, not in relation to the clients/ families that are being supported but on the professional health staff delivering them. As part of a recent leadership course called CLIMB I wrote and delivered my TED talk on this and how working in this way truly makes a difference. This talk forms the background to this research project.

In this project report, the background literature in relation to co production will be highlighted as well as what is already known about its impact and the support mechanisms needed for the cohort of children with developmental disabilities and their families that me and my service support will be discussed. It will then describe the methodology used to explore the professional's experiences and the results that were obtained. Finally, this report will discuss the impact of them and the relevance to clinical practice. The limitations to the study will also be considered.

Identification of project requirements

In an evidence-based NHS, it can be argued that one of the greatest challenges is to offer support to children and families that are outside of the traditional medical model. That is a need to move beyond randomised controlled trials focused on symptom reduction to support families to build lives that are satisfying, meaningful and valued (Repper & Perkins, 2003). This entails a cultural shift and organisational change to bring back compassion, humanity and value into the healthcare system (Shepherd, Boardman & Burns, 2010). We particularly need to do this for marginalized populations. We also need to deliver care that considers staff wellbeing as staff burnout is a significant burden in the Healthcare sector (Morse et al., 2012)

Co-production is gaining popularity within the health service as a way to develop services to better meet the needs of the populations we are trying to help (Welsh Government, 2015). However, it is not yet a key part of service delivery or embedded within pathways of care and is not easy to achieve (Dunston, Lee at al, 2009). Co-production was first conceptualised in the 1970s by academics in Indiana University, who described a lack of recognition of service users in service delivery (Realp and Wallace, 2010). It was then introduced into the UK during the 1990s by the King's Fund as a way of understanding relationships between clinicians and patients in health services.

In adult mental health services, there is a Recovery College Model which is helping people become experts in their own care and is founded on co-production principles. The Recovery College Model research has evidenced the "transformative powers" that enable people to become experts in their own care, co-production, breaking down stigma, providing peer support, decreasing isolation, having control and self-determination and promoting participation in the local community can have (Perkins et al., 2012). There is also a considerable body of evidence demonstrating the effectiveness of supported self-management education in conditions of all types (Cook et al., 2011). Supporting self-management is now defined by NICE as a key quality standard of adult mental health services, as part of the service user experience guidance (2011). What might this look like in services for children and families?

Recent research indicates that there is a larger need for interventions and support that target parental well-being and developmental outcomes for children with a learning disability (Heys et al, 2020). The National Institution for Health and Care excellence (NICE) conducted a systematic review of 15 Randomised Control Trial parenting programmes for parents of children with LD that were adapted from mainstream parenting programmes (NICE, 2008). The review found that all group programmes designed for parents of young children with LD focused on problems related to the child and on parenting skills. E-PAtS was deliberately not adapted from such mainstream 'parenting' programmes because many parents of children with GDD/LD are not lacking in generic parenting skills. E-PAtS is a relatively new group-based programme aiming to meet the specific and wider needs that families are often "battling" within the health system (Griffith & Hastings, 2014; Gore Bradshaw, Hastings, Austin & Sweeney, 2022). Prior to the implementation of E-Pats within Cardiff and the Vale, Professionals would see children and families in isolation and silos. Due to the

complexity of needs, no one professional can meet these needs for a family and so often the professionals feel a sense of responsibility and then disappointment at not being able to address many concerns.

Early Positive Approaches to Support (E-PAtS) is a service for families of young children with global development delay (GDD). It was developed under the leadership of Gore, et al, 2022). E-PAtS is a practical, clinical example of co-production. In this way E-Pats was co-developed by a professional and lived experience group (Gore et al, 2022); It is co-facilitated by a professional and a trained family caregiver with lived experience; and through group discussions, evidenced-based information sharing, recounting lived experience stories, practical exercises and reflective spaces, new ideas emerge that families can apply to their everyday lives. These E-PAtS groups have been delivered for 2 years now, and the question is how does being part of these co-produced groups benefit professionals?

There is some evidence from research into the Recovery Model (Skinner and Bailey, 2015) that staff report that the model focuses them on service users' personal goals, helps them recognize their expertise and strengths, listen to their views, and gives them a better understanding and hope for recovery. It also increased their empathy towards service users. These changes in attitudes, practice, and wellbeing are often attributed to co-learning, but the value of co-learning has been largely under-represented in current research focusing on co-production (McGregor et al., 2014). Co-learning has been linked to an increased sense of connectedness and parity with service users within the Recovery College model as well as increased empathy and understanding. Learning alongside service users as equals appears to encourage professional staff to understand and appreciate other perspectives, recognise commonalities, and reduce barriers. (Lambert and Barley, 2001; Le Boutillier et al., 2011). This paper seeks to understand this more in relation to service delivery in a child and family community service-delivery system because system change is needed and if this way of working could be shown to have a positive impact on the professionals, then the advantages of this way of working are increased. The practice-based evidence will grow as well.

Method

Design

The study was qualitative by design. It involved conducting a focus group discussion with professionals delivering E-PAtS groups to explore their experiences of running these groups within the early years' service system. Data was analysed using thematic analysis (Braun and Clarke, 2012). Thematic analysis is a research method used to identify and interpret patterns or themes in a data set; with the aim of creating new insights and understanding. The six-step process, as developed by Braun and Clarke (2012) was used. This was used to avoid confirmation bias when formulating the analysis.

Rationale

Erikson (1986) states that qualitative approaches allow for an exploration of an area where there is limited literature base. There is limited literature based on using co-production and co-learning within this service population, so it was felt that this was the most appropriate way to begin to understand this area. It was also felt that the exploratory nature of a qualitative approach would provide richer information than a quantitative approach.

Ethical approval

Ethical approval for this study was sought from the ethics committee within the School of Management, Swansea University. Several ethical issues were considered within this study.

Informed consent

All participants were asked to give their informed consent via an emailed consent form before participating in the study. It detailed information about the purpose, the procedure and what would be done with the collected information. It also ensured the participants that they had the right to withdraw at any time. All participants signed the consent form

Confidentiality

Each participant was assigned a code by the researcher to ensure anonymity. The researcher is the only person with the knowledge key to identify the participants. It was highlighted to the participants that if they

discussed anything potentially distressing to them, they could request a conversation with the researcher at the end of the focus group discussions.

Research sample/recruitment

All the professionals who had delivered an E-PAtS group in Cardiff and the Vale were asked if they would like to take part in a focus group conversation about their experiences of being part of the delivery of this project. Of ten individuals who were invited to participate, five agreed.

Data collection

A date and time was formalised to run the focus group. Due to staff working across areas, it was decided to use Microsoft Teams to conduct the interviews and record the content. Several questions were designed by the researcher and the graduate mental health support worker based in the team. Based on areas of interest and curiosity. They were used to guide the conversation about the impact of the professional facilitators' experiences. The conversation lasted about an hour and a half.

Data analysis

A qualitative thematic analysis (Braun and Clarke, 2012; Hennick, 2014) was conducted using the six-step process: familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing up. Familiarisation: The data was read thoroughly by the researcher, and some notes were taken to get familiar with it. Coding: The researcher highlighted sections of the text and came up with shorthand labels or "codes" to describe their content. Generating themes: Next the codes were looked at by the researcher to identify patterns among them, and to start coming up with themes. Reviewing themes: The researcher returned to the data set and compared themes with it. Asking questions such as: Are we missing anything? Are these themes really present in the data? What can we change to make our themes work better? Defining and naming themes: The researcher formulated exactly what was meant by each theme and figuring out how it helps understand the data. Naming the themes was carefully thought through and involved coming up with a succinct and easily understandable name for each theme. Finally, these were then written up in this report. The full list is shown in the appendix. During this process the researcher used her reflective diary to include hunches, explanation and modifications to themes. She also considered links to the literature.

Main Analysis/ Results

Based on an iterative process, 10 themes were developed from the focus group data. The table below shows these themes and example quotes.

Theme summaries

Table 1. Summary of the 10 themes and example quotes.

Themes	Participants who spoke about this	Example Quote
Professional fulfillment	3	*"Running it was just so enjoyable and seeing parents week after week after week, just try a tiny nugget of what they learned in the session and have the success to motivate them to do more week on week on week."*
Relational working	3	*"Having the opportunity to sit with families consistently over 8 weeks and build that familiarity with them and that relationship with them, that was lovely."*
Balancing fixing and facilitating	3	*"I was very, very conscious of not jumping in to fix or solve and just allowing the space to be what it was at the time."*
Removing pressure	2	*"From a professional point of view I have my knowledge and I know I can bring that to the sessions but I don't have the responsibility and expectation to have the answers"*

Changing service systems	4	*"Immediately after training as a professional facilitator it influenced how I triaged referrals into my service and the ways I ask questions. And then I framed my conversations with peers in staff meetings differently to help them understand learning disability*
An appreciation of what lived experience brings - To others	3	*"When X (parent carer facilitator) spoke, there was a lot of humour and it was lovely to hear her stories and see how the parent participants interacted with those stories and enjoyed hearing them"*
An appreciation of what lived experience brings- To self learning	3	*"I've got more knowledge and awareness from the training, but also from delivering with the parent carers."*
Relationships with families/ understanding context	2	*"Just seeing the reality, how constant it is for them. There is no respite. They haven't got family. Some of the parent participants it's just them and the child. So it's just constant"*
Knowing what matters (in terms of change) to families	4	*"What I really love about doing E-PAtS is the post traumatic growth. We go into really difficult things and we learn along the way and it has a positive impact on our outlook on life and relationships"*
Difficulties and Stressors	3	*"It was quite intense emotionally sometimes"*

Table 1A. Description of the 10 themes

Professional fulfilment	This theme is about how the impact of working in this way made professionals have a sense of satisfaction and enjoyment.
Relational working	This theme is about the impact of prioritizing working interpersonally.
Balancing fixing and facilitating	This theme relates to the choices professionals need to make when responding to questions, queries and comments participants make. It is about finding ways around this dilemma.
Removing pressure	This theme is about how working in this way appeared to support professionals to work in a different way. To focus more on the process and not having to offer an outcome.
Changing service systems	This theme is about how professionals change the way they think and work in relation to this client group.
An appreciation of what lived experience brings – To others	This theme is about standing back from the role of professional and observing the impact of working in this way on the participants in the group. It's about noticing humanity.
An appreciation of what lived experience brings – To self learning	This theme is about the **process of acquiring new understanding, knowledge, behaviours, skills, values and attitudes when working in this way.**
Relationships with families/ understanding context	This theme is about gaining a greater appreciation of the situation that many of the participants are in. This is about seeing the bigger picture, not just the problems.
Knowing what matters (in terms of change) to families	This theme relates to an understanding of the recognition of strength-based thinking and resilience.
Difficulties and Stressors	This theme is recognition that working in this way can have an emotional impact.

Discussion

These results indicated that all the participants felt a sense of professional and personal fulfillment from engaging in the delivery of E-PAtS groups. Participants found the work fun and enjoyable and felt they were really making a difference.

Participants felt that the work allowed them to build relationships with families that meant they began to understand the context and what it is like to parent a child with global developmental delay/ additional learning needs. This is similar to the evidence from research into the Recovery Model (Skinner and Bailey 2016) in that staff report that the model focuses them on service users' personal goals, helps them recognise their expertise and strengths, listen to their views, and gives them a better understanding and

hope for recovery. It also increased their empathy towards service users. Learning alongside service users as equals appears to encourage professional staff to understand and appreciate other perspectives, recognise commonalities, and reduce barriers. And this appears to go beyond the time in the actual group delivery. Many of the participants in this study reported that there was an impact on how they worked on a day-to-day basis and on their interactions with other staff. The flow of information gained and change in practice appears to be continual. The impact is on day-to-day delivery and interactions. Working in a co-productive way and co-learning also seemed to offer professionals a better sense of what matters to families and to see how this can be different to being told information or offered advice. Professionals could see the importance of assimilating information into obtainable ways *"When X (parent carer facilitator) spoke, there was a lot of humour and it was lovely to hear her stories and see how the parent participants interacted with those stories and enjoyed hearing them"*

Why is this important? Why is working in this way having this effect?

It appears to be in response to the integrity of the work and a fidelity to the co-production model. These groups follow a 'pure' co-production model and aren't simply just asking parents for their views and comments. This is so important and why Ross, Needman and Carr, 2016 amongst others, have sought to create clear guidelines as to how co-production should be done. The impact then is on relationally based work which allows emotions and shared experiences to come into the forefront making for a sense of connection and belonging which is vital to well-being. (Hong et al 2023). To feel connected, not lonely and part of a community, people need to feel like they belong. To feel this sense of belonging people, need frequent and enjoyable engagement with other people and for those interactions to be couched in a lasting framework of mutual concern (Baumeister & Leary, 1995). The beneficial health outcomes of belongingness for happiness and wellbeing are well documented (Myers & Diener, 1995; Tomaka & Palacios, 2006; Vaillant & Mukamal, 2001). Hagerty et al. (1992) furthered the construct of belongingness in their exploration of sense of belonging as a key mental health concept. They defined belonging as "the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment" (Hagerty et al., 1992, p. 173).

It is of interest then that the participants in this study also clearly articulated that working in this way helped to remove pressure and supported them to balance fixing and facilitating. In this work there can be a huge pressure to deliver quick and sustained change that is somewhat Clinician dependent and there is no doubt that is incredibly stressful. What is indicated here is the co-learning and co-delivery experiences allows this pressure of expectation to be removed, facilitating learning and change. Working in this way appeared to bring back compassion, humanity and value into the Healthcare system (Shepherd, Boardman and Burns, 2010). Moreover, delivering care in this way reduces staff burnout and increases wellbeing and can have profound implications for both personal wellbeing and professional development. This suggests how useful it would be to think about how the co-design/ co-learning co-production work can happen more and be embedded into the early years system of support.

However change to systems is extremely difficult. The Heath Foundation (2015) found that there are huge barriers to change within the NHS due to the system issues. The biggest three of these being greater instability of organisational structures than within the private sector, less improvement experience amongst staff and fewer incentives to improve. Being able to show impact on wellbeing is an important part of supporting motivation to change. In the 10 year A Healthier Wales work force strategy (HEIW, 2020) that was produced by HEIW, wellbeing for NHS and Social care staff lies at the foundation of what happens. This co-produced work might make a vast difference to wellbeing at work.

Additionally, when thinking about system change, it is interesting that several participants identified ways in which they had directly changed their day-to-day work or process as a result of being involved in this co-production work. This is so interesting to think that this has come from the Clinicians directly as a result of what they have experienced and appears to organically grow. This suggests some change is possible, quickly and does not need a new strategy or policy in order to try and implement it. So much can be learnt from this going forward.

Limitations

In this study there are several limitations. The sample size was small and only one focus group was run. This was due to the professionals having limited time in which to attend a focus group and because of

limited time to collect the data. It would be useful in future to run at least one further focus group and to include more professionals in the conversations. This was a qualitative study, and no quantitative data was collected. In order to triangulate the data, it would have been useful to have some quantitative data collection that also included information such as how many groups the professional had run, what their profession was and the number of years in their role. The data collected was from professionals working with only one client group which was what was required for this study as the groups the professionals facilitate are for a specific client group but it would be of interest to conduct focus group discussions with other professionals who co-facilitate groups with lived experiences practitioners to other child and family cohorts and to see if similar themes emerged. The participants all knew they were part of a research study and the groups were conducted by a senior member of the organisation so this could have biased the results. It was useful for the researcher to run the groups themselves as it allowed them to be immersed in the data to extrapolate the themes, but it is important to consider if this biased the conversations in any way or indeed influenced what was elicited and it might be useful in future to have an external person conduct the focus groups.

Conclusion

It was found that the main impacts on the professionals in this qualitative focus group study were on their understandings of the perspectives of the families, and they felt they understood the family's context better. This was because they were building relationships with the people in the room. They also had the ability to bring more of 'themselves' into the work and to 'enjoy' work more. This created a sense of being in it together with others and not feeling the pressure of having all the answers. Working in this way helped to remove pressure and supported them to balance fixing and facilitating. What is indicated here is the co-learning and co-delivery experiences allowed this pressure of expectation to be removed, facilitating learning and change and impacted directly on clinical delivery. This has important implications for staff wellbeing and on prevention of staff burnout which is at the heart of the Health Education and Improvement Wales (2020) workforce strategy. Co-working and co-learning and co-delivering might have profound effects on professionals and on system change.

Key Recommendations

It would be useful to think about how the co-design/ co-learning co-production work can happen more within the early years system and to ultimately be embedded into the early years system of support. This could entail developing co-produced 'follow up' workshops where a professional and a parent carer co- develop and co-deliver the materials.

At the moment the lived experience voice in Cardiff and Vale UHB child and family services is only part of the work supporting children with developmental delays and their families, but this could be broadened out to offer this within Child and Adolescent Mental Health and Learning Disability services as well as Children looked after services.

The impact of working in this way also suggests it would be useful to see if this could be applied to parents/ professionals of other client groups where experiences can be isolating and emotional and psychoeducation can be helpful. Co-designed and co-developed groups could be delivered to other family inpatient settings such as diabetes and oncology services.

It is important to note that this way of working does not come without its difficulties. The professionals in this study explained some of the personal stresses and strains they felt. This is culturally a different way of working and professionals find it quite emotional at times. It is suggested therefore that more focus could be on supervision for them to support these experiences as well as training to support better understanding of group dynamics and processes.

It is also important to remember that these results are based on conversations with 5 participants in one focus group. It would be interesting to see if these themes and ideas held true for others. It might be helpful to create a quantitative survey from these results to ask all E-PAtS facilitators to complete. It might also be useful to research the impact of being involved in the co-designed and co-delivered training that the professionals participate in alongside the parent carers before they even deliver the groups. Do we see some of these cultural shifts beginning back then?

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Appendix E: Themes with corresponding quotes

Theme 1: Professional Fulfilment	*Participant 2* *"It was rewarding. You get the reward inside, feeling you were making a difference"*
	Participant 1 *"Its given me that extra layer"*
	Participant 3 *"Running it was just so enjoyable and seeing parents week after week after week, just try a tiny nugget of what they learned in the session and have the success to motivate them to do more week on week on week."*
	Participant 3 *"There was lots of laughs there and lots of fun and it was deeply enjoyable and satisfying to be honest with you. It was really nice"*

Theme 2: Relational Working	*Participant 3* *"Having the opportunity to sit with families consistently over 8 weeks and build that familiarity with them and that relationship with them, that was lovely."*
	Participant 1 *"This parent participant, she had a willingness to say actually I feel really embarrassed saying this out loud but its what I do.[I feel that is quite big. To stand there and to feel she wasn't going to be judged by us"]*
	Participant 1 *"One of the parent participants came to a follow up coffee morning and I hadn't expected her to and she gave me a massive hug, which was just so touching for me"*
	Participant 4 *"They (Parent participants) said more than I expected them to. So open in sharing things"*

Theme 3: **Balancing Fixing and Facilitating**	Participant 1 *"I was very, very conscious of not jumping in to fix or solve and just allowing the space to be what it was at the time."*
	Participant 3 *"I would always check in with my parent facilitator every session (that) I didn't talk too much to make sure that I'm allowing them the space to come to their own conclusions. Have their own discussions."*
	Participant 2 *"(The parent carer facilitator helped me) not to try and fix and talk too much"*
Theme 4: **Removing Pressure**	*Participant 3* *"From a professional point of view I have my knowledge and I know I can bring that to the sessions but I don't have the responsibility and expectation to have the answers"*
	Participant 2 *"The families had just started their journey so know very little and just sharing some information (Evidence based materials) and feeling that was making a difference"*
Theme 5: **Changing service systems**	*Participant 3* *"Immediately after training as a professional facilitator it influenced how I triaged referrals into my service and the ways I ask questions. And then I framed my conversations with peers in staff meetings differently to help them understand learning disability"*
	Participant 4 *"So the impact is broader than just running a group. I'm actually embracing the E-PAtS facilitator out there in all aspects of my role"*
	Participant 2 *"So it's giving me ideas that I can offer parents in other settings like stay and play sessions"*
	Participant 3 *"E-PAtS is integrated into what we signpost families too now within our service" and "I've encouraged special school staff to consider being trainers because it would fit there and support and scaffold my role there"*

Theme 6: **An appreciation of what lived experience brings –** **To others**	*Participant 1* *"It was seeing how much they (parent participants) enjoyed what X (parent carer) had to bring. There aren't words to explain. It was just seeing she understood"*
	Participant 1 *"When X (parent carer facilitator) spoke, there was a lot of humour and it was lovely to hear her stories and see how the parent participants interacted with those stories and enjoyed hearing them"*
	Participant 2 *"Hearing how long it had taken X (parent carer facilitator~) to reach the point she was at now and her being able to empathise with the parents who are in the place she remembers being in"*

Theme 7: **An appreciation of what lived experience brings-** **To self learning**	*Participant 3* *"I've had a lot of training in my role but I've learnt so many new things through this"*
	Participant 2 *"I've got more knowledge and awareness from the training, but also from delivering with the parent carers."*
	Participant 1 *"My language is slightly different. It's just a different way of wording things that maybe if I'd said things before, I may have said it in a more complicated way, but this is more simplified I guess."*

Theme 8: **Relationships with families/ understanding context**	*Participant 2* *"(Hearing my parent carer facilitator speak and the parent carer facilitators) gave me a better understanding of their day to day lives. You have more empathy for the challenges they face"*
	Participant 2 *"I've just got so much more knowledge from doing the training and delivering with parent carers. Both had children at different ages and stages and that was good to see what was beyond a certain stage"*
	Participant 2 *"Just seeing the reality, how constant it is for them. There is no respite. They haven't got family. Some of the parent participants its just them and the child. So it's just constant"*
	Participant 1 *"Reminded me why its so important for families to meet each other"*
Theme 9: **Knowing what matters (in terms of change) to families**	*Participant 1* *"(the groups) have reminded me why it's so important for families to meet each other"*
	Participant 3 *"The E-PAtS language just seems to make sense to families"*
	Participant 2 *"It (the groups) kind of like bring the information to life, to action, you know. Hearing people talk about their children"*
	Participant 3 *"I can see now that allowing people to self discover is what would work for them. Rather than simply following my assessment and feeding back from that"*
	Participant 4 *"What I really love about doing E-PAtS is the post traumatic growth. We go into really difficult things and we learn along the way and it has a positive impact on our outlook on life and relationships"*

Theme 10: **Difficulties and Stressors**	*Participant 1* *"It was quite intense emotionally sometimes"*
	Participant 2 *"It's a bigger time commitment than I originally realised"*
	Participant 4 *"I think we need to develop more training in managing group dynamics and supporting people emotionally when they are distressed"*
	Participant 4 *"Encouraging people to share their stories, we will hear pain and we need to support facilitators with that more"*

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Speech, Language and Communication (SLC) in the Early Years: Public Health and everybody's business.

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Abstract:

Speech, language and communication needs (SLCN) are the most common type of additional learning needs in Wales with 4.8% of school children having SLCN (Pupil Level Annual School Census (PLASC), 2023). If unaddressed, this has lifelong impacts for education, wellbeing, mental health, youth offending and employment: 81% of children with emotional & behavioural disorders have communication needs not previously identified (Hollo et al 2014) and lower vocabulary scores at 5 makes you twice as likely to experience periods of unemployment in adulthood (Law et al 2009). However modest investment into training early years practitioners can have a huge impact on SLC outcomes (Education Endowment Foundation 2023).

There is no standard training on SLC development within the Health Visitor Specialist Community Public Health Nursing course, professionals who play a key role in identifying and supporting early years SLC needs (SLCN). This project focused on utilizing the skills within an integrated workforce by delivering a training package to Health and Local Authority (LA) practitioners within the early years across Gwent in order to make SLC an integral part of each and every contact with families.

The project has a second key element of developing and piloting a bespoke contact tailored to the needs of the populations within Gwent following stakeholder engagement. The project core aims centered around prevention, early identification and support for SLCN.

Key findings: SLC training increased practitioner confidence, caregivers responded to a dedicated SLC contact to become more responsive and confident in helping their child learn to talk. Capacity was saved at both targeted language interventions and specialised Speech and Language Therapy service from tracking referral and engagement patterns over the course of 14 months. The project demonstrates the value in public health focused Speech and Language Therapy roles and identifies key recommendations for further research.

Keywords: speech and language, Health Visitors, Early Years, communication development, prevention, learning to talk, integration.

Acronyms, Tables, and Figures

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Introduction

Speech, language and communication needs (SLCN) are the most common type of additional learning needs in Wales with 4.8% of school children having SLCN (Pupil Level Annual School Census (PLASC), 2023). If unaddressed, this has lifelong impacts for education, wellbeing, mental health, youth offending and employment: 81% of children with emotional & behavioural disorders have communication needs not

previously identified (Hollo et al 2014) and lower vocabulary scores at 5 makes you twice as likely to experience periods of unemployment in adulthood (Law et al 2009). However modest investment into training early years practitioners can have a huge impact on SLC outcomes (Education Endowment Foundation 2023). Language has been identified as an indicator of well-being (Law et al 2017) and should therefore be seen as a priority area in the Early Years to ensure that children have the best start in life.

The most important predictor of language abilities is the communication environment, and the environment is strongly linked to a child's ability to use words at 24 months (Roulstone et al 2011) and Early Years professionals have a role in promoting SLC skills within the home learning environment, with the people who know the child best. Particularly in the early years, a Speech and Language Therapist is not the agent of change for a child and focus should be on enabling and empowering those who spend the most time with the child, (the main caregivers) to support SLC in natural, everyday interactions using proven strategies such as contingent talk (McGillion et al., 2017), reducing screen time (Alroqi et al 2022), engaging in play to expose children to new words and ideas (Tamis-LeMonda & Schatz, 2019) and expanding on children's utterances (Levickis et al 2014) so raising awareness of this is fundamental. There is no standard training on SLC development within the Health Visitor Specialist Community Public Health Nursing course, yet they are a key professional who have established relationships with families who can promote SLC and identify those needing support.

The training package used in this project had been co-produced by The Heads of Health Visiting for Wales and The National SLC Co-Ordinator's in Welsh Government. In a national survey in England, from Public Health England and the Institute for Health Visitors 96% of Health Visitors stated they wanted more training on SLC and an e-learning package for NHS staff was developed (NHS Learning Hub 2024) and in 2021 Health Visitor leads in Wales agreed that "Health Visiting workforce would value SLC training, and that there would be no need to conduct a survey in order to establish this" (Welsh Government 2024). The need was evident so the leads for Health Visiting co-produced a training package in line with the 'Talk With Me' delivery plan for Wales (Welsh Government 2020) which includes objectives focused on upskilling the workforce and raising the public's awareness of SLC.

The project had a second key element of exploring how children are screened for language difficulties in Gwent. A recent screening review identified that out of 108 tools used across Wales to screen for SLCN, none are fit for purpose (Baker et al 2022), so the project aimed to collate the available evidence into a bespoke contact tailored to the needs of the populations within Gwent.

At the beginning of the project local context supported the delivery; Gwent was named as the first Marmot region in Wales (Aitken 2022) due to the work undertaken aligned to Marmot principles of tackling the social determinants of health. Core Marmot principles and elements of the project revolve around enabling children to maximise their potential and strengthening the role of prevention so there was a local appetite to support projects with a population focus.

This paper will outline the training delivery and development of the bespoke contact point with analysis of outcome measures and recommendations for further work.

Identification of Project Requirements

Integration and transformation are at the heart of this project, supported by funding post COVID19 as part of short-term pilots in certain Local Authority (LA) areas of Wales (Andrews et al., 2022). Historically, Health Visitors have either had Flying Start (FS) or non-FS caseloads so there was a disparity between what training individuals have accessed depending on their roles. In Aneurin Bevan University Health Board (ABUHB), there is a focus on integration as part of the Early Years Integrated Transformation Programme (EYITP) and at the time of this project starting, Health Visiting caseloads had merged, no longer separating teams into FS/Non-FS. So, it was agreed that this training would be offered to all Health Visitors, skillmix (support staff who delivered elements of the service e.g., Nursery Nurses/Healthcare support workers) and LA Family Support Teams who may be providing packages of care to families alongside Health Visiting. The aim being to maximise capacity across all teams who have contact with local families and support SLC at the right time, in the right place and with the right person, rather than escalating all SLC concerns to Health Visitors or early language teams, aligned with prudent healthcare principles (Welsh Government 2019). Since COVID19, anecdotal reports consistently say that there has been an increase in children presenting with SLCN (Watkinson 2023; Thomas 2022). In ABUHB, the number of referrals being made noting social

communication concerns have increased, and this makes it more important than ever to manage those with transient SLC needs that can be resolved with targeted advice, and prevent unnecessary SLCN and referrals, to enable those children who need specialist intervention to be prioritised in NHS services. Vacancy rates in SLT service have been called 'troublingly high' following surveys done by the Royal College of Speech and Language Therapists and the vacancy rate in NHS Children's services in Wales are 11% (Phillpot, 2024) which highlights the need to maximise capacity in existing teams even more.

It has previously been found that although 10% of all children will have long term SLCN (Beard 2018) it has previously been suggested that in some areas up to 50% of children start school with SLCN (ICAN 2009) and this is consistent with previous studies finding a link between living in poverty and a higher likelihood of having SLCN (Hart and Risley 1996) which may be transient in nature and likely to be linked to language learning opportunities created within the child's environment. This project harnessed this thinking and focused on a preventative approach to SLCN and empowering those around the child to create opportunities where language can develop via upskilling the workforce and having a dedicated contact point for SLC within the universal provision offered to families with young children in Gwent. The focus of this project was on universal and targeted levels of service, which children must access prior to being referred to NHS Speech and Language Therapy (SLT) in ABUHB as targeted input may be enough to resolve early language concerns. Although a gradient has been found in research between socio-economic status and language difficulties, some have critiqued the idea of the 'word gap' coined by Hart and Risley (1996) and theorised that differences in how parents expose their children to language are exactly that, a difference, rather than a deficit (Kuchirko 2019). Issues with the methodology relating to sample size and the extrapolated '30-million-word gap' figure are also highlighted. This, alongside Welsh Government's phased expansion of Flying Start (an Early Years entitlement where SLC support is one of four core strands, based on areas of social depravation) (Welsh Government 2024) gave the project a whole population focus rather than an approach involving a postcode-based system.

The project had key aims:

Overarching Aim

Improve the quality of practice in the whole early years team, around SLCN prevention, identification and support and use a person-centred way of 'screening' for SLCN.

- **Objective 1**: Upskill the Health Visiting and Local Authority Family Support workforce across Gwent, increasing confidence to deliver high quality SLC promotion and support.
- **Objective 2**: Develop a contact point (The 'Talk With Me' contact) around SLC tailored to the needs and wants of the Gwent population.
- **Objective 3**: Save staff time and impact engagement with targeted and specialised SLT services.
- **Objective 4**: Increase caregiver confidence to interact with their child in a way that helps them learn to talk, and their use of responsive interaction strategies.

Delivery

At the start of the project a survey scoping caregiver experiences of having practitioners review their child's development was sent out on social media channels.

There were 22 respondents, 19 of which met a criterion that they'd had a developmental review in the previous 6 weeks for their child who was 0-36 months. Key findings from the responses are shown below:

- 47.3% - Learning to talk had not been discussed at all
- 57.9% - What is expected of their child for SLC was discussed
- 5.3% - A specific idea was discussed to support their child's SLC
- 10.5% - Signposted to the 'Talk With Me' website
- 68.4% - Had not done anything differently since the session
- 57.9% - Responses to the question 'Did the visit help you feel more confident to support your child's speech and language development?' are outlined in figure 1. No parents rated 'quite a lot'.

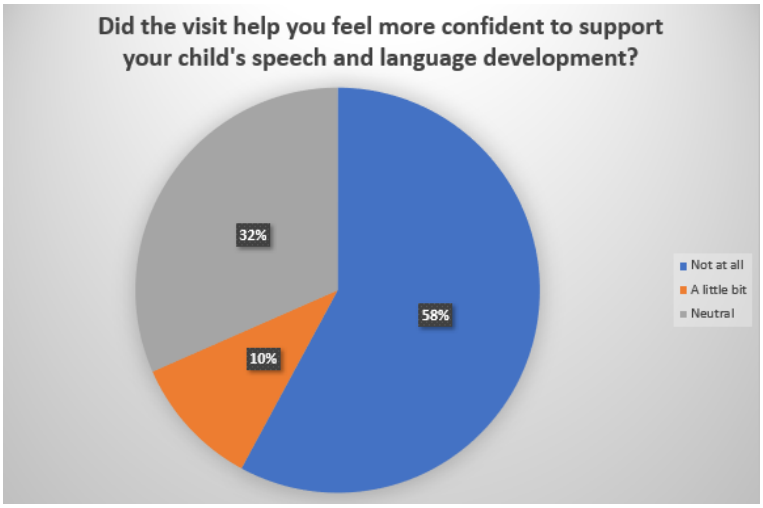


Figure 1: Baseline caregiver responses.

Respondents, on average rated themselves a 6.74 before the session and 6.83 after the session on a 1-10 scale of how confident they feel to support their child learn to talk. The following comments were shared which reiterate the experiences of parents at this time:

"*This was not covered at all during our session. I think that just because my child's speech is good does not mean I should not receive guidance like other parents do".*

"Would be nice to have more support at earlier visits, and direction of what to do and how to support"

"Researched ideas online as I wasn't offered any ideas"

This feedback was largely negative in relation to the service being provided within developmental reviews in terms of specific SLC promotion and clearly demonstrated the value in working to improve this. In particular this survey highlighted the need for more dedicated time to discuss SLC development and a focus on empowering caregivers to feel more confident in interacting with their child in ways that support them to learn to talk.

The training package was already in existence (Welsh Government 2024) having been created for Health Visiting workforces. In ABUHB the EYITP steering group was approached to suggest that the training offer was integrated with the LA's, as these staff may deliver packages of care to families alongside Health Visiting and SLC is everyone's business. This was agreed and the training rollout was offered to all Health Visiting staff and Family Support teams across the 5 local authority areas of Gwent as a mandatory training. The first session was delivered to Health Visitor Clinical Practice Educators and feedback was gathered about whether they would be able to co-deliver this, as is best practice. Some felt able to deliver, and some felt the content was too specific to be delivered by a non-SLT. Due to the extreme workforce pressures within Health Visiting, it was agreed that co-delivery was not possible.

Methods

The research used a deductive approach as the benefits and expected outcomes could be identified before commencing the delivery. As highlighted in the literature review, there is established evidence r.e the effectiveness of training and communication environments and these were used as core underpinning elements, tested together as a package of deliverables. A mixed methods approach was taken as a holistic approach to capture the person-centred nature of improving caregiver experiences and co-designing with stakeholders, alongside concrete outcomes related to specific metrics. Both qualitative and quantitative information bring value to the findings as some outcome measures lend themselves to numerical data but as the design of the contact point was aiming to improve experiences, it was essential to also take individual thoughts and feedback into consideration as part of the contact point design. As it was delivered in a practical setting in the real world, it has an action research design and utilised a longitudinal time horizon as data was gathered over the course of 12 months (Saunders et al 2007).

Electronic evaluations on MS Forms were used in all training dates to gather feedback from participants on the value of the training.

To develop a dedicated 'Talk With Me' contact for SLC that meets the populations of Gwent's needs, various stakeholder engagement activities were undertaken, outlined below.

Surveys

Two surveys were used, to specifically target feedback from caregivers and practitioners to share their views and shape the design of the contact point. Some questions remained the same for both groups and some were tailored to the target demographic. Caregiver surveys were shared on social media pages (ABUHB Facebook and Instagram pages for the Health Visiting team and the Children's SLT team) and QR codes given out to parents within targeted language interventions. Staff surveys were disseminated via Health Visiting and Local Authority managers to those staff who accessed the 'Talk With Me' training element of the project.

In person discussion

Researchers visited existing universal and targeted interventions to talk to caregivers. Some set questions were used however the discussions with semi-structured in nature to allow for individual's own experiences and views to be fully explored. Set questions specific focussed on SLC included:

- How did you find out about this group?
- During visits with your Health Visitor have they suggested ideas to try/websites to look at (if yes what were they?)
- What is the most important thing for you, after you've had a visit from a professional?
- What makes you feel like it was a success and a good experience after they've left?
- Do you have any general feedback on your experience of having reviews for your child or the process of getting to the group?
- What type of resources do you like? (e.g., booklet, video, links, QR codes etc.)
- How many strategies are realistic for a professional to share with you?

Focus group

A focus group of Health Visitors from one LA area and skillmix (11 staff present and video available) was also conducted prior to the pilot of the contact point.

The rationales for choosing these methods were related to various factors. As the project was delivered alongside typical work and within a set brief time frame, achieving a representative sample of caregivers to share their experience, to generalise findings was not achievable. As participants were mainly identified through being in attendance at universal or targeted language interventions the method was non-probability convenience sampling, and this was acceptable for the project as the discussion could draw out rich information that allowed for co-design of the contact point with an awareness that this could be further refined through piloting and continuous feedback over a longer period of time. However social media surveys were used to supplement the in-person discussions, although it's important to note that both attending interventions and responding on social media are likely representative of engaged and activated caregivers so over a longer period of time it would be important to also seek the views of families who are harder to reach or do not engage in interventions. There was an element of snowball sampling, as all participants engaged in discussion at interventions were asked to share a QR code with any other parents they know and it's likely this contributed to the responses on social media however responses were anonymous so identifying the proportion 'referred' by those in intervention groups is not possible.

For staff engagement, all staff had the opportunity to respond to the survey and all responses were anonymous. The focus group was chosen in relation to the LA area that volunteered to pilot the contact point first, so this group were sampled using convenience sampling in order to maintain momentum and begin the pilot.

Ethical considerations were taken when designing the project and mainly focussed on the data collection and stakeholder engagement elements. Written forms of data collection including surveys for caregivers

included information at the start around Aneurin Bevan University Health Board's privacy notice and confirmed that all data gathered was anonymous. It also explained that taking part was optional and what the purpose of the survey was; to better understand the experiences and views of Gwent families in order to improve services. Respondents were made aware that the content would be shared outside the Health Board and outlined the inclusion criteria to target the relevant population. For staff surveys, they were also provided information that responses were anonymous and what the purpose of the survey was.

Within in person discussions (at universal and targeted language interventions), the researcher gave a group introduction to explain the purpose of the visit was to engage with anyone who was comfortable to share their views and respond to specific questions and that all information was recorded anonymously. Taking part was optional and parents could opt to complete the online survey using a QR code if they preferred.

Main Analysis

SLC training

Training took place in local venues across 23 dates, from January 2023-January 2024, co-delivered by the regional SLT and a local SLT (although occasionally the regional SLT delivered alone). 297 staff accessed the full day of in-person training and 219 completed the evaluation form. Feedback was collated and shared with the National SLC co-ordinators periodically. The rollout of training has reached a huge number of early years workforce across Gwent (figure 2). The training aimed at increasing the quality in which SLC is discussed, needs identified, and supportive strategies recommended. This has extended to the integrated Health and LA workforces to ensure every contact with every family can involve high quality SLC prevention or identification.

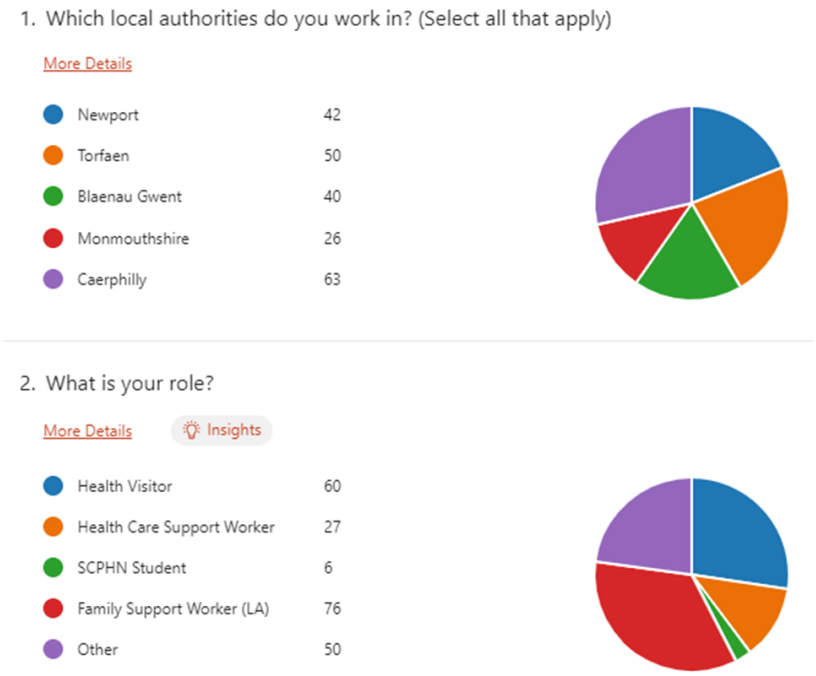


Figure 2: Breakdown of training participants.

One of the biggest impacts is on staff education and training. Of the 297 who attended, 219 completed an online evaluation form where a mixture of quantitative and qualitative information was gathered. The chart below shows changes in confidence before and after training (both gathered as a reflective rating at the end of the training day) for various elements covered within the training (figure 3).

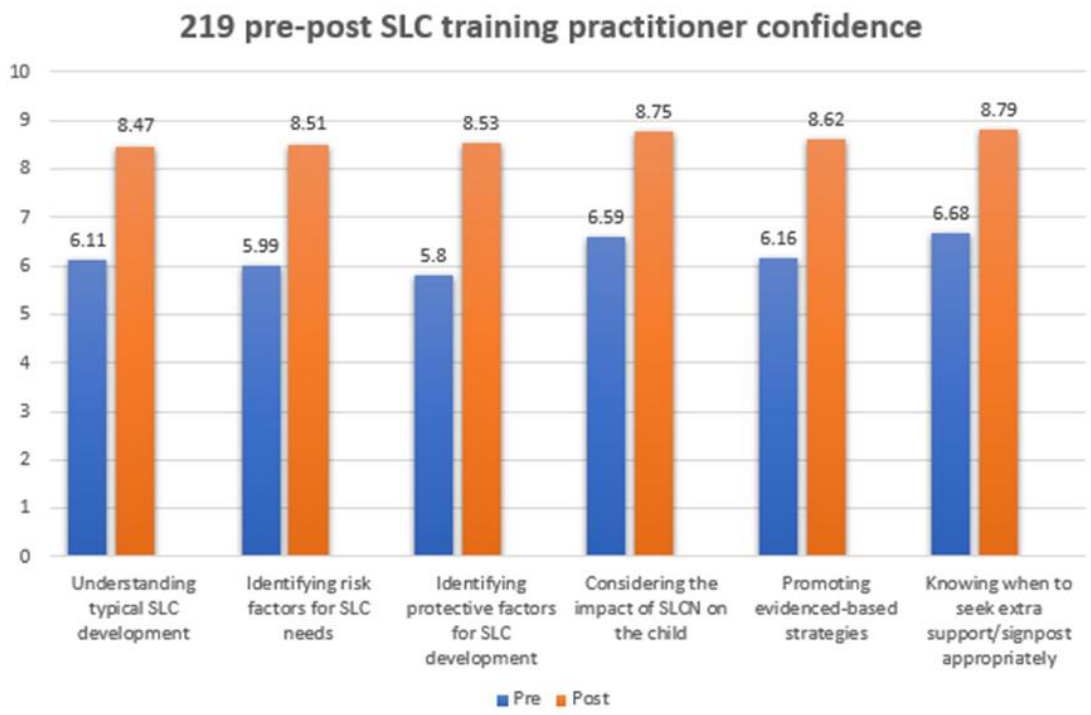


Figure 3: SLC pre/post training confidence ratings.

Overall, confidence increased from 6.22 to 8.61 on average on a scale of 1-10. Respondents to the evaluation varied from practitioners with previous SLC training and decades of experience, to some who have never accessed a training on SLC before.

The evaluation also provided several comments indicating that staff felt better equipped to support SLC rather than immediately making a referral to the SALT service, which aligns with the aim to better utilise the workforce capacity and have everyone support SLC in every contact:

> *"Looking for more ways to support speech without a referral to SALT, and being more confident to do this"*
>
> *"Importance of the early intervention before referring to specialist service".*
>
> *"More strategies to support families with speech needs. Increased awareness of community services available and protective and risk factors for speech".*

Key themes were identified in responses to questions about what most useful and what practitioners were taking away to use in their practice.

Table 1. Showing the top five themes identified within training evaluation responses.

Theme	Supporting quotes from training evaluation responses
Resources to share with families	"Really useful to look through the website, breaking it down and looking at info to share with families". "Having good resources to give out and use Having more knowledge about SLCN Feel more confident about talking to parents about SLCN". "10 tips & resources available to parents and professionals" "Showing parents the timetable for how much impact is coming from them and how they are so important rather than them thinking we are able to "fix them" in one hour"
Familiarisation with the 'Talk With Me' website	"Collectively it was all very helpful to my role, specifically the website and materials and information regarding pathways" "All the elements of the Talk with me website and all the relevant information" "Really useful to look through the website, breaking it down and looking at info to share with families". "The walkthrough of the talk with me website"
Research on the importance of gesture development	"The importance of gestures around 9 months" "discussing the key points that parents can do to help with the childs language for example gestures, talking about the importance of talking time to respond and engage in their child" "Made me think about when children can not point and the relevance this is in their communication skills" "'Show' gestures and how by an adult labelling the said item it can lead to pointing and more vocabulary. If this doesn't happen the impact this can have on the child"
The COM-B behaviour change model (Michie et al., 2011)	"Learning the COM B model" "The behaviour change approach, but to be honest all of it was fantastic" "The capability, opportunity, motivation and behaviour model". "The model using capability, opportunity, motivation and behaviour, was very useful".
Information on bilingualism	"Learning about speech, language and communication needs for children that may be bilingual" "Refreshing on bilingual homes and children learning dual languages eg welsh and English" "For bilingual children - The importance of speaking in your more confident language" "Benefits of more than one language"

These themes and comments indicated that the training would make an impact on referral decisions, specifically whether it is the right time for a referral, the likelihood of the child making spontaneous progress and the understanding of targeted level services that are available prior to seeking NHS Speech and Language Therapy.

Health Visitor students attending the training verbally expressed that they wish their course contained more practice-based information like the SLC training.

From the evaluation, 86.2% of practitioners agreed or strongly agreed that the training will speed up the time taken to find resources to give to families about SLC. Feedback has also led to the creation of new resources (bilingualism factsheets and speech sound process crib sheets) to fill gaps in public facing resources the workforce needs to share with families.

A key impact of the project is the more efficient use of the workforce. Without integrated training, most SLC concerns would be redirected to Health Visitors who are under enormous workforce pressures. From integrating the training to including Family Support Teams, a workforce who can embed SLC into interventions they are already providing to families has been created. This also saves families having various people involved at once (something which is known to be a priority for families, to have one trusted and consistent person). Each time a Family Support worker can utilise their SLC knowledge, they potentially save a session for a Health Visitor who previously may have been asked to go out and visit their family to support SLC concerns. The focus on caregiver strengths and confidence also enhances this further, as it aims to help them as the expert in their child, support their SLC in everyday life where specialist intervention is not required for their child to progress.

SLC contact point

A total of 45 survey responses were received across staff and caregivers as outlined in figure 4:

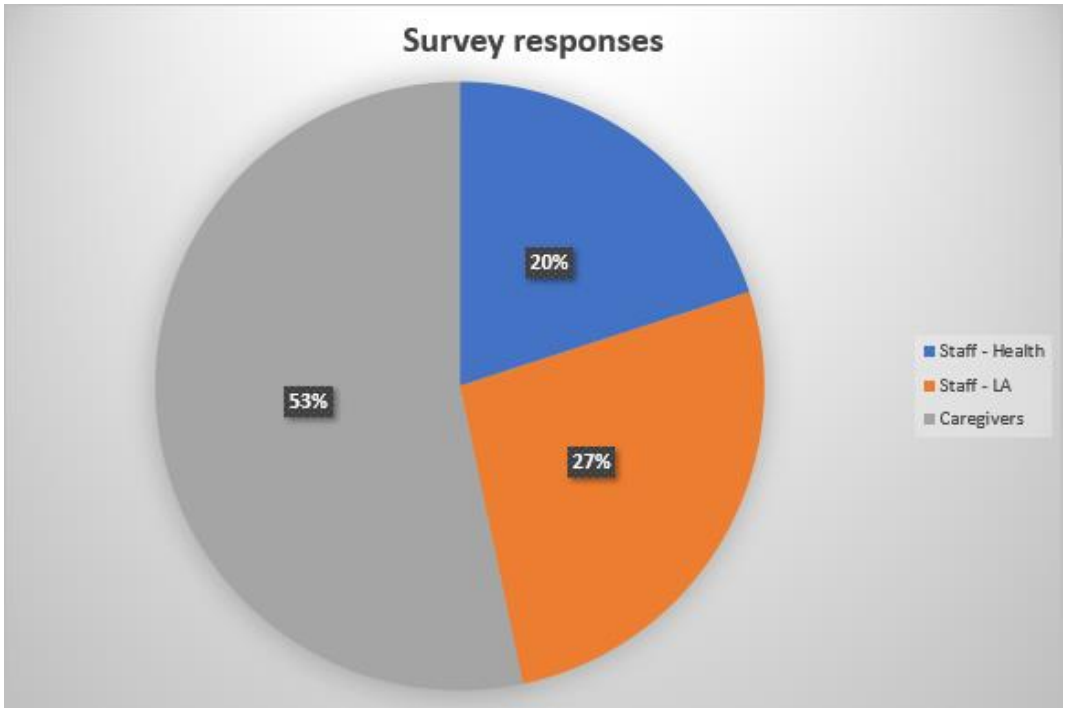


Figure 4: Breakdown of stakeholder engagement survey responses.

Within in-person discussions, researchers accessed 39 families (32 Mothers, 4 Fathers, 1 Auntie, 1 Foster parent). Through the stakeholder engagement activities, themes were identified around what caregivers want as part of their responses to questions such as:

When you have a visit/appointment to talk about your child's development, what's important to you?

When you have an appointment with someone such as a Health Visitor, what makes you feel like it was a success once the session is over?

Table 2. Showing seven themes identified within caregiver survey responses and in-person discussions.

Theme	Supporting quote from caregivers
To feel listened to	“Feeling happy and confident afterwards, like I have been listened to”. “Someone takes time to listen to my worries” “That I'm listened to, don't feel judged but supported. Not just a tick box occasion”. “They ask friendly questions about me and family and actively listen”. “When they leave and you feel a sense of relief because they’ve listened, supported you & helped with any issues”.
Concerns taken seriously	“Take my concerns seriously and don’t say she’s just immature and will grow out of it”. “That professionals take my concerns seriously” “Acknowledging concerns raised” “That my concerns were not brushed off and there will be some kind of follow up”.
The session to not be rushed or feel like a checklist	“Eye contact, smiles, showing engaged with what you're saying not rushing to next thing”. “That they take the time to watch/listen to our child and ask appropriate questions. This is much preferred to asking 'tick box' questions”. “Feeling like they're listening, not just ticking boxes” “Not feeling rushed, being able to ask questions and them being taken seriously and not brushed aside” “I don’t like it when the session is an obvious checklist. The questions need to flow so if I say something and you can ask more rather than just moving onto the next thing. Sometimes my answers made no sense with what they asked next”.

More time to discuss concerns	"Someone takes time to listen to my worries" "To be given sufficient time to be able to explain any issue that have risen and be given advice on what I can do".
Reassurance	"Reassure me on the things I'm doing right and give me advice on what I could do better" "That I feel reassured in areas I'm doing well and encouraged. Amy areas for improvement put across as 'and here are some other ideas/things to try'". "If I have been reassured and given advice about any problems I may have"
Time to discuss SLC	"Would like some dedicated time to talk about SLC earlier because if it's too late there's no one to turn to". "I think that just because my child's speech is good does not mean I should not receive guidance like other parents do". "An extra session about speech would be helpful because there's so much to go through in the reviews so when I voiced concerns there's only 2 minutes for a quick chat and to agree to the referral and then we had to move onto the next thing. I wanted more time to explain why I was worried".
To hear what they're doing well	"Having support from the HV to understand things and now I'm doing things well". "Want professionals to pick up on my strengths and what you're doing well and be reassuring. They need to validate parents concerns and be authentic".

For quantitative questions, responses to "When talking about strategies/ideas that might help your child keep making progress with learning to talk, how many ideas do you think is manageable to remember and try at home?" caregivers selected a range between '2' to 'more than 8' and chose their preferred way of receiving information as a range (paper booklets/QR codes/Links via email/social media pages to follow/links via text) so it was clear that these elements need to be collaborated on with parents and their individual preferences sought. This was reinforced by comments such as "I think you need to ask how many strategies we want because it depends on how many children you have and whether it's school holidays or not. I could do more if my other children were in school".

Across staff and caregiver surveys there was a consensus for 30–60-minute session and staff wanted all suggested elements on the proforma in once place including ages and stages, risk/protective factors for SLC and areas of communication to observe.

Feedback was used to develop a proforma with feedback opportunities for staff throughout. In line with the new SLC Outcomes for Flying Start, two outcome measures were embedded into the contact to monitor its impact:

1. Changes in caregiver responsiveness using an observed 1-5 scale; the Parental Responsiveness Rating Scale (PaRRiS) (Levickis 2019)
2. Changes in caregiver confidence to interact with their child in a way that helps them learn to talk (self-reported on a 1-5 scale)

Two LA areas delivered pilots using models that suit their local needs.

Table 3: Showing models of 'Talk With Me' contact pilots.

Where	Who for	What age	Delivered by
Blaenau Gwent	All Flying Start families	21 months	LA Family Support Team
Torfaen	Flying Start families in 2 specific areas	18 months	Health Visitor support workers

Only staff who attended the 'Talk With Me' training were able to deliver the contact point, and all attended a supplementary preparatory session in order to view and discuss the proforma, practise use of the outcomes measures and clarify local processes. Flexibility in the delivery models was required due to established workforce structures, however it's important to note that Levickis et al (2020) found that the PaRRiS was reliable when used with Community Health Nursery Nurses, the same professional group as those chosen to deliver within Torfaen. Trialing with Family Support Workers in Blaenau Gwent extends the use of this tool beyond what has been formally investigated, and inter-rater reliability of all staff was established prior to any 'Talk With Me' contact delivery with a requirement of staff consistently rating between 1 point of the trainers across 5 training videos. As of 6th March 2024, 46 contacts were completed

(42 within Blaenau Gwent and 4 within Torfaen) with the following outcomes indicating the contact made caregivers more confident and responsive, (both scales out of a maximum of 5), see figure 5.

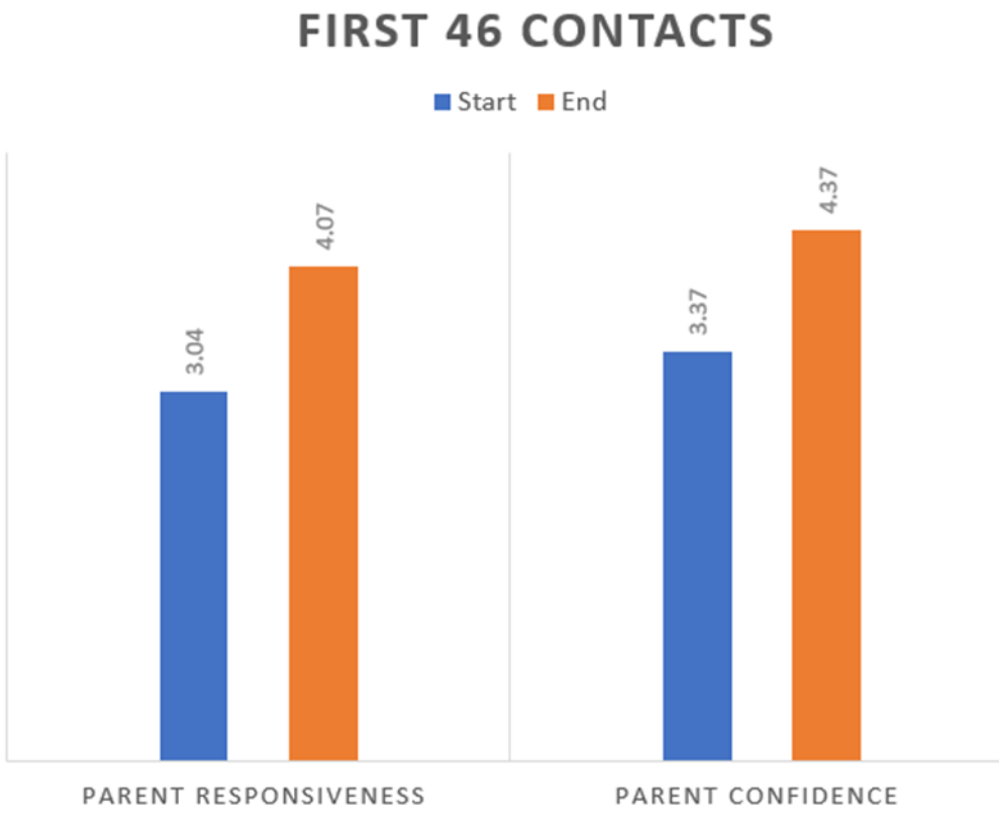


Figure 5: Outcome measure data for the 'Talk With Me' contact pilots as of March 7th 2024.

Spontaneous comments have also been reported to researchers by practitioners who deliver the contact points; one Mother who had a previous child screened with a language tool commented on how much 'better' the new SLC session was. Staff have also commented that the contact provides high quality information to triage families to appropriate interventions. In particular, the observations made within the play are helpful.

It appears the contact is supporting caregivers to create environments which facilitate language development. Feedback has been gathered from Blaenau Gwent staff around the contact and most queries related to familiarity with the documentation and session. Further supportive resources were created to provide guidance on rating responsiveness with families who speak language other than English, a 'what to expect' flyer to send to caregivers and some sentence starter suggestions, aiming to support practitioners in feeling confident to deliver.

Torfaen has fed-back that the new contact is easier than previous screening methods, provides better quality information and staff are consistent when conducting inter-rater reliability for the responsiveness scale.

A second caregiver survey was sent out on social media to gather a comparison from the initial experience survey gathered at the start of January 2023. Nine responses were completed but unfortunately only one met the criteria of having a 0–3-year-old child who has received a developmental review in the previous six weeks. The survey was sent three times and shared across various platforms, but no further replies were gained so we have not been able to compare the overall experience of caregivers at this stage. This will be re-addressed over time.

A dedicated experience survey has also been offered to the families who have accessed the 'Talk With Me' contact pilots. One response has been received. This respondent identified that the session had 'very much so' increased their confidence in supporting their child's SLC development and commented 'very helpful

information'. They self-rated an increase from 5-10 on a 10-point confidence scale from the start to the end of the session, however a greater variety of responses over more time is needed to evaluate caregiver experience of the contact specifically.

Referrals

Where possible, referral and engagement data were tracked to both targeted language interventions across all 5 LA areas in Gwent, and to NHS specialised Speech and Language Therapy service within ABUHB. What is available has been outlined below. The figures from January – February 2023 were calculated as an average number of referrals per month (as data for Jan-March was provided), and the data from Jan-Feb 2024 has been outlined as the actual total figures. Blaenau Gwent could not provide data for 2024 so are not included.

For specialised service, the actual referral numbers which were triaged to the community team for children aged 0-2 years 11 months have been included as these children are identified as having language as their primary need. Engagement rates have not been included as 2 boroughs do not report their attendances on the same online system, so the figures were not reliable.

Table 4: Showing referral and engagement data received for comparison analysis.

Area	Jan-Feb 2023 referrals (average)	Jan – Feb 2024 referrals (actual)	Engagement Jan-Feb 2023 (average)	Engagement Jan-Feb 2024 (average)
Caerphilly	43	21 definite 21 possible*	95% accepted intervention	Not yet available
Monmouthshire	24	21	83% accepted intervention	Not yet available
Newport	76	94	66% accepted intervention and attended first session	78%
Torfaen	49	42	56% accepted intervention and attended at least one session	93%
NHS SALT (Gwent wide)	43 (actual)	26	Not available	Not available

Of the 42 children referred for support in 2024, 50% were awaiting a triage decision around whether their primary need was language or social communication at the time of data provision. If all got allocated for language, referral rates have remained steady however locally team leads have confirmed that generally around 50% are redirected to other services so it is likely that referrals had decreased.

Targeted intervention analysis

All areas saw changes in their referral and/or engagement rates. Where referrals reduced (e.g., Monmouthshire) it's likely related to the workforce training and increased knowledge and skills across practitioners for SLC. Less referrals into interventions may mean increased management of emerging SLCN at universal level, using the public health key messages from the training and identifying the right time for families to access support, when they are ready to engage. Family Support teams may be better managing children's SLC needs as part of their interventions rather than referring in to a separate team, aligned with the right person, right time, right place approach to SLC being everybody's business.

Where referrals increased (Torfaen) it's possible that the training led to better identification of SLCN and less children being missed.

For some areas such as Newport and Torfaen, attendance went up significantly and this may be partly due to the training leading to better identification of possible SLCN and engaging motivated families at the right time, in line with the practitioner feedback about using behaviour change approaches in their practice. Newport in particular provided spontaneous feedback around a noticeable improvement in the quality of referrals sent by Health skillmix over the course of 2023 as training rolled out.

However, it's important to note that there has been pathway development in all areas which could have influenced the changes in this data.

Using the available data from Newport and Torfaen, there were estimated to be seventeen less children in January-February 2024 who did not engage in their interventions compared to the same period in 2023. Targeted language interventions are typically delivered in groups of 4-6 children and are run by two members of staff for an hour each week for six weeks, so we can estimate that there has been a total of four groups saved. If each group session is counted as a 'slot' for the staff member to deliver this equates to 48 saved slots across two LA areas in an 8 week period (or 24 per month).

NHS SALT analysis

One key positive finding is the reduction in referrals for children aged 0-2 years 11 months, triaged to Community Clinic team within NHS Speech and Language Therapy service. These children are most likely to be 'late talkers' who access early language support (as opposed to those with more complex needs who may require a neurodevelopmental diagnostic pathway or very specific work related to speech sound difficulties/stammering who would typically be referred at older ages or directed to different teams). The significant reduction indicates that children are being better managed within universal and targeted services and seventeen less children required an initial appointment slot with a community clinic SLT in 2024 compared to 2023 in a two month period. Initial appointments can be delivered by a qualified SLT (Band 5-7) and are allocated 90 minutes, so this saving equates to 25.5 hours of time (12.75 hours per month) which can be redistributed to other SLT teams where demand is increasing. It's important to note that this is an estimation only as there is a validation period for returning patient contacts that had not fully elapsed at the time of writing.

Overall

Initial data indicates positive shifts in the knowledge and skills of early years staff and referral shifts. More in-depth analysis over time will be needed to fully understand the impact of the project over time.

Conclusion

This project has been the beginning of transformational change in how an integrated early years workforce can use a public health approach to SLC promotion and support. It's clear that a coordinated rollout of high-quality training leads to increased practitioner confidence in promoting and supporting SLC and the outcomes of this so far have been indicative of time saved and better quality of service. The project has also highlighted that caregivers know what they want from professionals and respond to a dedicated SLC contact to increase in their responsiveness and confidence to support their child to learn to talk. The project required the capacity of a public health SLT to deliver the training and complimentary work, and the positive outcomes highlight the benefit of investing in similar roles across other parts of Wales and beyond to drive a focus on prevention. ABUHB now has a workforce of early-year staff who have accessed the same SLC training across Health and 5 LA's which is a huge achievement given the historical disparity in this and this should be mirrored elsewhere. As always in innovation projects, challenges presented throughout the delivery and highlight key areas to explore further.

Key Recommendations

The project has started valuable work in the SLC arena and leaves scope for further development. Initially the local priority is extending the 'Talk With Me' contacts to all areas of Gwent and a greater variety of families (not just those in Flying Start postcodes). Other SLT's in universal and targeted roles have shown interest in the contact and sharing the work across Health Boards will be critical as a means of transitioning away from screening tools and moving towards person-centred care and prevention. The 'Talk With Me' contact information has been shared with a working group that has been tasked with developing a new screening tool for Wales by 2026, as the fundamental elements of both are very similar. When the new screening tool is available, time will be spent understanding how both can work alongside each other.

Due to the feedback from Health, incorporating 'Talk With Me' practitioner training into pre-registration SCPHN training would be an aspirational end goal, with an agreement around when/how refresher training should be offered across an individual's career. The project has formed a large part of the Regional SLT role within the Public Health domain and sharing it with professional bodies would also be hoped to

demonstrate the value in the role itself. Elements of the training could also be shared with other Allied Health Professionals, as some core principles can be applied far beyond SLC.

Various elements of the project highlight ongoing work for ABUHB and opportunities to develop the project further with new areas to investigate. Locally, sustaining skills within an ever-changing workforce is essential to future-proof the gains made within this project and plans are established to ensure maintenance. An e-learning refresher will begin, hoping that from 2025 as a two-yearly requirement for staff to maintain their knowledge of developments in SLC evidence-base and practice and a rolling programme of training has been planned within ABUHB, with biannual 'Talk With Me' training dates for all new starters within Health Visiting and LA Family Support teams in Gwent.

Looking to digitise the 'Talk With Me' contact proforma will be useful to explore ways of electronic completion, automatic population of outcomes and eventual tracking of responsiveness and confidence through follow up language interventions for families to analyse the level of maintenance of the change seen within the initial contact point. Another key extension of the current work revolves around gathering more robust referral and engagement data to see longer term trends. Local investigations around access to electronic systems are needed to ensure data is robust, reliable and comparable across all areas of Gwent.

Attention should also be given to deepening the understanding of caregiver experiences within the contact point to ensure it continues to be fit for purpose and elements can be redesigned as required. Further investigation of the outcome data will add depth to the understanding of whether one practitioner group are best placed to deliver this and could lead to a recommendation for best practice and wider adoption in the future.

Due to the methods of stakeholder engagements required within the timescale of this project, vulnerable families should be a priority for further engagement work to ensure that the design is fit for purpose for the whole Gwent population, utilising core principles of stakeholder engagement with 'hard to reach' families from Evangelou et al (2011) considering the most suitable time, location and space, allowing time to build relationships and considering the use of multilingual assistant researchers.

A key enabling factor to this project was the established integrated workforce which allowed for the distribution of demand across sectors. For others considering adoption of this work, integration should be at the forefront, alongside the creation of a public health SLT role to provide the capacity to deliver the elements of a high quality and co-ordinated rollout of training and support for the contact point. An understanding of the local population and the current provision around SLC training, promotion and support is also needed alongside knowledge of targeted intervention options available to families, to map services against the intended desired outcomes of the project in order to collate meaningful outcomes for referrals and engagement, which ultimately show the value in a prevention focused piece of work. The pathways around SLC vary from area to area and it is unlikely one model can be transferred without adaptations to suit local needs, but the core principles identified within the project can underpin similar work being successfully undertaken elsewhere.

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Appendix F: Ethical Approval

Swansea University
Prifysgol Abertawe

Approval Date: 08/05/2024

Research Ethics Approval Number: 1 2024 9626 8658

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	Speech, language and communication in the early years: Public Health and everybody's business
Applicant name	EMILY HOSKINS
Submitted by	EMILY HOSKINS /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/11677

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 08/05/2024

Rhif Cymeradwyo Moeseg Ymchwil:

Diolch am gwblhau cais moeseg ymchwil am gymeradwyaeth foesegol ac am gyflwyno'r ddogfennaeth ofynnol drwy'r platfform ar-lein.

Teitl y Prosiect	Speech, language and communication in the early years: Public Health and everybody's business
Enw'r Ymgeisydd	EMILY HOSKINS
Cyflwynwyd gan	EMILY HOSKINS /
Dolen i'r ffurflen gais lawn	https://swansea.forms.ethicalreviewmanager.com/Project/Index/11677

Page 1 of 2

Mae'r pwyllgor moeseg Humanities and Social Sciences wedi cymeradwyo'r cais moeseg ymchwil, yn amodol ar yr amodau a amlinellir isod:

Amodau cymeradwyo

1. Mae'r gymeradwyaeth yn seiliedig ar yr wybodaeth a roddir yn y cais, a gwneir y gwaith yn unol â hyn. Yr ymgeisydd sy'n gyfrifol am sicrhau bod yr holl reoliadau, polisïau a deddfau mewnol ac allanol perthnasol yn cael eu dilyn.

- Gall y prosiect hwn gael ei adolygu gan y pwyllgor o bryd i'w gilydd. Gellir atal neu ddirymu'r gymeradwyaeth ar unrhyw adeg os bydd yr amodau'n cael eu torri.
- Caiff unrhyw addasiadau sylweddol i'r cais a gymeradwywyd eu cyflwyno i'r pwyllgor moeseg cyn i'r fath newidiadau gael eu rhoi ar waith.

Amodau penodol ynghylch y cais hwn:

Barnwyd bod y cais yn risg Low i'r Brifysgol.

Dim amodau ychwanegol.

Datganiad o gydymffurfiaeth

Penodir y pwyllgor yn unol â'r trefniadau llywodraethu ar gyfer pwyllgorau moeseg ymchwil. Mae'n cydymffurfio â chanllawiau Ymchwil ac Arloesi yn y DU (UKRI) a'r concordat i gefnogi uniondeb ymchwil.

Cadeirydd Ymchwil a Moeseg, Humanities and Social Sciences

Prifysgol Abertawe.

Os oes gennych ymholiadau ynghylch yr hysbysiad hwn, yna mae croeso i chi gysylltu â gweinyddwr moeseg ymchwil eich cyfadran.

- Ar gyfer Gwyddoniaeth a Pheirianneg, e-bostiwch FSE-Ethics@abertawe.ac.uk

- Ar gyfer Meddygaeth, Iechyd a Gwyddor Bywyd, e-bostiwch FMHLS-Ethics@abertawe.ac.uk
- Ar gyfer y Dyniaethau a'r Gwyddorau Cymdeithasol, e-bostiwch FHSS-Ethics@abertawe.ac.uk

Appendix B: Talk With Me training evaluation questions

Health Visitor SLC training pilot

As this training is a pilot, anonymised responses to this survey will be shared with The National SLC Co-Ordinator in Welsh Government.

1. Which local authorities do you work in? (Select all that apply)
2. What is your role?

Pre-training

Before you attended this training, how confident were you in: (scale 0-10)

3. Understanding typical SLC development
4. Identifying risk factors for SLC needs through your observations and discussions
5. Identifying protective factors for SLC development?
6. Considering the impact of SLCN on the child
7. Promoting evidenced-based strategies to support families to support their children to learn to talk
8. Knowing when to seek extra support/signpost appropriately to universal, population, targeted and specialist services as required

Post training

Having completed the training, how confident do you feel in: (scale 0-10)

9-14 same wording as 3-8 above

Key learning points

15. Which elements of the training were most useful to you?

16. Please state one thing that you are taking away from the training to use in your own practice

Content and format of the training

You have received this training as part of a pilot. Please give your honest feedback to the questions below, your responses will be used to shape and develop the training as it is rolled out across Wales.

Please state how strongly you agree or disagree with the following statements about the training?

Strongly agree agree neutral disagree strongly disagree

It was the right length

It was pitched at the right level

It was interesting

It was relevant to my practice

It will speed up the time I take finding resources to give to families about SLC

18. Please tell us what we can do to make the training better and more relevant for you

Appendix C: Example extracts of survey questions

Parent/carer experience

All responses are anonymous. Data from the responses will be presented outside of ABUHB to demonstrate changes in the ABUHB system.

1.Have you been visited within the last 6 weeks to discuss/review your child's development? (If 'No' please do not complete this survey)
Yes

No

2.Do you know if the person who visited was from Health (for example a Health Visitor/Nursery Nurse) or the Local Authority (for example a family worker)
Yes - Health

Yes - LA

No

3.How old is your child?
0-14 months

15-18 months

19-24 months

25-36 months

4.During the visit, did the practitioner talk to you about speech and language development?
Yes

No

5.Did they do the following? (Tick all that apply)
Discuss what would be expected for your child's age in terms of their understanding and talking

Give you a handout on speech and language / send information on this another way

Agree a specific idea for you to try at home to support your child's speech and language

Tell you about Tiny Happy People

Tell you about Talk With Me

Discuss further support for your child's speech and language (a group/support from a language team/Speech and Language Therapy)

None of the above

6.Have you done anything differently to help your child learn to talk/help their speech and language development since the visit?
Enter your answer

7.Did the visit help you to feel more confident in supporting your child's speech and language development?
Not at all

A little bit

Neutral

Quite a lot

Very much so

8.Explain your answer to question 7 if you can. Required to answer.
Enter your answer

9.How confident were you before the session to support your child to learn to talk?

10.How confident do you feel after the visit to support our child to learn to talk?

11.Any other comments

Learning to talk: parent/carer views

This survey is for parents and families within the Aneurin Bevan University Health Board area, to help us further understand your experiences and expectations. Your feedback is really important in shaping the future of our services, ensuring we meet the needs of our families/communities. Participation is optional, but your perspective would be invaluable to us. This survey does not gather any personal information about you or your child but ABUHB's privacy notice can be found online at https://abuhb.nhs.wales/files/information-governance/privacy-notice-general/, detailing how we handle and protect personal information. All responses are anonymous. Data from the responses will be presented outside of ABUHB to demonstrate changes in the ABUHB system.

Please only respond if you are a parent/carer of a child in Gwent.

1.This survey is about how we work with you to support children to learn to talk - please keep that in mind when giving your answers. Tick the box to confirm you have read this.
Yes - this survey is about learning to talk

2.When your child is due for a review of their progress with learning to talk, do you prefer to be visited by:
Someone from Health (e.g. Health Visitor or Nursery Nurse)

Someone from the Local Authority

No preference

3.When your child is due for a review of their progress with learning to talk, do you prefer?
To be visited at home

To go to a local clinic/venue

No preference

4.When you have a visit/appointment to talk about your child's development, what's important to you?
Enter your answer

5.When you have an appointment with someone such as a Health Visitor, what makes you feel cared for and listened to?
Enter your answer

6.When you have an appointment with someone such as a Health Visitor, what makes you feel like it was a success once the session is over?
Enter your answer

7.How long do you think a session about learning to talk should take? (Including chatting about how your child is getting on, any concerns you have, what is working well and new ideas to try)
0-15 minutes

16-30 minutes

31-45 minutes

46-60 minutes

Longer than 60 minutes

Not sure

8.When talking about strategies/ideas that might help your child keep making progress with learning to talk, how many ideas do you think is manageable to remember and try at home?
1

2

3

4

5

6

7

8

More than 8

9.How do you like to receive information to refer to after the session, about how to support your child to learn to talk? (Tick all that apply)
Paper booklets/flyers

QR codes to scan (websites/videos)

Links via email (websites/videos)

Links via text (websites/videos)

Social media pages to follow

10.Anything else you'd like to share
Enter your answer

Talk With Me contact (skillmix engagement)

Proposed contact to monitor children's Speech, Language and Communication development at 18-21 months, following the rollout of 'Talk With Me' training in ABUHB.

This survey is to help shape this contact point alongside feedback from families so please provide your honest thoughts and feedback to ensure we create a session that suits the needs of families and our service. All responses are anonymous.

1.Do you work for
Health

Local Authority

2.When you visit a family to deliver a session (such as a development review), what makes you feel like it was a success?
Enter your answer

3.If you currently deliver any support for speech and language (HCWP development reviews, Wellcomm assessments, referrals to targeted language services etc), what works well? This could be about the processes, relationships with families, paperwork etc.

NB: If you do not currently deliver any work around SLC please skip this question
Enter your answer

4.How long do you tend to need to feel that you've had a successful session (you can identify whether there are concerns related to the child's speech, language or communication development and recommend supportive strategies/discuss a referral)?
0-15 minutes

15-30 minutes

31-45 minutes

46-60 minutes

More than 60 minutes

Unsure

5.What would you like to have on the paperwork when delivering a session with families? (Tick all that apply)
Checklists / tick boxes

Free writing of observations / parent report

An outline of the structure of a session

Instructions on how to deliver / the recommended structure

A grid of ages and stages

A list of risk and protective factors for language development

The communication pyramid

Suggestions of next steps (e.g. local SLT contact information, signposting, local support groups and referral route)

6.Do you prefer to complete paperwork...
By hand

Electronically

No preference

7.Are you familiar with using the following (tick all that apply)
MS forms

A QR code

Neither of the above

8.When thinking about monitoring a child's speech, language and communication development, which setting do you find most suitable for the session (to make an accurate assessment)?
Visiting the home

Bringing the family to clinic

No preference / Unsure

9.Please give a reason for your answer above:
Enter your answer

Appendix D: Talk With Me proforma

Talk With Me 18-21 month contact proforma

Bwrdd Iechyd Prifysgol Aneurin Bevan University Health Board

Refer to Talk With Me **ages and stages** norms to support identifying SLC development concerns:

 6 – 12 months	• Locates source of voice with accuracy. • Focuses on different sounds, e.g. telephone, doorbell.	• Understands frequently used words such as 'all gone' 'no' and 'bye bye'. • Stops and looks when hears own name. • Understands simple instructions when supported by gestures and context.	• Uses speech sounds (babbling) to communicate with adults; says sounds like 'ba-ba', 'na-na' and 'ga-ga'. • Stops babbling when hears familiar adult voice. • Uses gestures such as waving and pointing to help communicate. • Around 12 months begins to use single words e.g. 'mummum', 'dada'.	• Enjoys action rhymes and songs. • Tries to copy adult speech and lip movements. • Takes 'turns' in conversations (using babble).
 12 – 15 months	• Attends to music and singing. • Enjoys sound-making toys/objects.	• Understands single words in context, e.g. cup, milk, Daddy. • Understands more words than they can say. • Understands simple instructions e.g. 'Kiss Mummy', 'give to Daddy', 'stop'.	• Says around 10 single words, although these may not be clear. • Reaches or points to something they want whilst making speech sounds.	• Likes being with familiar adults. • Likes watching adults for short periods of time.
 15 – 18 months	• Listens and responds to simple information/ instructions e.g. 'Ben, put on shoes', 'Mohammed, give to Daddy'.	• Understands a wide range of single words and some two-word phrases e.g. 'Give me', 'shoe on'. • Recognises and points to objects and pictures in books if asked. • Gives named familiar objects to adult, e.g. coat, car, apple, book.	• Still babbles but uses at least 20 single words correctly, although may not be clear. • Copies gestures and words from adults. • Constant babbling and single words used during play. • Uses intonation, pitch and changing volume when 'talking'.	• Simple pretend play. • Plays alone, although likes to be near to familiar adult. • Although increasingly independent, happiest when near familiar adult.
 18 months to 2 years	• Focuses on an activity of their own choice but finds it difficult to be directed by an adult. • Use of childs name beginning to help them to attend to what an adult says e.g. 'Sarah, eat sandwiches', 'Ali, put coat on'.	• Understanding of single words develops rapidly during this stage, anything between 200 and 500 words are known. • Understands more simple instructions e.g. 'Get Mummy's shoes', 'Get your bricks', 'Tell Dad tea is ready'.	• Uses up to 50 words. • Begins to put two or three words together. • Frequently asks questions e.g. the names of people and objects. • Uses speech sounds p, b, t, d, m, w.	• Pretend play developing with toys, such as feeding a doll or driving a car. • Becomes frustrated when unable to make self understood, this may result in tantrums. • Follows adult body language including pointing, gesture and facial expressions.

Taken from Talk With Me Stages of speech and language development A1 poster english for web (gov.wales)

Please liaise with local SLT or Emily Hoskins for support if needed.

This contact point was developed within Aneurin Bevan University Heath Board in collaboration with Early Years services across Gwent

Talk With Me 18-21 month contact proforma

Bwrdd Iechyd Prifysgol Aneurin Bevan University Health Board

Practitioner guidance notes:

- The aim of this contact is to provide **strengths-based feedback** to parents about **how they are already supporting** their child's SLC development, provide further ideas for them to use at home and **identify children who would benefit from targeted language** interventions.
- Use the phrase '**learning to talk**' when discussing SLC, as this is preferred by parents.
- This visit should be delivered as a **relaxed conversation** with you informally drawing out information from the parent/carer. Draw out relevant information via discussion and observation to support decision making. Suggested questions/comments are provided in italics as a guide.
- **Parents tell us they want to feel listened to**, hear what they're doing well, feel reassured and have any concerns taken seriously. Deliver this session as a discussion rather than a checklist.
- This session should last between **30-60 minutes**. Some information can be gathered prior to the session.

PaRRiS outcome measure ratings:

One rating to be completed before discussion of any interaction strengths/key messages and 1 rating to be completed after discussion to demonstrate change. Refer to the PaRRiS user manual for guidance, select the description of parent responsiveness that matches your observations most closely as your rating. This will mean asking parents to play with the child for a couple of minutes for you to see their natural interactions. This should be built into the natural delivery of the session as an opportunity for you to observe the child, and familiarise with parent's interaction style. It can be helpful to ask 'is this how you usually play together or is it any different with someone new in the house?' to probe if the observation was a good representation of their typical interaction style.

Please note: should a parent become less responsive over the course of the contact, this is not a reflection of the delivery of the information. Some adults may become less responsive when they begin trying to support language as their natural communication style has a teaching/questioning approach. This may indicate they would benefit from targeted intervention if there are SLC concerns, to continue developing their use of supportive strategies.

Levickis, P. (2019) Parental Responsiveness Rating Scale (PaRRiS): Scoring Manual [unpublished manuscript]. Melbourne: The University of Melbourne, Melbourne Graduate School of Education, REEaCh Centre.

This contact point was developed within Aneurin Bevan University Heath Board in collaboration with Early Years services across Gwent

Proforma for completion

Part 1: Demographic information

Child's name		Setting	
Child's DOB		Facilitator name	
Child's chronological age		Facilitator role	
Parent/carer present		Delegated by (if relevant)	Pilot – leave blank
Main language		Second language	

If more than one language make sure to ask which is the main (best) language for the child and make it clear what reports apply to the main/second language.

Part 2: Baseline observation and background information

Observation of baseline interaction (see PaRRiS notes for guidance) To be completed by practitioner *'Let's just have a few minutes to play for ___ to get used to me and I can see what they naturally do'.*	Circle one: 1 2 3 4 5
Discussion: Is the parent/carer concerned about the child's SLC development? (Circle/delete as appropriate) *'How is your little one getting on with learning to talk?'*	Not concerned at all A little concerned Very concerned

This contact point was developed within Aneurin Bevan University Heath Board in collaboration with Early Years services across Gwent

Talk With Me 18-21 month contact proforma

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Does the parent/carer feel their child's communication is positively/negatively impacting them? Could this change in the near future?	You could ask: *Do they get frustrated, do they give up, are they able to communicate their needs/wants? Do you think this could change in the near future at all for example if they're going to childcare soon?*
Have they attended any universal SLC provision or tried any strategies already (please state)?	No Yes If yes, what?
Risk/protective factors NB: Some factors can be identified before the setting, some via discussion with parents, and some observed during the session.	Identified/observed risk or protective factors (tick as appropriate):

	Risk	**Protective**
Antenatal	Premature Birth	Being born full term
Biological Sex	Male	Female
Hearing	Sensorineural hearing loss (permanent hearing loss, not glue ear)	No hearing loss
Temperament	Shy children/low sociability. Reactive temperament	Sociable, more persistent temperament
Family history of SLCN	History of an immediate family member with Developmental Language Disorder	n/a

This contact point was developed within Aneurin Bevan University Heath Board in collaboration with Early Years services across Gwent

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Talk With Me 18-21 month contact proforma

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	Socio-economic status	Low socio-economic status (living in an area of depravation)	n/a
	Quality of interaction	Limited child-directed speech. Limited exposure to varied vocabulary	High levels of child-directed speech, exposure to wide vocabulary
	Book sharing	Limited exposure to books or book-sharing activities	Frequent book sharing activities and access to books
	Childcare	n/a	Exposure to childcare settings and other language role models
	Babble	Absent or limited babble	Using babble at appropriate developmental level
	Gesture	Absent pointing and limited use of gestures	Use of pointing and gestures
	Severity of difficulty	Receptive and expressive language difficulties. Large gap between expected level of language and level child is functioning at	Reaching developmental language milestones
	Vocabulary	Limited expressive vocabulary	Wide vocabulary use

This contact point was developed within Aneurin Bevan University Heath Board in collaboration with Early Years services across Gwent

Talk With Me 18-21 month contact proforma

Bwrdd Iechyd Prifysgol Aneurin Bevan University Health Board

Part 3: Play observations

Observations in play: Consider the communication pyramid and refer to the ages and stages.	From parent report/observations:	
	Attention	
	Play	
	Understanding	
	Use of language	
	Speech sounds	
	Social communication	

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Talk With Me 18-21 month contact proforma

Part 4: Strengths-based feedback and key messages:

Positive environment/strategies in place (please highlight which one/s parent received positive feedback for) EXAMPLES: • *'I can see you've got a lovely quiet space to play in and this will really help ____ pay attention to the words you use and help them understand'* • *'Being face to face like that helps you see what he's interested in so you can use words that match what he's looking at'* • *'I hear you using lots of different types of words like labels, action words and describing words which is brilliant for him learning new words'*	**Strategy** (Taken from COMIT strategy lanyards)	**Observed (circle/delete)**	**Highlighted to parent as a positive strength (tick maximum of 2)**
	Face to face interaction	Y / N	
	No distractions (TV/Radio off)	Y / N	
	Following the child's lead	Y / N	
	Waiting for child to process/initiate	Y / N	
	More comments than questions	Y / N	
	Varied vocabulary use	Y / N	
	Repeating what child has said and adding a word	Y / N	
	Repeating errors correctly but not correcting the child	Y / N	
	Other observed:		
TWM key messages shared (provide 3 unless parents request less/more)	Circle/highlight/delete as appropriate to show which 1-3 messages were provided: 2. I can learn our language and culture from you 3. Our best place is face to face 4. Sing me a rhyme at any time 5. Let's talk and play everyday 6. Let's look at books together 7. Talk with me about what we can see 8. Let's turn screen time into you and me time 9. Add a word to what you have heard me say 10. I love to talk with everyone		

This contact point was developed within Aneurin Bevan University Heath Board in collaboration with Early Years services across Gwent

Talk With Me 18-21 month contact proforma

Support parents to think about when they could use the strategy and what this will look like for them.	Specific idea discussed:

Part 5: Outcome measures and next steps

Observation of interaction following discussion (see PaRRiS guidance) Recap the strategies, *'let's have a go at using these in play together'.*	Circle one: 1 2 3 4 5
Confidence rating: Recap strategies discussed and ask *'On a scale of 1-5, how confident did/do you feel about interacting with your child in a way that supports them learning to talk?'*	Circle one: Before today: 1 2 3 4 5 Now: 1 2 3 4 5
Next steps agreed Consider all factors to inform this decision, including how parents have responded to the information shared today and how their responsiveness has changed. If support has been offered but declined, consider a COM-B discussion (behaviour change model) to draw out barriers: Capability, Opportunity, Motivation.	Tick/delete as appropriate: Universal messages – no concerns so no follow up ☐ Universal messages and check in r.e concerns identified ☐ Targeted intervention/referral offered (accepted/declined) ☐ Seek advice from local SLT ☐

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Talk With Me 18-21 month contact proforma

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All families signposted to: Ask parents their preferred way of receiving info (QR code, booklet, email etc)	**Talk With Me** SCAN ME	**Tiny Happy People** SCAN ME	
	Encourage parent/carer to also like/follow ABUHB Children's Speech and Language Therapy pages on social media. **Tick to confirm:** ☐		
Signature of person completing the contact	X	Date	
Signature of HV responsible	X Pilot, leave blank	Date	Pilot, leave blank

After the session:

Complete the below form (5 simple questions) after each contact to support us in gathering outcomes and trends to shape the contact going forward:

https://forms.office.com/e/yRUBdiJ90u (PaRRiS and confidence ratings are essential)

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Appendix E: MS Form 'Talk With Me' outcomes example questions

Talk With Me 18-21 month contact outcomes

This form needs to be completed following every 18-21 month Talk With Me contact within the Gwent Early Years Integrated Core Programme

1.Local Authority area.

Blaenau Gwent

Caerphilly

Monmouthshire

Newport

Torfaen

2.PaRRiS at start of session Required to answer.

Remember, you cannot do half points. Please choose number that best fits the interaction you observed

1
2
3
4
5

3.PaRRiS at end of the session

Remember, you cannot do half points. Please choose number that best fits the interaction you observed

1
2
3
4
5

4.Parents confidence to help their child learn to talk using the strategies discussed before today

1
2
3
4
5

No confidence Completely confident

5.Parents confidence to help their child learn to talk using the strategies discussed now

1
2
3
4
5

No confidence Completely confident

Acknowledgments

This project was facilitated by a huge amount of support within Gwent and thanks is owed to the management team of the ABUHB Health Visiting department who created the role that enabled this work to be delivered and provided unwavering support for all elements. Early Years managers within all five Local Authorities of Gwent were also instrumental in supporting the training rollout and contact pilots. Thanks to the Speech and Language Therapy professional leads for supporting the provision of referral data and local SLT support. This project was originally done as a Bevan Commission Exemplar project, and the programme provided a massive amount of structure which helped drive the delivery and momentum and was key in having a robust process of evaluation. A particular thanks need to be extended to Catherine Pape, National SLC co-ordinator in Welsh Government who was the original impetus for seeking support for the training rollout and prompting the whole conception of the project, without her initial belief in the Public Health role and the contribution it could make, this work would never have been delivered in such a strategic and co-ordinated way.

About the Author

Emily Hoskins.

Emily is a Speech and Language Therapist who qualified in 2016. Her initial practice was focused on developing clinical skills, working in specialised Speech and Language Therapy teams across Children's Centres, schools and Community clinics, initially in Bristol before the opportunity arose to work within her home Health Board of ABUHB. In 2017 a short burst in a Flying Start role ignited her passion for Universal and Targeted work and prevention. This work continued from 2019-2022 with Early Years and Flying Start roles across Caerphilly and Newport. In 2022 Emily was appointed to the innovative Regional Speech and Language Therapist Early Years role within ABUHB's Health Visiting department with a focus on contributing to population level preventative work across the Gwent region. This has allowed huge growth in the regions' universal and targeted work and prompted engagement in innovation projects through the Bevan Commission. Emily is passionate about upskilling others, working with families, evidence-based practice and developing relationships. Her work is underpinned by a strong belief that getting universal and targeted services right gives children the best start in life for SLC and protects specialised services for those who really need it.

What are the Enablers and Inhibitors to the Effective Implementation of the Green Theatre Checklist within Ear Nose and Throat Surgery?

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Abstract:

Climate change is an existential global challenge that will place increasing strain on global health systems. To mitigate its effects, governments, including those in the UK, have legislated to reduce greenhouse gas emissions. Surgery and healthcare contribute significantly to the climate crisis through energy use, anaesthetic gases, and waste. The Green Surgical Checklist was introduced in 2022 as a grassroots resource to minimise environmental impact within local operating theatres.

This project aimed to establish views and perceptions of the 'Green Theatre Checklist' (GTC) with a view to introducing it into clinical practice within an ENT theatre department. Views were gathered via a perceptual questionnaire and semistructured interviews of 20 multidisciplinary members of an ENT theatre team.

Staff agreed that theatres significantly contribute to the climate crisis and are motivated to make changes. Additionally, they believed the GTC to be trustworthy, evidence based and that it should be implemented. Areas of current good practice identified by participants included anaesthesia and recycling clean waste. Key areas to exploit included reduction of consumables and adoption of water-saving handwashing techniques.

Participants felt that early adoption of sustainable practices contradicted the conventional infection control principles, and this represented risk to the individual and team. However, there was consensus that this could be mitigated by the publication and dissemination of ENT specific guidelines. Enablers to implementation included strong local role models and cost-savings as a mutually beneficial motivator for sustainability. Lack of formal training and sustainability and concerns regarding short-term increases in cost and staff time proved important barriers.

This study demonstrates that although motivation within staff groups is high, support from local health boards and national bodies will be essential in a safe and evidence-based transition to sustainable services.

Keywords: Sustainability, Green Theatres, Green Theatre Checklist

Acronyms, Tables, and Figures

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Introduction

Background and Context

Climate change represents an existential threat to human society and planetary health. Global warming has been driven by post-industrial greenhouse gas emissions and perpetuated by unsustainable land, energy and resource use (IPCC, 2023). Attempts at a United Nations coordinated global response to reduce emissions and mitigate their effects have culminated in the Paris Agreement, setting a legally binding global warming limit of 2 ºC (UNFCCC, 2015). Subsequently, the United Kingdom has committed to reducing net greenhouse gas emissions to zero along with countries representing 90% of global emissions and GDP (COP 26, 2021).

However, total greenhouse gas emissions continue to accelerate, and its effects on global health are already being felt today with extreme weather, poor air quality, food and water insecurity and climate sensitive communicable disease (Lee & Romero, 2023). There were an estimated 3.3 million excess deaths from air pollution in 2019 (Romanello et al., 2021). On our current trajectory, extreme weather events alone are predicted to cause 83 million excess global deaths by the end of this century (Bressler, 2021). The NHS predicts that meeting their Paris Agreement obligations will result in annual reduced premature deaths of 5,700 from better air quality and 138,000 from improved diet and exercise (NHS England & NHS Improvement, 2020).

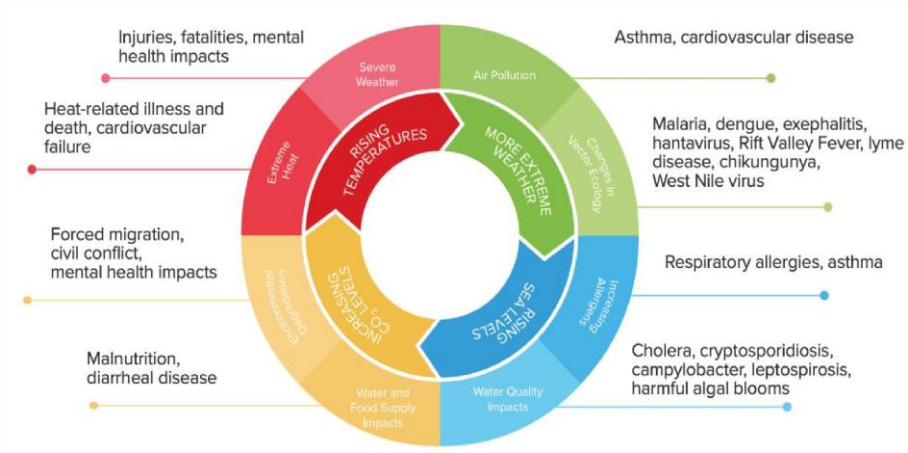


Figure 1. Impact of Climate Change on Human Health (From: Healthcare Without Harm, 2019).

Many of these effects on populations and systems are already occurring, and global healthcare services will be a key part in allowing humans to adapt to our changing world. However, there remains a path to ensuring that the worst effects are minimised, but only with concerted rapid widespread adoption of mitigation strategies (IPCC, 2023).

Whilst the impacts of climate change will negatively impact human health and put additional strain on healthcare systems, healthcare is a significant part of the problem. Healthcare contributes 4.4% of global emissions equating to greater total emissions than Brazil, the fifth largest global emitter (Health Care Without Harm, 2019). This contribution is mirrored in the UK, with the NHS contributing 4% of national emissions (NHS England & NHS Improvement, 2020).

In recognition of this important contribution, the UK has led in setting ambitious decarbonisation targets within the devolved health services. The Senedd passed the Wellbeing of Future Generations (Wales) Act in 2015 and declared a Climate Emergency in 2019 – setting the target of the Welsh public sector becoming a net zero emitter of greenhouse gases by 2030 (NHS Wales & Carbon Trust, 2021). As the largest of the public sector organisations, NHS Wales is anticipating needing to reduce their emissions by more than one third by 2030 (NHS Wales & Carbon Trust, 2021).

Surgical Contribution to the Climate Emergency

The transition to sustainable surgical services will be a particularly important area of focus. Surgical services require a 27% proportion of NHS budgets, producing an estimated 5.7 million tonnes of CO2e within the

UK annually (Brighton & Sussex Medical School et al., 2023). The operating theatre is considered a 'carbon hotspot'. To deliver safe and effective care it requires significant staffing resources, sterilised precision equipment, volatile anaesthetic gases, sizeable energy requirements through ventilation, temperature control, lighting, and powered surgical and anaesthetic devices. It is estimated that operating theatres are 3-6 times more energy intensive compared to the rest of the hospital (MacNeill et al., 2017). Additionally, theatres produce large amounts of waste, much of which is single-use and requires incineration due to risk of infection (Brighton & Sussex Medical School et al., 2023).

Ear Nose and Throat (ENT) Surgery is the sixth largest surgical specialty with 1.2% of the NHS England total budget (NHS England, 2021). Surgical case mix ranges from short common procedures like tonsillectomy to extensive resections for head and neck cancer. In April 2023 ENTUK, the ENT professional membership body, released a statement committing to lead the sustainable transition through supporting intercollegiate projects and producing evidence-based guidelines, which are yet to be published (ENTUK, 2023).

The Green Theatre Checklist

The Green Theatre Checklist (GTC) was produced by a multidisciplinary team on behalf of the sustainability groups of the royal surgical colleges of England, Edinburgh, and Glasgow (see Appendix D) (Robb & Pegna, 2023). They created a single page of evidence-based guidelines and policies for members of the surgical team to introduce within their own departments. Designed as a checklist which could be used as a tool whilst briefing at the beginning of a theatre list or to audit progress. It is accompanied by a 'Compendium of Evidence' to substantiate the recommendations. This work was heralded as a practical step towards creating a health service which is sustainable financially, environmentally and socially. Despite the well-evident need for widespread urgent action, uptake has been limited. There are sporadic reports of single centre quality improvement projects, but implementation is far from universal (Westwood et al., 2023).

Objectives of the Research

This research aimed to inform the transition to sustainable surgical practices within ENT theatres at a 550-bed district general hospital in South Wales. It was designed to establish views and perceptions as to the importance, relevance and implementability of the 'Green Theatre Checklist' with a view to introducing it into clinical practice.

Research objectives included:

- To determine if staff believe that theatres significantly contribute to climate crisis and are motivated to make changes.
- To evaluate the relevance of the GTC, establish areas of good current practice and areas to target.
- To identify enablers to implementation and how these can be further exploited.
- To identify barriers to implementation and how these can be overcome.

Literature review

ENT Speciality Specific Evidence

A systematic single reviewer literature review was conducted via ovid MEDLINE using a problem, phenomena, time (PPS) search strategy (see table 1).

Table 1. Problem, Phenomena, Time Search Strategy.

Problem	Phenomena	Time
ENT, otorhinolaryngology, otolaryngology, thyroid, head and neck, tonsillectomy	Sustainable, waste, sustainability, green, stewardship, carbon, CO2, green theatre checklist, green surgical checklist	2010-Current

Keywords were searched within the abstract. Non-English language and papers without available abstracts were excluded. 106 papers were identified and their abstracts screened for relevance. 15 papers were found to be directly relevant to the project. Further evidence was then identified using a 'snowballing'

technique through reference review. All relevant identified papers were reviewed with subsequent descriptive synthesis.

Table 2. Literature Matrix – Specialty Specific Evidence.

Author and Year	Title	Focus
(Bowen et al., 2024)	Single-use versus reusable rhinolaryngoscopes for inpatient otorhinolaryngology consults: Resident and patient experience	Single use vs re-usable laryngoscopes, patient, and doctor survey
(A. E. Dilger et al., 2024)	Climate change and environmental sustainability in otolaryngology: A state-of-the-art review	Review article
(Hathi et al., 2023)	Attitudes and Perceptions of Canadian Otolaryngology-Head and Neck Surgeons and Residents on Environmental Sustainability	Perceptions survey of ENT surgeons
(A. E. Dilger & Bergmark, 2023)	Environmental sustainability in otolaryngologic surgery	Review article
(Morgan et al., 2023)	Cost-comparison study of reusable and disposable rhinolaryngoscopes in a large English teaching hospital	Single use vs re-usable laryngoscopes, cost analysis
(Yalamanchi et al., 2022)	Association of operating room costs and with head and neck surgical instrumentation optimization: a surgeon-led quality improvement initiative.	Theatre set rationalisation
(Ryan et al., 2021)	Operating Room Waste Generated Across Otolaryngology Cases	Theatre waste analysis
(A. Dilger et al., 2021)	What otolaryngologists can do to lessen their carbon footprint	Summary article
(Meiklejohn & Chavarri, 2021)	Cold technique in adult tonsillectomy reduces waste and cost	Waste and cost analysis in tonsillectomy
(Mistry et al., 2020)	The single-use rhinolaryngoscope: an evaluation and cost comparison	Single use vs re-usable laryngoscopes, cost analysis
(Crosby et al., 2020)	Surgical instrument optimization to reduce instrument processing and operating room setup time	Theatre set rationalisation
(Lui et al., 2014)	Reducing the preoperative ecological footprint in otolaryngology	Theatre waste analysis
(Morris et al., 2014)	Streamlining variability in hospital charges for standard thyroidectomy: developing a strategy to decrease waste	Cost analysis of streamlining pre-op/intra-op processes
(Chin et al., 2014)	Reducing otolaryngology surgical inefficiency via assessment of tray redundancy	Theatre set rationalisation
(Penn et al., 2012)	Reducing disposable equipment waste for tonsillectomy and adenotonsillectomy cases	Theatre set rationalisation, cost, and waste analysis

Papers focussed on the transition to sustainable surgery are limited within the ENT speciality academic literature. No ENT papers are referenced by the Green Theatre Checklist compendium of evidence or the Green Surgery Report bibliography (Brighton & Sussex Medical School et al., 2023). Similarly, very limited evidence was identified regarding experiential adoption of the Green Theatre Checklist itself, none within the field of ENT. A single centre general surgical project reported successful adoption within reusable textiles and reduction of unnecessary procedures, but that procurement of reusable equipment was a challenge and staff remained hesitant to adopt alcohol gel (Westwood et al., 2023).

Despite this, it is recognised that ENT services are directly impacted by changes in climate. Exposure to air pollution is associated with increased rates of sinusitis, obstructive sleep apnoea and respiratory disease,

and increased ultraviolet exposure is predicted to increase rates of cutaneous head and neck malignancies (Dilger et al., 2024).

Many of the papers focus on waste reduction and rationalisation of theatre sets. The most common primary outcomes were cost and waste, with few studies considering the global warming potential of interventions. Positively, as ENT operative lists often contain a number of short cases, creating large amounts of often recyclable waste, there is a significant potential to reduce environmental impact by proper waste segregation and recycling (Ryan et al., 2021). Additionally, a number of papers have shown that rationalising theatre packs is an effective way to reduce waste and cost, whilst maintaining surgeon satisfaction (Penn et al., 2012) (Crosby et al., 2020).

Another area of interest is in the single use rhinolaryngoscope, which gained prominence during the COVID pandemic due to reduced risk of viral exposure to staff and other patients. These have limited use outside of the outpatient setting, however, are useful indicators of surgeons thinking regarding single use vs reusable instruments. Despite early reports that switching to single use would be cheaper (Mistry et al., 2020) and preferable (Bowen et al., 2024), larger recent studies have shown significant reduction in waste and cost using reusable rhinolaryngoscopes in the medium to long term (Morgan et al., 2023).

Implementation of Surgical Sustainable Change

Both NHS patients and staff are aware of the environmental impact of healthcare and are supportive of action (NHS England, 2022), the majority support the Net Zero target (The Health Foundation, 2021). Patients have indicated they would be willing to practically support a greener NHS by taking a number of measures including recycling aerosols and video GP consultations (The Health Foundation, 2021). A recent survey of UK surgeons found that 82% of surgeons are willing to alter their clinical practice to increase sustainability (Harris et al., 2021).

To support this transition, a number of useful summary articles and policy documents have been released in the UK. Brighton & Sussex Medical School, Centre for Sustainable Healthcare, and UK Health Alliance on Climate Change released their ‘Green Surgery Report’ in 2023. This document laid out the scale of the problem and recommended targets for policy makers (Brighton & Sussex Medical School et al., 2023). The guidance focussed on reducing the need for surgical intervention at the population level, optimising surgical care pathways, reducing energy use, and minimising the impact of volatile anaesthetic gases. Additionally, it provided further guidance on reducing consumables in conjunction with the Green Theatre Checklist and advice on change leadership, encouraging a simultaneous grassroots and top-down approach.

However, clinicians in practical terms must balance these concerns with the simultaneous challenges of ageing populations, squeezed budgets and increasing waiting lists (NHS England, 2024). A survey of Canadian ENT surgeons indicated 81% believed climate change would significantly harm future generations but few thoughts it would affect current patient (Hathi et al., 2023). This lack of urgency is reflected by NHS patients. Despite having high support for net zero targets, creating a greener NHS was ranked second lowest out of 15 for priorities in the next 10 years. Top priorities were waiting times, staffing and morale (The Health Foundation, 2021).

Commonly, healthcare staff report taking more action to counter climate change at home rather than at work (Harris et al., 2021). Surgeons report barriers including funding, time constraints, knowledge and organisational factors (Gadi et al., 2023). Key enablers for sustainable innovation include guidance from national bodies, monitoring and regulation, improved national leadership, and education (Harris et al., 2021).

The multifactorial requirements to implement change are reflected in the wider literature. Within the COM-B model, the change in behaviour (B) cannot happen without capability (knowledge and education), opportunity (guidance and leadership) and motivation (Michie et al., 2011). Michie et al went on to further categorise opportunities to influence these in both policy categories and intervention functions (see Figure 2).

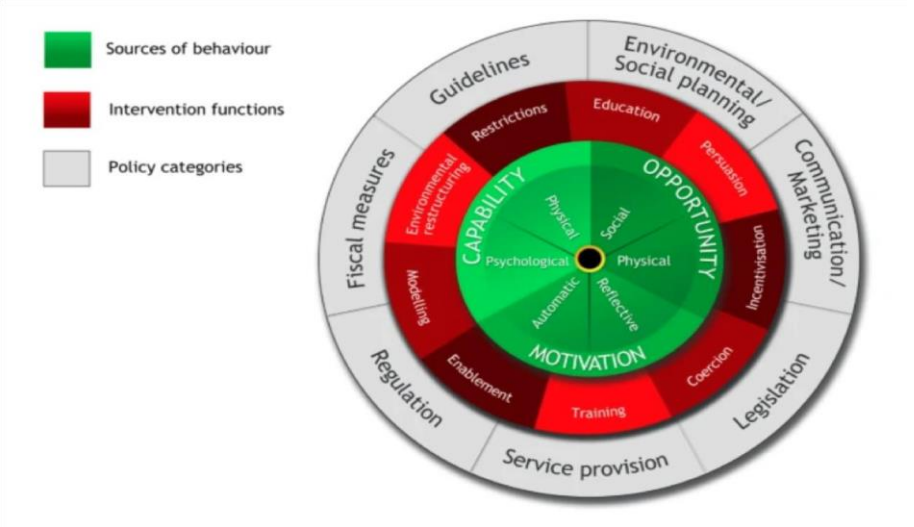


Figure 2. The Behavior Change Wheel (From: Michie et al. 2011).

The Green Surgery report advises clinicians to consider the Kotter model for leading sustainable change in corporate leadership. This framework for successful innovation includes eight steps (Gupta, 2011).

1. "Establish a sense of urgency
2. Create a guiding coalition
3. Develop a vision and strategy
4. Communicate the change vision
5. Empower individuals for broad-based action
6. Generate short-term wins
7. Consolidate gains and produce more change
8. Anchor new approaches in the culture"

Conceptual Framework

Following a review of the literature and consideration of the specific context of the department, a conceptual framework for the implementation of the GTC was developed. This was used to guide the creation of the perceptual survey and in the analysis of qualitative interview data.

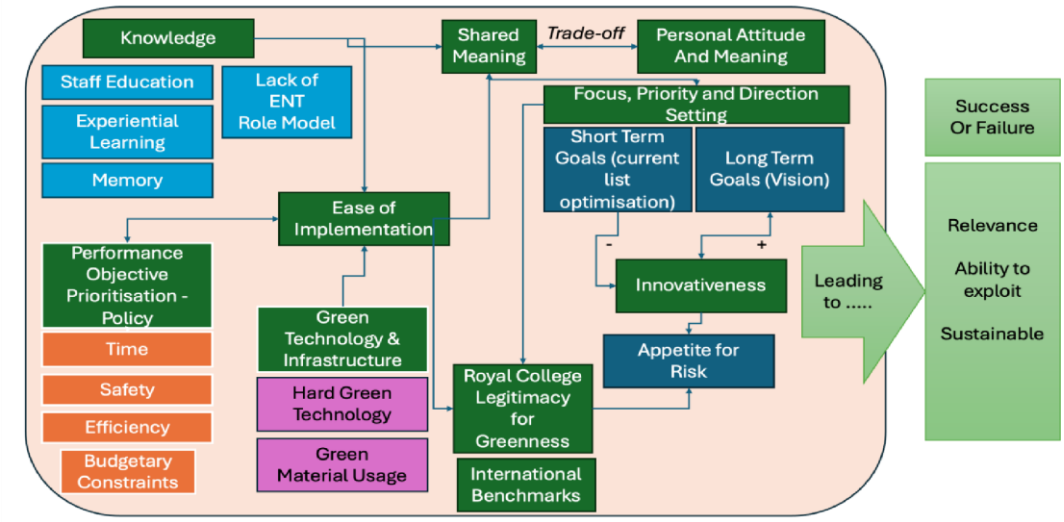


Figure 3. Conceptual Framework – Implementing the Green Surgical Checklist.

Research methodology and design

Introduction and Purpose

This project was designed to inform the targeted transition to sustainable surgery within ENT theatres in our district general hospital. The Green Theatre Checklist has been given much prominence by the Royal Surgical Colleges and was designed to facilitate members establishing their own grassroot sustainable change. It was therefore selected by the ENT theatre leadership as an evidence-based way to implement the sustainable transition. However, in order to implement this change, it was deemed crucial to understand the staff's views and perceptions of the checklist. Firstly, did staff consider it importance and relevant to their practice – were they motivated. Secondly, we aimed to establish the checklist's implementability by identifying enablers and barriers – capability and opportunity.

In order to implement 'broad-based' action, it was deemed crucial to gauge a wide variety of views from across the team in varying roles and seniority. Recruitment of participants was aimed at clinical staff (ENT surgeons, anaesthetists, scrub nurses, operation department practitioners) as well as non-clinical (management, infection control, procurement).

Methodology

Participants were recruited from within the clinical environment, whilst working within ENT theatres in our hospital. The natural breaks within the theatre day were exploited and staff were asked to spare 10-30 minutes. Participants were given a Participant Information Sheet and asked to complete an online consent form. Firstly, participants were asked to complete a 5-10 minute online perceptual questionnaire on the Qualtrics XM platform. They were then asked to participate in a semi-structured interview.

This project received ethical approval from the Swansea University Humanities and Social Sciences Ethics Committee (see Appendix A).

Perceptual Questionnaires

The questionnaire was designed to primarily address research objective one: to determine if staff believe that theatres significantly contribute to the climate crisis and are motivated to make changes. Questions were informed by other surveys found in the literature (Harris et al., 2021) and (Hathi et al., 2023). The full questionnaire can be found in Appendix B.

Semi-Structured Interviews

The semi-structures interviews were designed to address research objectives two to four:

- To evaluate the relevance of the GTC, establish areas of good current practice and areas to target.
- To identify enablers to implementation and how these can be further exploited.
- To identify barriers to implementation and how these can be overcome.

Participants were shown a copy of the GTC before being asked in turn about the pre-operative, intraoperative and post-operative elements. For each section of the GTC, participants were asked to identify what was relevant to ENT, areas of current good practice, areas which should be targeted for implementation, enablers and barriers to their implementation, and how barriers can be overcome (see Appendix C).

Interviews were carried out by the author; summative transcript notes were taken to record the conversations. Interviews were conducted in a private room within the theatre suite.

Data Analysis

Quantitative survey data was analysed using Qualtrics XM. Qualitative data from interview transcripts were analysed using deductive content analysis. A Microsoft word table was used to record emerging subcategories with example text within the themes identified from the developed conceptual framework.

Results

Introduction

In total 20 participants were recruited to the study. All participants completed the perceptual questionnaire and participated in the semi-structured interviews. The survey completion rate was 100%. Participants took on average 5.5 minutes to complete the survey. Interview duration varied from five to thirty-two minutes, with a median of ten minutes. Participants were drawn from a variety of professional backgrounds representing clinical and management roles (Table 3).

Table 3. Professional Demographics of Study Participants.

Professional Role	n=
ENT Surgeon	5
Anesthetist	4
Scrub Nurse	4
Management (Nursing, OPD and Infection Control)	4
OPD	3

Legitimacy and Leadership

ENT staff have acknowledged and identified that their clinical service directly contributes to the climate crisis, with 30% strongly agreeing and 85% agreeing (Figure 4).

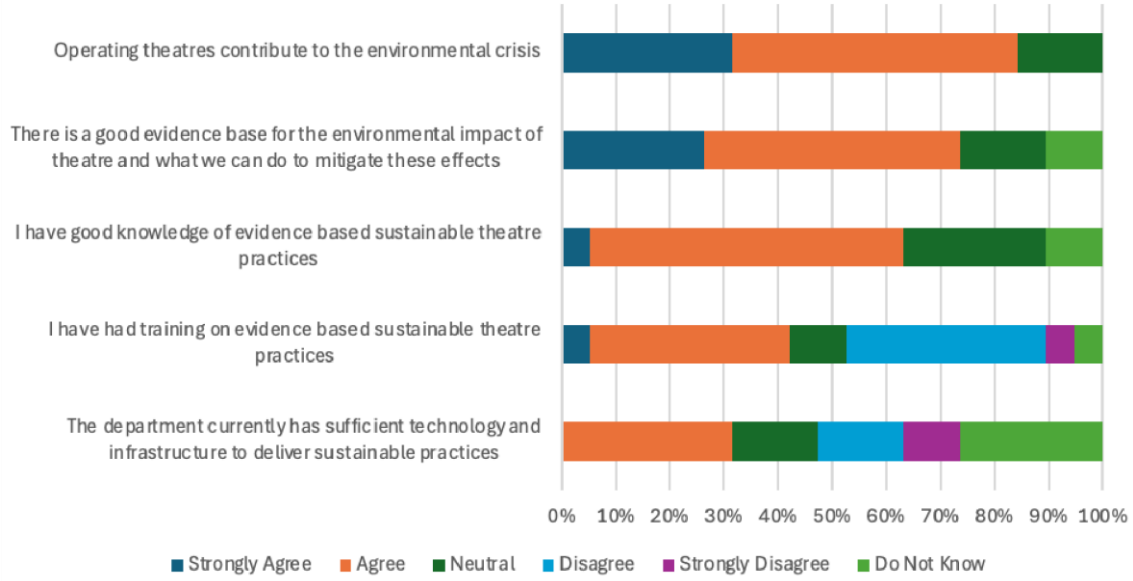


Figure 4. General Perceptions Regarding Theatre Sustainability Importance, Relevance and Training.

Most participants (55%, n=11) were able to identify a person or organisation they consider a role model within sustainable ENT. Most commonly staff identified a consultant (n=4) or member of the local team (n=3). Additionally, Royal Colleges (n=3) and local initiatives such as the Health Board Green Group and Green Health Wales (n=1).

There was consensus on local leadership, with a majority suggesting a multidisciplinary team being best to lead the green transition within ENT. Views were more disparate in terms of national leadership, however four out of five ENT surgeons suggested ENT UK should undertake this role (Figure 5).

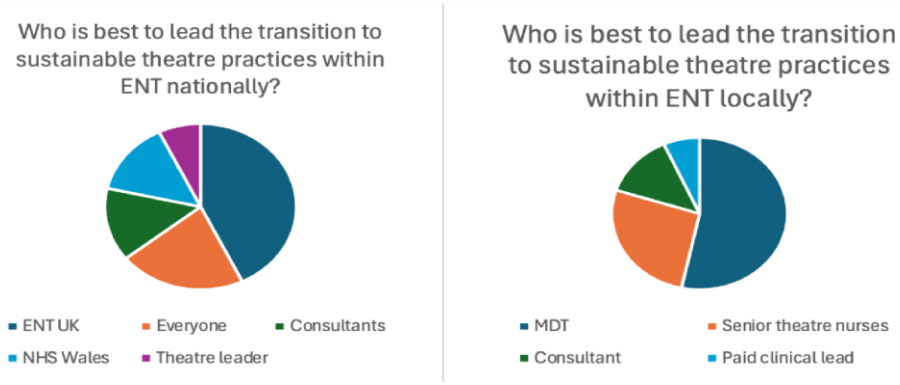


Figure 5. Proposed Leaders of Change within Surgical Teams.

Staff recognised the power and influence of local leaders.

> *ENT Surgeon 1: "You are starting to see a number of staff using reusable hats, but I would say only about 10% of staff use them. I don't think it would be possible to mandate this, maybe you just need some strong leaders to make it the 'done thing'."*

> *OPD 2: "I think the biggest thing is the buy in, people think - this is the way we have always done it. If you can get a leader to stand up and say – this is what I am doing and why, you might get the ball rolling."*

The association of the GTC with the Royal Surgical Colleges was perceived to be positive and impactful. Participants believe that the association with the colleges meant that the checklist was evidence-based, trustworthy and should be a priority for the team. However, participants had a more neutral view about whether it was currently a priority for the team (Figure 6).

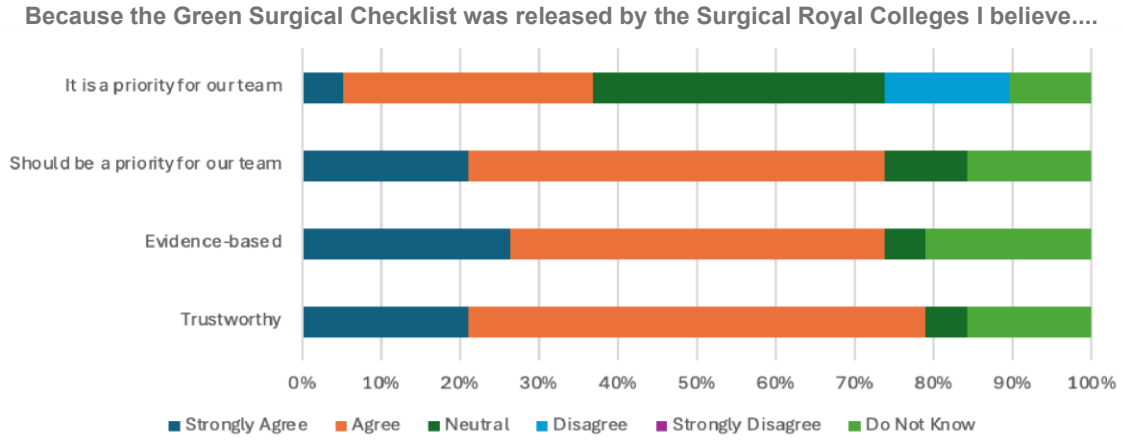


Figure 6. Impact of The Royal Surgical Colleges Involvement.

Staff demonstrated a desire for national guidelines to inform practice, with a perception that without them there was significant risk to the individual.

> *ENT Surgeon 2: "We need clear consensus guidelines from ENT UK … so that we know the consultant body is on board. It would ensure that if things go wrong, we can say to the trust that we are following guidelines and we have consensus to back things up. The change itself might be blamed on us."*

Several Anaethetists highlighted the power of college guidelines with regards to a recent change in practice.

> *Anaesthetist 3: "AGPI guidelines have meant that you don't have to use a full gown for spinals. The reason people have started this is because the college released that guideline, we probably*

knew it was safe before, but now it's in the guidelines we have transitioned, it covers you in case anything goes wrong."

Without formal guidance, junior surgeons looked like they were led by their senior colleagues.

ENT Surgeon 3: "As a junior, I will normally do whatever my consultant would do, so if they want to do a full scrub that is what I would do. But I guess that will change as clear evidence and policy comes out.

There was in turn a recognition from senior surgeons that they need to lead by example to encourage others and give them permission to act.

ENT Surgeon 5: "I think it would be good to explicitly state in the brief [team meeting at the beginning of an operating list] that there is no need to scrub, because then I am leading by example and as the surgeon I take responsibility. I think this would be a good thing to do, especially initially to give more junior staff members the confidence to reduce unnecessary equipment."

Clinicians were frustrated by the lack of standardisation and the unnecessary variation between hospitals.

Anaesthetist 2: "We are about the only hospital in Wales that has reusable laryngoscope handles, only because we fought it tooth and nail. The standards are different in every hospital."

Focus, Priority and Direction Setting

Perceptions of the impact of sustainable theatre practices were positive. Over 65% of participants strongly agreed that waste would be reduced. Additionally, there were mostly positive or neutral views on cost, theatre efficiency, time and patient safety (Figure 7).

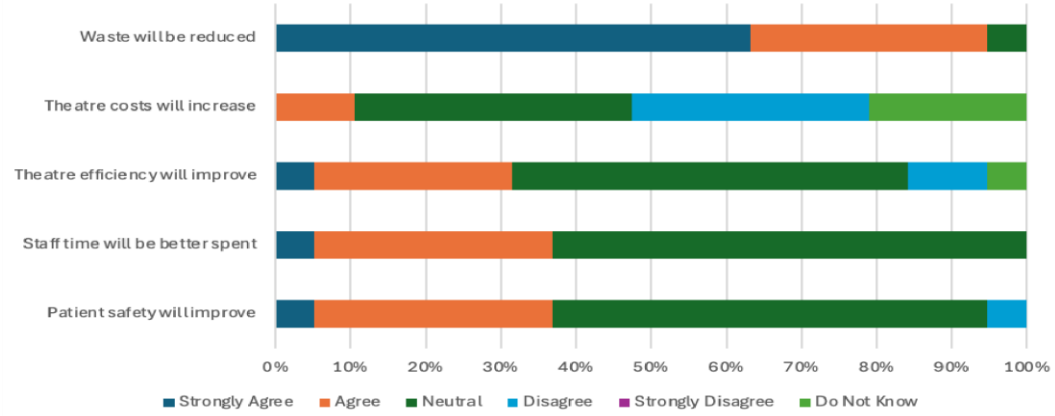


Figure 7. General Perceptions Regarding Impact of Sustainable Theatre Practices.

Participants agreed that they prioritised limiting the environmental impact of lists, with more agreeing and strongly agreeing that this would be the case in the future. There was a more neutral view about colleagues' current priority, but this improved when considering the department's future (Figure 8).

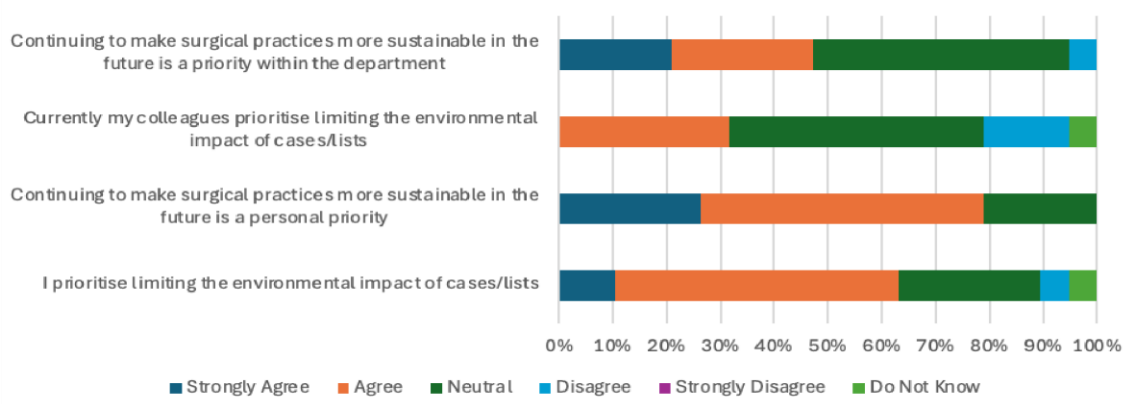


Figure 8. Prioritisation and Direction Setting.

Staff were keen to highlight areas of current good practice and focus. Many of the anaesthetic team – both doctors and ODPs - reported that they were almost fully compliant with the anaesthetic side of the checklist.

> *OPD Manager 1: "Anaesthetics are well versed and educated with it, we are trying to do a lot of stuff, on the whole we are doing quite a lot of this plus more."*

Another noted area of good practice was recycling at the beginning of a case. Many staff admitted that this has been driven primarily by an recent awareness of the significant cost saving in recycling clean waste rather than simply incinerating it with the clinical waste. Financial savings is clearly a powerful symbiotic motivator.

> *ENT Surgeon 1: "Getting people to focus on recycling things at the beginning of the case is actually quite easy because of the cost of incinerating clinical waste. When you get that double benefit saving money and being more green people tend to be very onboard."*

> *OPD Manager 1: "I'm not an eco-warrior, but if we can do things that will improve costs and emissions why not do it, just because it's the status quo is no excuse."*

Despite staff considering sustainability a personal priority, the demands of the clinical day often mean practice does not live up to intention. Many staff could see this best evidenced by sorting of clinical waste and that often convenience was crucial in decision making.

> *Anaesthetist 1: "One thing we are really bad at is sharps bins, just because they are close and its convenient. Right now I can see 10syringes, plastic packaging and clinel wipes in this bin – that's really bad because they are expensive and get incinerated. …. It's a simple thing of ergonomics the sharps bin should be less close than the other bins."*

Additionally, staff recognised that they often focus and priority changes throughout the day. Often motivation is poor at the end of a list. Many staff commented on the 'shut down' element of the checklist being the least adhered to, often night staff with find lights, computers and radios on.

> *Theatre Leader: "We are not good at powering off – it's not a priority and I think people are always in a rush to get off. We are not good with change unless it's part of a routine and we are monitored!"*

> *OPD 3: "Shutting down depends on the human beings in the theatre, often on nights the lights will be on, its basic, you would turn lights off in your house so why wouldn't you do it at work?"*

Staff Knowledge, Training and Memory

The majority of staff believed that there is a good evidence-based basis to guide sustainable practices, and they had a good knowledge of this (Figure 4). However, awareness of the GTC was low, 40% (n=8) stating that they were aware of its existence, the remainder stating they were not aware (n=9) or not really (n=3). Only two participants reported using the GTC on a daily basis.

Despite self-assessed understanding being high, a number of staff expressed views that are contradictory to current evidence regarding infection control.

> *Scrub Nurse 1: "I am not sure what I think about reusable gowns, if I was having surgery I would want everything to be fresh.*
>
> *Theatre Manager: "We need to look at the evidence about rub don't scrub…You would need to also do monitoring… to ensure that infections do not increase".*

Additionally, many scrub staff believed that high levels of training in sterile practices had led to inflexible thinking and hesitance to use initiative.

> *Scrub Nurse 3: "Surgeons often only scrub when necessary, but often the scrub staff will do a full scrub every time. Its force of habit, I don't know why we do it, lots of our cases are not sterile as we are operating in a dirty areas but it's just what we do."*
>
> *Theatre Leader: "Staff are trained to be sterile at all times, they will just find it hard not to fully scrub and drape for clean procedures."*

Most staff did not report having had any formal training within sustainable practices (Figure 4). This was reflected in the interviews.

> *Scrub Nurse 4: "Rub Don't scrub – what does that mean?"… [Explanation given] I've never done it."*
>
> *OPD 2: 'Sometimes people don't have a good knowledge about what can and can't be recycled, would be a quick fix, just a bit of education."*

Participants also recognised in interviews that often decisions regarding best practice were extremely complicated and nuanced, often with the carbon implications being unclear between different options, as well as safety and clinician preference. One example would be in choice of anaesthetic agent, which is multifaceted.

> *Anaethetist 1: "TIVA [using only intravenous anaesthetic agents] is controversial because it will slow the list down, every single patient needs two syringes and pumps and in many children you would need to use gas and then switch to TIVA which would expose them to two anaesthetic drugs, which I don't think I would do. This becomes more finely balanced the shorter the case."* Managers also reported problems in educating staff due to fast-changing guidelines.
>
> *OPD Manager 1: "Honestly – what they recycle changes so often that it is really hard to tell staff what to recycle. The goalpost is constantly being changes which confuses staff, it fatigues them."* Half of participants (n=10) reported having been previously involved in sustainability projects within theatre.

Of these, many reported a positive experience (Figure 9).

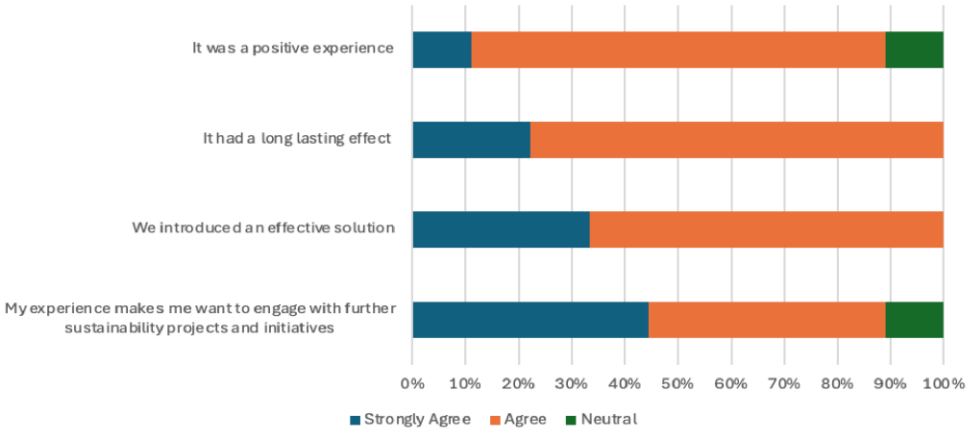


Figure 9. Previous Experience with Sustainability Projects.

Despite generally positive experiences, many described a perceived adversarial relationship between innovation and safety concerns primarily from infection control.

> *OPD 2 "There is a big conflict of interest between lots of this reusable stuff and with infection prevention… You would come across a lot of resistance if you tried to change anything."*

> *Anaesthetist 2: "Our biggest problem in this hospital is infection control, their default position is single-use… it drives me absolutely mad."*

There was evidence that staff are developing shared meaning regarding sustainability and are forming consensus over priorities.

> *ENT Surgeon 1: "To make the biggest impact we should be focusing on the most common operations that we do … without having to open too many single use items."*

> *ENT Surgeon 2: "Reusable equipment is particularly relevant for us, for example we do a lot of short cases like tonsillectomies and scopes so we can make a big difference by using reusable."*

However, there was evidence of siloed working and a hesitance to collaborate with other disciplines.

> *OPD 1: [About intra-op section] "I wouldn't know anything about that."*

> *ENT Surgeon 4: "We have no power or agency over the anesthetic side unfortunately, so this section of the checklist is difficult to monitor or implement."*

Green Technology, Infrastructure and Resources

Only one third of staff agreed that the department currently has the resources to implement sustainable practices (Figure 4). Often staff felt that there were no viable reusable options available.

> *Scrub Nurse 3: "Often the thing stopping us from using reusable things are the manufacturer, for example finger switch and harmonic there are no options."*

There was also concern that switching to reusable textiles and instruments would require significant upfront financial commitments and more staff.

> *ENT Surgeon 2: "Funding is a big barrier – when updating these processes it will be very expensive and people might not be on board, especially if you are competing for money with more essential things like getting waiting lists down."*

> *OPD 3: "The main barriers to this are manpower to be honest. I used to do HSDU [sterile services] in Cardiff – and all the equipment you would need [to sterilise gowns] is there, you just need more people to do it."*

However, there was a recognition that rationalisation of resources such as operative sets would minimise this impact and that many of these upfront costs would be offset in the long term.

> *OPD Manager 1: "I would have thought reducing set size would be music to sterile services ears because they are always pushing towards this, it is obviously in their best interest and saves time and money."*

> *Infection Control Manager 1: "[Automatic taps} it's an expensive change … but eventually you should make your money back."*

Additionally, many experienced staff members felt user satisfaction would be higher with reusable materials and equipment.

> *Infection Control Manager 1: "People tend to be happier with reusable textiles and instruments because the quality tends to be much better."*

Discussion

Legitimacy and Leadership

Although the vast majority of participants agreed that theatres contribute to the environmental crisis, only one third 'strongly agreed'. Similar results have been found in previous surveys of ENT surgeons (Hathi et al., 2023). This result could perhaps be explained by the context of a health service which faces a number of competing challenges, and reduction of carbon emissions will not be the primary concern for all staff members (The Health Foundation, 2021).

Participants were able to identify and emphasised the importance of local leaders within the trust. Many noted that it will take a core number of individuals to lead by example to encourage adoption of change. This observation is supported by Roger's Diffusion of Innovation model – which states once a critical mass has adopted a behaviour, the change within a team becomes self-sustaining, with further innovation becoming inevitable (Brighton & Sussex Medical School et al., 2023).

Both survey and interview data emphasised the importance of national bodies, particularly ENTUK, in leading the transition to sustainable services. Although involvement from the surgical colleges lent legitimacy and authority to the checklist, clinicians wanted formal and specific guidance in order to mitigate perceived risks, particularly with infection control. Calls for national bodies to increase monitoring, publish guidance and regulation have been sustained (Harris et al., 2021). However, ENTUK and the royal colleges are yet to publish any ENT specific guidance to address these concerns.

Focus, Priority and Direction Setting

Participants identified the reduction of unnecessary gloves, gowns, and single-use devices as a priority. This view is supported by a recent systematic review of carbon hotspots within theatres which suggests targeting consumables and devices (Robinson et al., 2023).

Waste analysis studies have identified that ENT theatres produce large amounts of clean waste, roughly one third of total waste, 89.7% of which is recyclable (Lui et al., 2014). Waste reduction and recycling are the most common projects surgical staff report involvement in (Gadi et al., 2023). Participants believed that they had already made good headway in this area, and by providing separate waste bags at the beginning of the case this had increased recycling. Many cited costs as the primary motivator but emphasised that convenience is crucial to maintain compliance.

Previous studies looking at implementation of sustainability in nursing staff have found they prioritise concerns such as infection control and believe initiatives will increase cost and time (Anåker et al., 2015). However, our participants held neutral or positive views over efficiency, time and cost – perhaps reflecting primarily positive previous experiences with sustainability projects.

There was a discrepancy between participants' views on how much they prioritise sustainability compared with their colleagues. Additionally, participants thought they would prioritise sustainability more in the future than they do in current lists. This demonstrates a potential lack of urgency and shared view on prioritisation. This disconnect was further emphasised by the reluctance of surgeons and nurses to comment on anaesthetic matters and ODPs to comment on intraoperative matters.

Staff Knowledge, Training and Memory

40% of staff reported training on evidence-based sustainable practices, which is higher than rates reported in the literature (Gadi et al., 2023). Reluctance to adopt alcohol rub rather than antiseptic scrub and hot water has been reported in previous sustainability drives (Westwood et al., 2023). Participants described concern there may not be enough evidence it is safe, despite the fact 'rub don't scrub' has been adopted within National Institute for Care and Health Excellence guidelines since 2008 (NICE, 2019).

Participants agreed that patient safety must take precedence over sustainability, reflecting previous survey data of both patients and staff (Gadi et al., 2023). However, several participants commented on a perceived adversarial relationship with infection control which stifles innovation. This was, despite previous experience in sustainability projects reported to be positive. This demonstrates it is crucial that leaders develop positive

working relationships with other professionals to ensure sustainable change is implemented in a way that ensures a positive or neutral impact on patient safety and outcomes.

Conceptual Framework Revisited

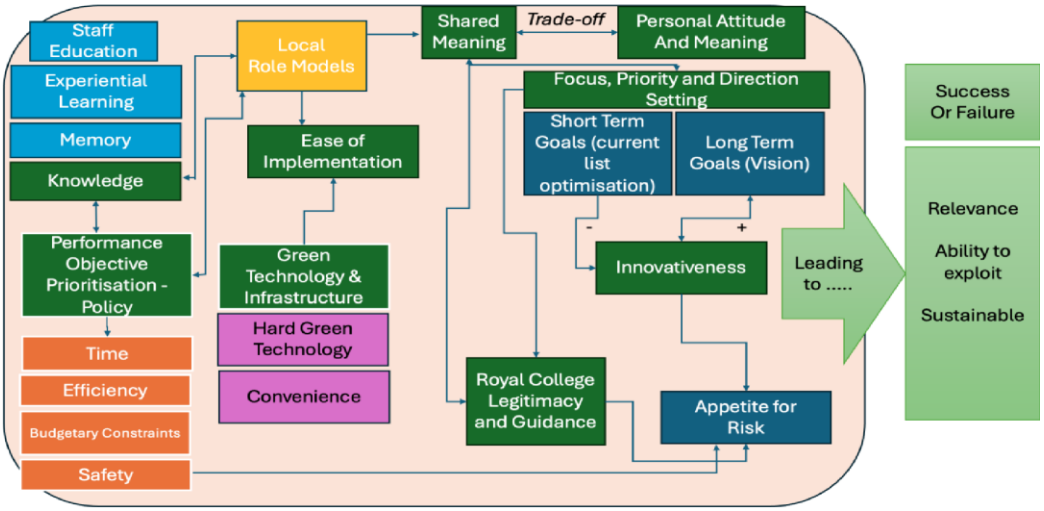


Figure 10. Revised Conceptual Framework - Implementing the Green Surgical Checklist.

Much of the conceptual framework was substantiated by both survey and interview data. Prioritisation of sustainability was influenced by perception regarding time, list efficiency, budget and safety. Knowledge was influenced by both formal training, previous experience and organisational memory. Finally, there was a difference in focus on sustainability between short term goals and long-term vision.

However, two important modifications have been made to the framework. The first acknowledges that participants were able to identify local role models within sustainability, and they emphasised their importance in team behaviour change within interviews. Secondly, I have emphasised that participants felt safety concerns, primarily from infection control, impacted perceptions on risk to the individual and team. Crucially however, participants believed this could be mitigated by influence and guidance from the royal colleges.

Limitations

This project was designed to inform about the implementation of sustainable change within a small team. Although views were sought from across a number of professions, participants were not recruited from other surgical specialties outside of ENT. Additionally, all participants were recruited from a single mid-sized district general hospital in south Wales. The generalisability of any conclusions outside of the specific context of this speciality and team should therefore be interpreted with caution. However, given that all staff members, other than ENT surgeons, will regularly work in non-ENT theatres, the conclusions should be largely generalisable within the organisation.

Conclusion and Recommendations

Key Findings

- ENT theatre staff within our hospital agree that theatres significantly contribute to the climate crisis and are motivated to make changes.
- Staff believe that the GTC is trustworthy, evidence-based, and should be implemented.
- Perceived areas of good current practice include anaesthesia and the recycling of clean waste.
- A number of enablers and barriers to implementation were identified.

Table 4. Summary of Key Barriers and Enablers to Implementation.

Theme	Effect	Method of Exploitation or Mitigation
Speciality specific guidelines	Enabler (reduces perception of risk and standardises practice)	ENTUK publishing ENT specific guidelines on consumable use
Local role-models and leaders	Enabler (helps develop shared meaning, maintains motivation,	Formalise a multidisciplinary leadership group and empower them to make change
Understanding of sustainability evidence	Enabler (motivation, understanding and reduces perception of risk)	Increase knowledge through education campaigns for all staff members. Leverage previous positive experiences and include real world examples.
Cost as a symbiotic motivator	Enabler (increases motivation)	Recognise key areas where financial and environmental concerns are easily aligned, e.g., waste management and reduction of consumables. Compound this effect by promoting any cost/carbon savings to staff.
Reusable equipment cost	Barrier in short term Enabler in long term	Clear signaling from NHS Wales and Executive that funding is available and long-term outcomes will be prioritised
Perceptions about infection control	Barrier (perceived inhibitor to action, increased personal risk)	Disseminate guidance and evidence about sustainable practices. Encourage collaboration, endorsement, and early involvement from local infection control in any projects.
Convenience	Enabler	Recognise that staff are busy and making change convenient increases uptake and longevity of motivation. Any change or motivation should put staff ease of experience as a central concern.

Recommendations for Checklist Implementation Locally

There is broad support for the transition to sustainable surgical practices from within the ENT theatre team. Individuals consider it a personal priority and want to make it more so in the future. However, individuals are concerned about the impact specific changes would have on infection control, short-term budgets and staffing levels. Despite motivation being theoretically high, staff recognise that their practice varies throughout the day, with suboptimal shut down procedures. Staff are particularly hesitant to deviate from what they perceive to be infection control guidance.

Facilitate and enable good practice by:

- Encourage the development of a grassroots multidisciplinary team to lead the transition to sustainable services. Promote interdisciplinary collaboration and sharing of best practices within teams by encouraging sustainability discussion at departmental meetings and within local innovation and improvement conferences.
- Encourage and champion the progress made in recycling clean waste both in terms of carbon and money (as this is a key symbiotic motivator). Try to limit changes in waste guidance to ensure clarity and minimise fatigue.
- Disseminate and endorse well-established and evidence-based infection control guidelines which facilitate sustainable practices. This would include NICE guidance on hand washing and draping to encourage ‘rub don’t scrub’.
- Develop a multidisciplinary teaching series on sustainability issues and incorporate this into team members continuing professional development.
- Assign the role of ‘theatre shutdown’ to a specific member of staff. This should be done on a late shift, where they are not under clinical demands or pressure to leave the department. This could be protocolised into a checklist.

Implication for National Bodies

Participants, particularly ENT surgeons, have emphasised the acute need for specific ENT guidance on theatre practice. Particular guidance is required from ENTUK on the use of reusable equipment and

minimising consumables. For example, what procedures are considered clean vs sterile, and do not require full scrub, draping and gowning. This would preferably come in the form of well-evident guidelines, but participants noted that, given the need for expedience, consensus statements would also be useful. There is evidence that this will legitimise practice, increase uptake, and reduce perceptions of risk for individual clinicians and theatre teams.

Additionally, case studies should be published to share innovative best practice and encourage adoption.

Future Research

Future research should focus on different hospitals and specialties to allow for better generalisability across healthcare settings. Additionally, if these changes are to be widely adopted, it will be necessary to study the implementation phase of these strategies and the effect any changes have on patient outcomes, cost and carbon. As an iterative document, the GTC should be regularly updated to incorporate emerging evidence and innovative practice.

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Appendices A: Ethical Approval

Ethical Approval – Humanities and Social Sciences ethics committee, Swansea University

Swansea University
Prifysgol Abertawe

Approval Date: 05/07/2024

Research Ethics Approval Number: 2 2024 9516 9276

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	Green Surgical Checklist - Relevance, Acceptability and Barriers within ENT Theatres
Applicant name	FERGUS WOOD
Submitted by	FERGUS WOOD /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/11554

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

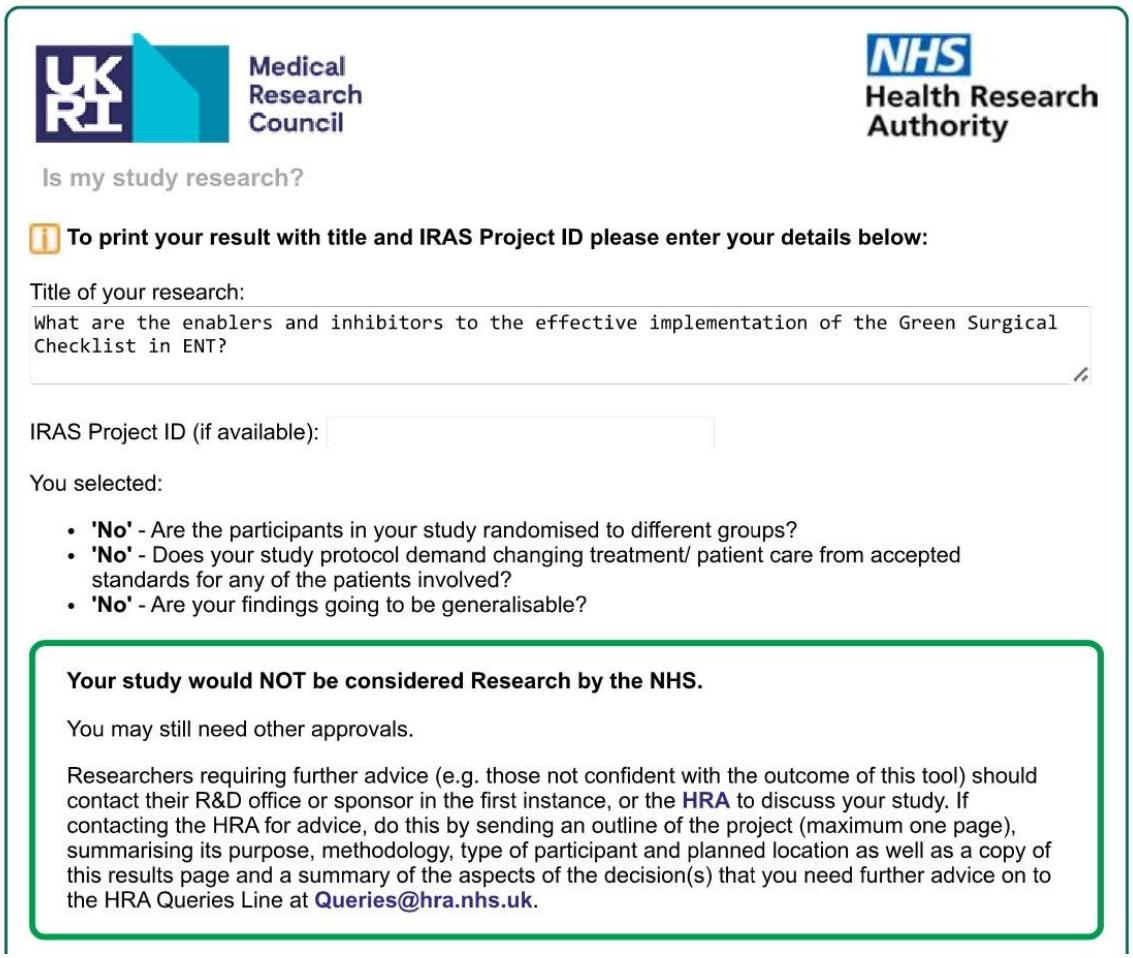
Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Confirmation no ethical approval was required from the NHS/Health Research Authority as not defined as research by the Medical Research Council 'Research Tool'



Medical Research Council

NHS Health Research Authority

Is my study research?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

What are the enablers and inhibitors to the effective implementation of the Green Surgical Checklist in ENT?

IRAS Project ID (if available):

You selected:

- **'No'** - Are the participants in your study randomised to different groups?
- **'No'** - Does your study protocol demand changing treatment/ patient care from accepted standards for any of the patients involved?
- **'No'** - Are your findings going to be generalisable?

Your study would NOT be considered Research by the NHS.

You may still need other approvals.

Researchers requiring further advice (e.g. those not confident with the outcome of this tool) should contact their R&D office or sponsor in the first instance, or the **HRA** to discuss your study. If contacting the HRA for advice, do this by sending an outline of the project (maximum one page), summarising its purpose, methodology, type of participant and planned location as well as a copy of this results page and a summary of the aspects of the decision(s) that you need further advice on to the HRA Queries Line at **Queries@hra.nhs.uk**.

Appendix B: Perceptual Survey

1. I consent to complete this questionnaire (please see consent and participant information sheet). [Multiple choice]
    a. Yes
    b. No – Thank you for your help. You may now close this window.
2. What is your professional role? [Multiple choice]
3. Please provide you view to the following statements: [Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree, Don't Know]
    a. Operating theatres contribute to the environmental crisis
    b. There is a good evidence base for the environmental impact of theatre and what we can do to mitigate these effects
    c. I have good knowledge of evidence based sustainable theatre practices
    d. I have had training on evidence based sustainable theatre practices
4. Are you aware of people or organisations that are role models for implementing green strategies within ENT or surgery? [Free text]
5. Do you have prior experience of sustainability initiatives/projects in theatres? [Multiple choice]
6. Please rate your experiences of the sustainability initiative or project: [Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree, Don't Know]
    a. It was a positive experience
    b. We introduced an effective solution
    c. It had a long lasting effect (practices have continued after the completion of a project)
    d. My experience makes me want to engage with further sustainability projects and initiatives
7. Please provide any further comments on your experiences with previous projects here - thank you. [Free text]
8. Are you aware of the Intercollegiate 'green surgical checklist'? [Multiple choice]
9. My experience/views of the Intercollegiate Green Surgical Checklist [Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree, Don't Know]
    a. It is easy to implement
    b. We now use it on a daily basis
    c. It was a positive experience
10. Who is best to lead the transition to sustainable theatre practices within ENT nationally? [Free text]
11. Who is best to lead the transition to sustainable theatre practices within ENT locally? [Free text]
12. Please provide your views of the following answers to this statement: Because the Green Surgical Checklist was released by the Surgical Royal Colleges, I believe.... [Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree, Don't Know]
    a. It is a trustworthy initiative
    b. It is evidence-based
    c. It should be a priority for our team
    d. It is a priority for our team
13. Please provide your answers to the importance of sustainability in terms of performance and objectives for your team: [Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree, Don't Know]
    a. Currently I prioritise limiting the environmental impact of cases/lists
    b. Continuing to make surgical practices more sustainable in the future is a personal priority
    c. Currently my colleagues prioritise limiting the environmental impact of cases/lists
    d. Continuing to make surgical practices more sustainable in the future is a priority within the department

e. Colleagues within the department have a shared view about ways ENT can be made more sustainable
f. The department currently has sufficient technology and infrastructure to deliver sustainable practices

14. Please provide your answers to the statement that I believe that if sustainable practices are embedded within the department, the effect will be ....: [Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree, Don't Know]
    a. Patient safety will improve
    b. Staff time will be better spent
    c. Theatre efficiency will improve
    d. Waste will be reduced
    e. Theatre costs will increase
15. Is there anything else you would like to share with us about this topic? [Free text]

Appendix C: Semi-Structured Interview Questions

1. Please review the pre-operative elements of the checklist.
    a. Are there any parts are particularly relevant to ENT?
    b. Are there any elements that we are already doing well?
    c. Would there be any parts of the checklist that would be good to implement?
    d. What would be the barriers to implementation?
    e. How could those barriers be overcome?
2. Please review the intra-operative elements of the checklist.
    a. Are there any parts are particularly relevant to ENT?
    b. Are there any elements that we are already doing well?
    c. Would there be any parts of the checklist that would be good to implement?
    d. What would be the barriers to implementation?
    e. How could those barriers be overcome?
3. Please review the post-operative elements of the checklist.
    a. Are there any parts are particularly relevant to ENT?
    b. Are there any elements that we are already doing well?
    c. Would there be any parts of the checklist that would be good to implement?
    d. What would be the barriers to implementation?
    e. How could those barriers be overcome?

Appendix D: The Green Theatre Checklist

THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH · Royal College of Surgeons of England · ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF GLASGOW · RCSI

Intercollegiate Green Theatre Checklist

Below are a list of recommendations to reduce the environmental impact of operating theatres. All the relevant guidance and published evidence has been included in the Compendium of evidence, accessed via the QR code:

Anaesthesia		
1	Consider local/regional anaesthesia where appropriate (with targeted O_2 delivery only if necessary)	☐
2	Use TIVA whenever possible with high fresh gas flows (5-6 L) and, if appropriate, a low O_2 concentration	☐
3	Limit Nitrous Oxide (N_2O) to specific cases only and if using: ▸ check N_2O pipes for leaks or consider decommissioning the manifold and switching to cylinders at point of use; ▸ introduce N_2O crackers for patient-controlled delivery.	☐
4	If using inhalational anaesthesia: ▸ use lowest global warming potential (sevoflurane better than isoflurane better than desflurane); ▸ consider removing desflurane from formulary; ▸ use low-flow target controlled anaesthetic machines; ▸ consider Volatile Capture Technology.	☐
5	Switch to reusable equipment (e.g. laryngoscopes, underbody heaters, slide sheets, trays)	☐
6	Minimise drug waste ("*Don't open it unless you need it*", pre-empt propofol use)	☐
Preparing for Surgery		
7	Switch to reusable textiles, including theatre hats, sterile gowns, patient drapes, and trolley covers	☐
8	Reduce water and energy consumption: ▸ rub don't scrub: after first water scrub of day, you can use alcohol rub for subsequent cases; ▸ install automatic or pedal-controlled water taps.	☐
9	Avoid clinically unnecessary interventions (e.g. antibiotics, catheterisation, histological examinations)	☐
Intraoperative Equipment		
10	REVIEW & RATIONALISE: ▸ surgeon preference lists for each operation - separate essential vs. optional items to have ready on side; ▸ single-use surgical packs - what can be reusable and added to instrument sets? what is surplus? (request suppliers remove these); ▸ instrument sets - open only what and when needed, integrate supplementary items into sets, and consolidate sets only if it allows smaller/fewer sets (please see guidance).	☐
11	REDUCE: avoid all unnecessary equipment (eg swabs, single-use gloves), "*Don't open it unless you need it*"	☐
12	REUSE: opt for reusables, hybrid, or remanufactured equipment instead of single-use (e.g. diathermy, gallipots, kidney-dishes, light handles, quivers, staplers, energy devices)	☐
13	REPLACE: switch to low carbon alternatives (e.g. skin sutures vs. clips, loose prep in gallipots)	☐
After the Operation		
14	RECYCLE or use lowest carbon appropriate waste streams as appropriate: ▸ use domestic or recycling waste streams for all packaging; ▸ use non-infectious offensive waste (yellow/black tiger), unless clear risk of infection; ▸ ensure only appropriate contents in sharps bins (sharps/drugs); ▸ arrange metals/battery collection where possible.	☐
15	REPAIR: ensure damaged reusable equipment is repaired, encourage active maintenance	☐
16	POWER OFF: lights, computers, ventilation, AGSS, temperature control when theatre empty	☐

DISCLAIMER: These suggestions are based upon current evidence and broadly generisable, however, specific environmental impacts will depend upon local infrastructure and individual Trusts' implementation strategies.

Intercollegiate Green Theatre Scorecard. November 2022.

Acknowledgments

The author would like to thank Professor Nick Rich for his supervision and guidance in the conception, design and writing of this article.

Could immersive technology be used to promote pharmacy careers throughout Wales?

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Abstract:

This study explores the potential of immersive technology, including virtual reality (VR), to enhance pharmacy education and career promotion in Wales. Participants expressed strong enthusiasm for using immersive tools to explore career options, aiding their understanding of job roles and the profession prior to university enrolment. The findings underscore ongoing challenges faced by students in accessing work experience opportunities, emphasising the need for innovative solutions. As the U.K. faces an aging population and increasing reliance on the NHS workforce, adopting forward-thinking approaches to career promotion and education is crucial to ensure a future-ready, informed, and motivated healthcare workforce.

Findings revealed broad support for immersive technology, with participants highlighting the importance of user-friendly, engaging educational tools. Essential features such as ease of use, realistic design, and gamification were identified as critical for fostering interactive and enjoyable learning experiences. Participants also stressed the importance of cross platform compatibility, reflecting a strong desire among younger generations for digitalised education that aligns with their technological fluency.

Future research should employ qualitative methods, such as interviews or focus groups, to gather deeper insights into user experiences and expectations. Embracing current technology is essential to prepare the next generation of pharmacy professionals to meet the challenges of tomorrow.

Keywords: Pharmacy, Immersive Technology, Virtual Reality, Pharmacist, Pharmacy Technician, Pharmacy Assistant, Pharmacy Support Staff, Careers, Career Promotion, Children.

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Table 1. NHS Strategic Documents Related to Pharmacy and / or Immersive Technology

Document Title	Year	Author	Purpose
'A Healthier Wales: long term plan for health and social care'	2018	Welsh Government (WG)	'This plan sets out a long-term future vision of a 'whole system approach to health and social care', which is focused on health and wellbeing, and on preventing illness.'
'Pharmacy: Delivering a Healthier Wales'	2019	Royal Pharmaceutical Society (RPS)	'Pharmacy: Delivering a Healthier Wales is the 2030 vision for pharmacy in Wales. Launched in 2019, the vision sets long term ambitions for how patients will benefit from the expertise of pharmacy teams by 2030.'
'Preparing the healthcare workforce to deliver the digital future'	2019	Health Education England (HEE)	It explores the implications of digital developments in the NHS, including how to prepare and train the healthcare workforce to transform the way they care for patients, diagnose and treat diseases, and prevent illness from developing.
'All Wales SimulationBased Education and Training Strategy'	2022	Health Education and Improvement Wales (HEIW)	Simulation-based education and training (SBET) continues to play an important role in contributing to the education and training of the healthcare workforce. This strategy will set the direction for a collaborative and coordinated approach to high quality, interprofessional and accessible SBET across the healthcare workforce in Wales for the coming five years.
'Strategic Pharmacy Workforce Plan'	2023	Health Education and Improvement Wales (HEIW)	'This plan will be a vehicle for driving radical change and comprehensive improvements in how we develop, value, and support our pharmacy workforce.'
'Prescribing Progress: Transforming Clinical Hospital Pharmacy in Wales for Enhanced Patient Care'	2023	Royal Pharmaceutical Society (RPS)	'This independent review recommends actions and changes for organisations and individuals. If implemented, these recommendations will ensure hospital pharmacy clinical services can continue to meet the changing needs of patients and the NHS in Wales'
'A Strategic Framework for NHS Wales Careers'	2024	Health Education and Improvement Wales (HEIW)	'Developed in response to the 10-year workforce strategy for health and social care's ambition to establish a strong and recognisable brand and become the sector of choice for our future workforce by 2030.'

Introduction

Background

The pharmacy workforce plays a crucial role in the UK's healthcare system, serving as a vital link between the public and the broader healthcare community. Pharmacists, pharmacy technicians, pharmacy assistants and support staff are increasingly important in ensuring the safe and effective use of medications, providing clinical advice, and supporting public health initiatives. Their expertise is critical in managing chronic conditions, preventing hospital admissions, and enhancing the overall quality of patient care, in line with 'A Healthier Wales: our plan for health and social care' (Welsh Government, 2021).

With the NHS facing unprecedented demand, pharmacists are stepping into more clinical roles, such as conducting health screenings, managing minor ailments, and providing vaccination services. This expansion of responsibilities helps alleviate pressure on general practitioners and emergency services, making healthcare more accessible and efficient. The pharmacy workforce contributes significantly to reducing health inequalities by offering community-based care, which is essential for reaching underserved populations. As the UK faces an aging population and increasing prevalence of complex health conditions, the demand for skilled pharmacy professionals is growing. Investment in training and development is necessary to ensure that the pharmacy workforce can continue to meet these challenges, contributing to a more sustainable and effective healthcare system.

From 2026, all graduates of the Master of Pharmacy (MPharm) programme who register with the General Pharmaceutical Council (GPhC) will also become prescribers – a radical change to the educational and professional pathway. Historically, pharmacists were required to be practising for a minimum of two years prior to starting an independent prescribing course; however, the GPhC have recently removed this prerequisite, now enabling pharmacists to become independent prescribers without any experience in practice (General Pharmaceutical Council, n.d.). In 2022, Health Education England (HEE) described how this additional training and qualification will enable new models of care, 'supporting patients from diagnosis to prescribing, providing advice and follow-up, and preparing pharmacists to provide clinical care, as pharmacy services become more widespread within emerging clinical pathways'.

Immersive Technology

Immersive technologies are defined as 'technologies that create a simulated experience that can be perceived by the user as real' (Eriksen et al., 2024). This is often referred to as 'extended reality' (XR) and is an umbrella term which includes virtual reality (VR), augmented reality (AR), and mixed reality (MR).

The use of XR technology could help visualise roles that are often misunderstood or overlooked, providing individuals with the chance to learn about and experience these roles in a new, modernised way. As generations become more reliant and accustomed to technology, those responsible for education and training should become aware of the opportunities that this technology brings. Despite the challenges that immersive technology can bring, it could be supported and implemented to support education and career ideation across the working-age population.

Aim of this Research

The aim of this research is to explore whether digital and immersive technology can support education and careers promotion within the pharmacy profession.

The objectives of this Research are:

- To determine whether students currently enrolled in an MPharm programme in Wales had any professional experience in pharmacy prior to starting university.
- To assess whether digital and immersive technology could enhance future learning, particularly in the field of pharmacy.
- To explore the potential of digital and immersive technology as a tool for promoting careers in pharmacy.

Context

VR, originally designed for entertainment and gaming, has gradually been integrated into various healthcare applications. Advances in technology have made VR more accessible, with users now able to experience it through head-mounted displays (HMDs). The growing popularity of VR for entertainment has also driven down costs, improving both affordability and accessibility. 'Preparing the Healthcare Workforce to Deliver the Digital Future' (Health Education England, 2019), also known as The Topol Review, predicted that virtual and augmented reality would impact 50% of the entire NHS workforce by 2030 and over 80% by 2040. The review also highlights how VR has been applied in clinical and therapeutic settings, including complex procedures, and emphasises its potential to enhance learning, knowledge retention, and workplace experience.

The concept of 'possible selves' (Markus and Nurius, 1986) refers to potential future identities, and these are shaped by a person's aspirations, fears, and goals. This is especially relevant as individuals transition from childhood to adulthood, considering who they might become and what they want to achieve in life. Kapil & Shepard (2003) found that limited exposure to diverse careers can restrict children's ambition and self-belief. They also observed that a strong belief in achieving one's ideal self-image is linked to higher self-esteem. This suggests that younger generations could benefit from enhanced confidence-building, potentially through increased opportunities for community engagement. Steinke et al. (2009) found that viewing televised scientist characters led to a positive change in both adolescent girls' and boys' perceptions of science careers. This suggests that media can play a crucial role in bridging the gap by offering adolescents a broader understanding of different professional roles.

However, there are indeed several limitations when it comes to recruiting young people, particularly those under eighteen, into professional roles within the NHS. One key challenge is that these individuals are not registered healthcare professionals, which inherently limits their ability to fully understand or engage in the hands-on aspects of clinical roles. This limitation prevents them from participating in direct patient care, making it difficult for them to experience the full scope and responsibilities of healthcare work. However, this is where digital technology and immersive environments could help bridge the gap. Dalgarno and Lee (2010) found that simulated experiences allow learners to engage in tasks that would be 'expensive, dangerous, or risky in real life.' Persky (2024) found that immersive technologies provide access to educational resources in multi-user virtual environments, addressing a wide range of psychological concepts (Appendix A), thereby creating a compelling case for their use as learning tools. Given that the younger generation is digitally native, immersive environments and virtual reality present a promising, modern alternative for learning and gaining experience.

XR, immersive environments and simulation-based training could offer young people a realistic, interactive experience that could replicate many workplace environments. These technological advances allow young people to observe and practice skills in a safe, controlled setting, enhancing their understanding of what certain roles entail. Estrada and Prasolova-Førland (2021) investigated this at the Innovative Immersive Technologies for Learning (IMTEL) at the Norwegian University of Science and Technology. Their work acknowledged that many workplaces were located a considerable distance away from young learners and job centres, leaving them unable to visit to gain valuable insight into potential roles. Their goal was to ensure that all job seekers could make informed career choices by providing access to meaningful experiences. By utilising such technologies, employers can provide young people with a meaningful insight into the clinical aspects and help them to understand the responsibilities of such roles. This modernised approach can support pre- and post-sixteen education, encouraging students to pursue future training and potentially seek employment within the NHS, whilst aligning with an academic curriculum.

This work will provide a general overview of the published literature on the intersection of careers, education, and immersive technology within the pharmacy profession. The accompanying research will involve primary data collection from students currently enrolled in the MPharm degree program in Wales. This research aims to build a more nuanced understanding of students' perspectives by exploring their experiences with digital and immersive technologies, as well as any prior exposure to pharmacy work before beginning their studies. Findings will contribute to the evidence base for the effective use of immersive technology in pharmacy-specific healthcare education and careers promotion.

Literature Review

Background

Generational typology has been widely described and recognised that the current workforce comprises of six distinctly separate groups (Table 2). Although older generations have experienced the introduction and evolution of digital technology, Generation Z (Gen Z) is the first generation to be born into a fully connected and digitalized world (Cilliers, 2017). Compared to Millennials, Gen-Z are believed to have a 25% decrease in attention span (12 seconds vs 8 seconds), and this is believed to be due to their instant access to information and gratification through digital technology (Stears, 2019).

Table 2. Generational Categories and Years of Birth (Pew Research Centre, 2019)

Generation	Year of Birth
Silent Generation	1928 - 1945
Baby Boomers (‘*Boomers*’)	1946 - 1964
Generation X	1965 - 1980
Millennials	1981 - 1996
Generation Z (‘*Gen-Z*’)	1997 - 2012
Generation Alpha	2013 - Present

Social Learning Theory (Bandura, 1977) emphasises how individuals learn through their immediate environment and broader interactions, highlighting the importance of self-efficacy and motivation in shaping behaviour within educational and social contexts. Individuals from Generation Z are noted for having brains that are increasingly responsive to complex visual stimuli (Rothman, 2016). This aligns with findings from the American Nurse Journal (2021), which highlight this generation's preference for technology-based learning tools, such as digital infographics and interactive apps. With the growing acceptance of eLearning, virtual classrooms, and webinars (vastly accelerated by the COVID-19 pandemic) students can now learn through modern, technologically advanced methods that better align with their preferred learning styles, and ones that are markedly different when compared to the teaching methods of previous generations. Immersive media can significantly enhance learning opportunities by extending experiences beyond immediate physical surroundings. This enables learners to explore and apply concepts in innovative ways, improving retention and recall of information.

VR is also seeing a rapid increase in use, enhancing learning by providing realistic, firsthand experiences that improve memory retention and application to real-world scenarios (Shin, 2017; Chittaro & Buttussi, 2015). Active, task-based approaches foster confidence and prepares students to apply knowledge beyond these virtual settings (Dalgorno & Lee, 2010; Jiang et al., 2021). This theme also extends into simulationbased learning (SBL), a method of learning that is becoming increasingly embedded within many undergraduate degree courses. ‘Simulated practice learning in preregistration nursing programmes’ (Nursing and Midwifery Council, 2024) highlighted that SBL offered an authentic practice experience, allowing students to demonstrate skills in various scenarios, providing a safe, supportive environment where students can practice and reflect on their learning. This experience allows students to build both competence and confidence for their future roles. It was noted to foster a sense of assurance and provides equal practice opportunities across cohorts - something often challenging to achieve in fast-paced, high-pressure, and unpredictable real-world healthcare settings.

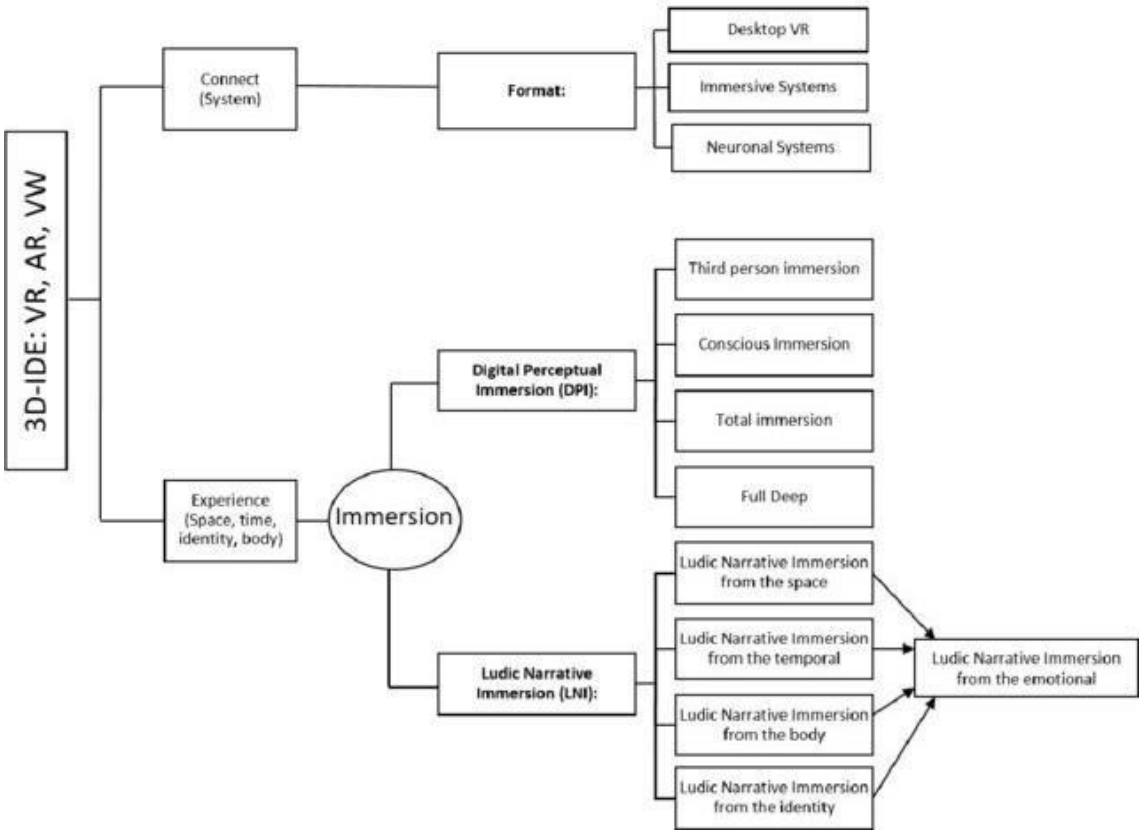


Figure 1: 'Ludic Narrative Immersion' (Ryan, 2015).

Whilst there is a risk of SBL and immersive technology being perceived as a novelty due to elements of gamification, some experiences have been assessed as being enjoyable, whilst also educational. Ryan (2015) introduced the concept of 'ludic narrative immersion' (Figure 1); the combination of ludic and narrative, and how both elements can combine and enhance the experience of the user. It was proposed that the combination of playing games (ludic), and storytelling (narrative), can create a more engaging experience, where users may also become emotionally invested. Combined with the concept of 'possible selves' (Markus & Nurius, 1986), these experiences can offer younger generations a unique opportunity to understand, learn, and engage in ways that could markedly shape their future aspirations and potential.

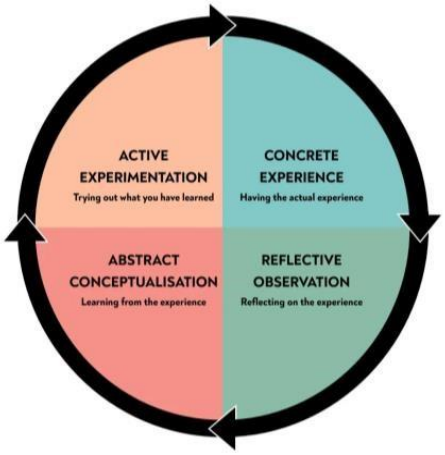


Figure 2: Kolb's Experiential Learning Cycle (Kolb, D.A., 1984)

Despite the appeal of modern, digitalised learning methods, the intersection of education, human psychology and digital immersion remains incredibly complex, grounded in a substantial body of educational theory, including principles of andragogy and pedagogy. Bruner (1960) introduced the concept

of a spiral curriculum, which allows learners to progressively build their knowledge, skills, and behaviours. This approach involves revisiting topics over time, each with increasing complexity, enabling learners to deepen their understanding and mastery through progressively challenging experiences. Complementing Bruner's work, Kolb (1984) described how knowledge is developed through experience, with learning arising from the process of grasping and transforming those experiences (Figure 2).

By combining these approaches and utilising the potential that virtual environments have in providing users with a sense of 'being there' (Ellis, 1996; Schroeder, 2002), it becomes possible to establish a continuum of experiential learning. This continuum could integrate multiple outcome-based events that increase in difficulty, aligning with Miller's Pyramid (1990). Miller's Pyramid demonstrates how learners progress through clinical education, advancing from knowledge (knows') to action ('does'). Immersive educational environments and materials can facilitate this progression, offering learners valuable real-world experience in a controlled and structured setting. Additionally, Dewey (1938) proposed that 'educative experiences are those that arouse curiosity and strengthen initiative' - a quality that cannot always be achieved through reading a book or viewing still images. An adaptive, immersive approach is likely to be more effective and impactful than relying solely on isolated, opportunistic experiences in the physical workplace. It also provides all learners with a consistent opportunity to develop and refine their competencies while aligning with any intended learning outcomes.

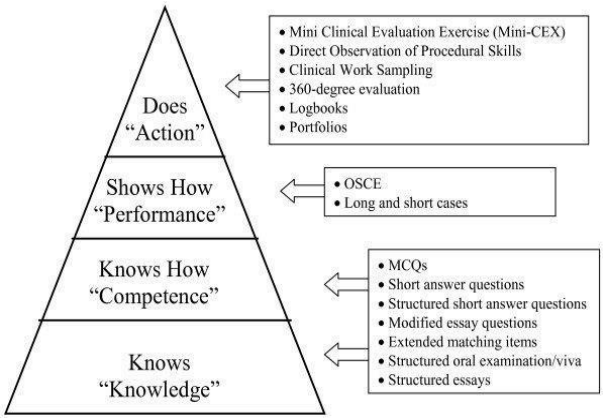


Figure 3: Miller's Framework of Clinical Assessment (Miller, G.E., 1990)

Providing a consistently replicable experience allows students to participate in meaningful debriefing, an exercise shown to significantly enhance the overall learning experience (Schon, 1987). Debriefing is a critical skill for healthcare professionals, with evidence demonstrating its potential to improve clinical outcomes (Cant & Cooper, 2011). By facilitating learning through discussion and reflection on events, debriefing promotes the transfer of insights into clinical practice, enhancing both individual and team performance, despite the availability of numerous tools and structures to support it (Svendsen et al., 2024). An individual's ability to effectively engage in debriefing not only supports their education but also contributes to team improvement (Kolbe et al., 2021), preparing them for similar experiences in their future careers. Providing students with access to the same scenario offers a shared experience, enabling them to collaboratively discuss, critique, and reflect, fostering progressive learning and deeper understanding.

There is a need for inclusive, appropriate, and accessible educational material that not only piques learners' interests but to also capitalise on them. However, these efforts are not without their disadvantages, with Sharples et al. (2008) terming the potential adverse effects of immersive technologies as 'virtual reality induced symptoms and effects (VRISE)'. VRISE, which includes symptoms such as nausea, headache, and disorientation, poses a significant barrier to the broader adoption of these technologies. The high cost of application development further complicates their integration into educational settings and any overarching curriculum. Learners may also face risks such as social isolation, confusion between virtual and physical realities, or overdependence on virtual environments in their personal and social lives. Understanding and addressing these challenges is crucial to safeguard user well-being and to ensure the creation of equitable, effective, and sustainable learning environments. While technological advancements hold promise for learning and training, Persky (2014) raised concerns about the psychology of this teaching method, particularly regarding trust and privacy, especially in medical contexts. Meeting the educational

needs of learners while addressing their individual learning requirements and navigating the challenges of digital poverty and social deprivation, presents a significant challenge for academia.

Discussion of the Current Literature

The literature search yielded no results specifically addressing the use of VR for pharmacy-related work experience or career promotion for children and teenagers. However, studies were identified that examined the use of VR in pharmacy education at the undergraduate and workplace levels, though they did not align with the specific focus of this research. Accordingly, this study will explore an uncharted area and will draw on literature from related fields outside its immediate scope to support and contextualise its findings (Appendix B).

Research Methodology & Study Design

Introduction

Saunders' (2016) 'Research Onion' is a framework to assist in the planning stages of research and study design and can be used for qualitative and quantitative research. It provides a structured, step-by-step approach to help the researcher consider and understand all stages of the research process, ensuring each choice aligns with the proposed research question (Figure 4). It also enables researchers to understand, reflect and justify their chosen method – particularly useful as this is an exploratory piece of research, and therefore may help inform or augment further research in this area.

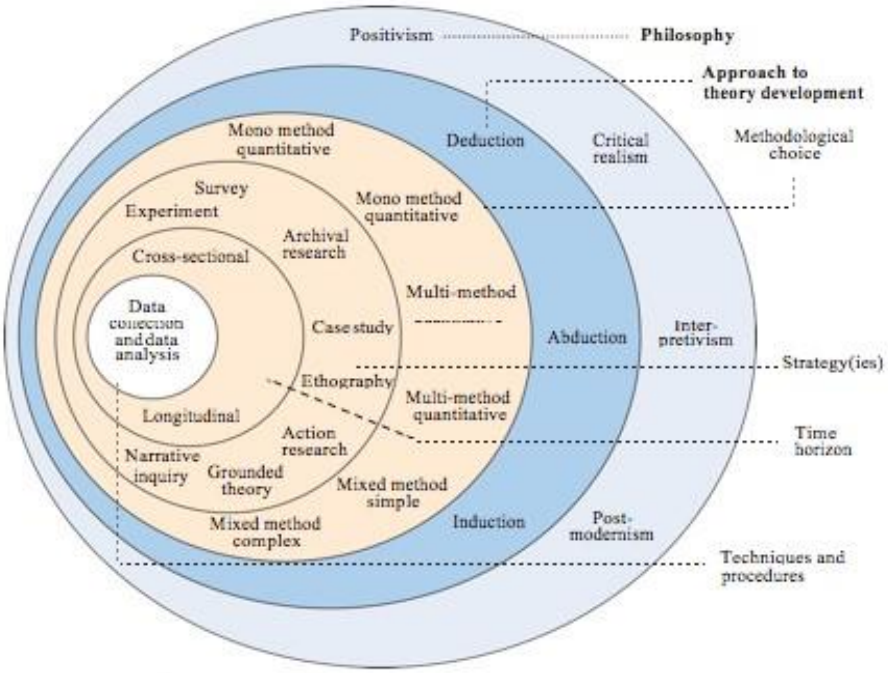


Figure 4: 'Research Onion' (Saunders et al., 2016)

Methodological Choice

This study takes a pragmatic approach with an inductive research method, using mixed methods to combine quantitative and qualitative data. An experimental framework was adopted which involved collecting data at a single point in time - a cross-sectional design. Participants were recruited using convenience and snowball sampling, with surveys and statistical analysis used to gather and interpret data. This approach combines numerical results with enablement of participants to expand on their responses. This method provides a clear and effective way to explore the research question in a social science context. While participant responses were collected, thematic analysis was not conducted due to time constraints. This methodological choice is chosen and follows Saunders' Research Onion' (2016) (Figure 5).

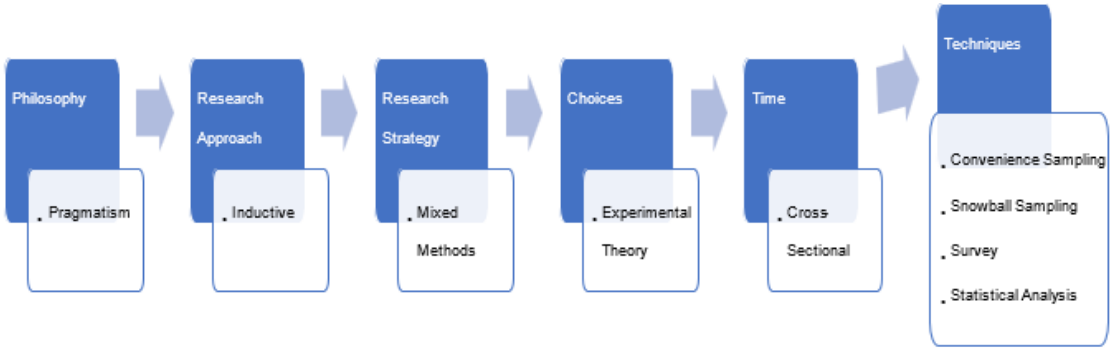


Figure 5: Methodological Choice

Ethical Approval

Prior to conducting this study, the researcher used the NHS Health Research Authority's Decision Tools to determine whether it qualified as research (Appendix C) and if approval from a Research Ethics Committee would be required (Appendix D). Research ethical approval for this research study and approach was then acquired through Swansea University School of Management Research Ethics Board in September 2024 and assigned project number 11477. This study received ethical approval from the Humanities and Social Sciences Ethics Committee at Swansea University (Research Ethics Approval Number: 1 2024 11477 10384) and was approved on 23rd September 2024 (Appendix E).

Participants

For this study, students were provided with an online participant information sheet (PIS); available in English (Appendix F) and Welsh (Appendix G). Before completing the questionnaire, students were asked to confirm that they had read and understood the PIS. Appendix H provides a summary of the questionnaire method. The questionnaire consisted of 22 questions and was distributed via Microsoft Forms (MSF), available in English (Appendix I) and Welsh (Appendix J). The students also had to confirm that they were currently enrolled on an MPharm programme at either Cardiff University (CU) or Swansea University (SU). These universities were chosen as they are currently the only two Higher Education Institutions that currently offer the MPharm programme in Wales.

The questionnaire was available electronically with no option of a hard copy. Both the PIS and questionnaire were available in English and Welsh and were submitted as part of the ethical approval process prior to data collection.

Sampling

Both convenience (Etikan et al., 2016) and snowball sampling (Eichhorn, 2022) methods were used as part of the data collection process. These recruitment methods may introduce an element of selection bias (Greenhalgh, 2014), potentially influencing and generalising the results of this exploratory research. However, this approach provides a foundation for future studies aimed at understanding the experiences of existing MPharm students outside of Wales.

This research focused on the experiences of MPharm students within Wales and was distributed solely to students enrolled in the two institutions in Wales that offer the MPharm programme – Cardiff University and Swansea University. The findings may not be generalisable throughout the U.K. and wider as other MPharm programmes may have embedded immersive technology into their curricula or students may have been exposed to such technologies earlier in their academic journeys.

Additionally, students in these universities may come from different cultural and geographical backgrounds, which may have influenced their experiences of using digital technology at home and at school. For example, students with limited access to digital technology at home or in school may find immersive technology particularly challenging, as they are effectively transitioning from minimal digital fluency to highly advanced and novel technology. This lack of experience may influence their engagement, understanding and perception of its use, and thus could be a barrier to acceptance.

Data Collection

To allow a single access point for all information related to the study, GJ created QR codes (Appendix K & L), and a 'Linktree' webpage with direct links to the PIS and MSF (Appendix M). This method was chosen as it allowed dissemination of all relevant documentation in a single webpage link and is convenient and accessible for users (available via https://linktr.ee/immersive_pharmacy_research).The 'Linktree' webpage was closed within 24 hours of the data collection period ending. The MSF link was available publicly for 31 days between 00:00am on 22nd October and 11:45pm on 22nd November 2024.

An email template (Appendix N) was sent to all cohorts enrolled in the MPharm program at both Cardiff University and Swansea University. A follow-up reminder email was distributed two weeks before the deadline to thank students who had participated and to remind those who had not yet completed the research. This follow-up aimed to increase engagement among remaining students and encourage discussions that could support snowball sampling.

An invitation to participate in this research was also shared via GJ's 'LinkedIn' profile (Appendix O). This post was shared on a professional social network to increase interest in this research and facilitate snowball sampling through mutual professional connections and interests.

Sample Size

The researcher aimed to obtain a minimum of 30 responses, recognising the importance of having a suitable sample size to analyse, and to ensure the proposed research question can be addressed (Sargeant, 2012). The researcher received 32 responses during the data collection period and was satisfied that this number would provide sufficient data for analysis and meaningful contributions to addressing the research question.

Results and Discussion

The Topol Review (2019) outlined a vision for a future where the workforce is empowered to rethink and challenge current practices and systems. However, the digitalisation of healthcare-related education, including the costs of hardware and resource development, will require significant investment, with no dedicated central funding currently available in Wales. Nearly six years from the release of the Topol Review, the public sector must explore opportunities for frugal innovation, particularly as they are expected to achieve more with fewer resources while driving improvements. Given that this is a novel and emerging area, particularly in pharmacy, this presents a compelling opportunity for future research in professional practice, education, and academia.

As of August 2024, Welsh universities can charge U.K. students up to £9,250 per year for undergraduate tuition, while international students face significantly higher fees (Welsh Gov., 2018). This places students under considerable financial strain, with this primary research showing that this is often without adequate insight into the career opportunities that await them upon completing their studies. With society becoming increasingly accustomed to using tools like Google Maps and Street View to visualise journeys or locations, we have moved beyond the linear perspective offered by traditional maps or photographs. This raises the question: can similar tools be used to enhance education and careers promotion to provide deeper workplace insights? With a significant number of students having no prior experience working within a pharmacy before enrollment, and nearly half reporting restrictions in gaining such experience, alternative proposals and solutions must be explored. These efforts are essential to provide future generations with appropriate insight and opportunities, ensuring the best chance of their academic success and future employment. Today's students are essential for building a steady pipeline of future professionals, particularly those pursuing careers in pharmacy. Their engagement ensures a sustained workforce capable of delivering safe and effective pharmaceutical care for generations to come.

Exploring students' perspectives on using VR to develop their skills in specific areas would be a valuable area for future research, with the potential to significantly enhance the learning experiences of future MPharm students. While in-person experiences and training cannot yet be fully replicated, immersive technologies provide an opportunity to reimagine how students engage with professions and workplaces that might otherwise be inaccessible. The ability to learn and develop skills in a psychologically safe environment enables students to make mistakes and gain experience without negatively affecting patient care or outcomes. This approach can boost confidence and resilience, offering valuable learning opportunities that might otherwise be inappropriate or, at worst, result in significant harm or distress to

patients. This research indicates that students are eager to learn through digital means and highly value realistic, immersive experiences. However, the emphasis they place on learning while having fun highlights the creativity of this generation. Encouraging this creativity can foster innovation and inspire new approaches to education and professional development. More importantly, it can facilitate the transfer of these innovative practices into the workplace, promoting a culture of continuous improvement and embracing new ways of doing things - something that is desperately needed in the health and social care sector. From a career promotion perspective, this approach challenges habits, beliefs, and norms shaped by past lived experience or the thoughts and opinions of others, enabling individuals to visualise the broader opportunities and potential of various roles and workplaces. By leveraging the capabilities of current technologies, those responsible for healthcare-related education and training have the potential to lead innovation in how work experience is delivered and perceived, leading the way for a more dynamic and inclusive approach to experience and professional development, and preparedness for future roles and careers.

It is important to note that the students who participated in this research may have grown up and been educated in various locations worldwide, not exclusively in the United Kingdom or Wales, and this was not explicitly asked as part of this research. The adoption and spread of immersive technology in education varies significantly between countries; therefore, these results should not be assumed to represent a generalised consensus on students' experiences with immersive technology. There is a growing expectation for children to have access to digital technology during their schooling to prepare them for workplace roles that increasingly rely on it. However, the cost of integrating such technology into schools is significant and implementation can vary significantly between localities and more-so across the education system. Ensuring familiarity with technology is essential for a positive user experience, as without it the hardware and software may prove challenging to use and lead to inconsistent outcomes. Higher education institutes are known to embrace advancements in digital and technological innovations, and this is evident as U.K. universities have already begun integrating immersive technology into their MPharm programmes (Wilkinson, 2023). Such exposure may have influenced the students' responses, potentially limiting the variability of the data compared to a broader and more diverse sample, which could affect the robustness of the conclusions of this research.

Figure 6 shows that of the 32 respondents, 28 were students from Cardiff University, and 4 were students from Swansea University, with many of these students being in 1st Year (n=11). However, there was a similar number of respondents across the 2nd, 3rd, and 4th years (n=8, 7, and 6, respectively).



Figure 6: Respondents' Current Year of Study.

The mean age of respondents when they decided to study pharmacy was 17.21 years (17 years of age: n=13; 18 years of age: n=9). This aligns with the typical age at which students begin considering applications to UK-based universities through the Universities and Colleges Admissions Service (UCAS). While it is encouraging that students are exploring pharmacy as a university option, this highlights a potential gap in information and exposure at earlier stages. Addressing this gap could be a valuable focus for those promoting pharmacy careers, ensuring that students are introduced to the profession earlier in

their academic journey. This could help reduce the likelihood of pharmacy being chosen without thorough consideration during the often stressful and pressured university application process.

Students were provided with a free-text response to allow them to explain why they chose to study pharmacy, offering unique insights into their decisions and the motivations behind their choices. From these responses, there was a theme around them wanting to generally help others, and more specifically, helping them improve their health (Appendix P; Figure 7). There was also a clear link between their responses having a general interest in healthcare professions, which also incorporated a passion for STEM-related subjects ('Because of a passion for chemistry and mathematics. I also did not want an office job where I would spend most of the time sitting around all day. I was definitely interested in healthcare sciences from year 11 and new that a career in this area was suited to my passions and qualities'). Whilst one respondent detailed their 'dying passion to be a pharmacist', one response gave a contrasting view, whereby their rejection from their initial academic choice led them to pursue pharmacy ('I got rejected from studying a different course and then had the opportunity to apply to study pharmacy and after getting the offer I decided to continue to study pharmacy'. This response demonstrates that pharmacy can serve as a suitable alternative for individuals with an interest in healthcare and science and should not be overlooked, perhaps even capitalised upon. Students also seemed to have a broad understanding of the career which is available to them after graduation and qualification ('I wanted a career in healthcare which was a mix of patient facing work and scientific knowledge'; 'Lots of Career opportunities from this degree'; 'high demand in Pharmacist in community..'; 'I think it's a good career and the role is developing a lot, excited to see what the future holds for pharmacists'), with some describing how prior work experience had been a factor in their decision to study pharmacy at university ('I worked in a pharmacy when I was 16 and decided it was what I wanted to do as a career'; 'Because my work experience showed that the work life balance seems much more favourable than medicine and the course is interesting'). However, the use of digital technology and VR experiences could help students deepen their understanding of their current identities, facilitating their progression towards 'hoped-for selves' as they are able to experience and explore roles within STEM fields (Redick, 2023).



Figure 7: Wordcloud Depicting Responses To 'Why Did You Decide to Study Pharmacy?'

While some students highlighted how work experience in a pharmacy setting influenced their decision to study pharmacy, 63% of respondents (n=20) reported having no prior experience working in a pharmacy before enrolling in the programme (Figure 8). Understandably, four respondents specifically stating that COVID-19 was a barrier to them gaining access to experience. The disruption and impact of COVID-19 on the health and social care sector explicably restricted access to workplaces and has also likely influenced how these roles are perceived by younger generations - both positively and negatively. Their lived experience opposes the findings by Jiang et al. (2021), who detailed that fostering students' interest in science, technology, engineering, and mathematics (STEM) subjects during their teenage years significantly enhances the likelihood of pursuing careers in these fields. The increased demand for healthcare services since COVID-19, including operational backlogs and delays in treatment and diagnosis, may have further limited opportunities for prospective students to gain in-person work experience. While this research captures the experiences of a small cohort of students, it is likely reflective of challenges faced by many others. To address this growing need, alternative pathways for gaining workplace experience must

be developed to complement students' education and interests. These pathways should not only relieve the impact of limited access but should be created to strengthen students' decisions to pursue careers in STEM fields.

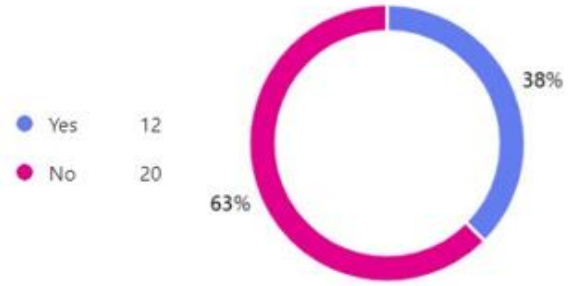


Figure 8: Respondents' Experience of Working In A Pharmacy Setting Prior To Enrollment.

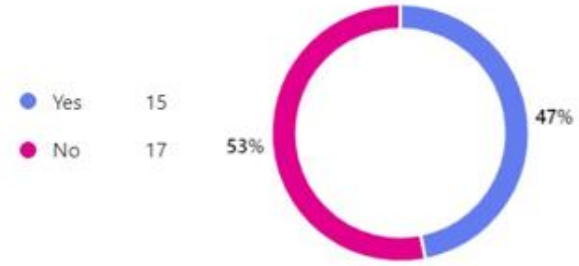


Figure 9: Respondents' Accessibility of Gaining Experience Before Enrolling on The Programme.

Given the digitalisation of many aspects of daily life, this was reflected in the findings, with 84% (n=27) of students reporting access to digital technology at home (Figure 10), and the same number having access to digital technology at school (Figure 11). However, the type of digital technology accessible at home and school differed significantly, offering valuable context into how young learners engage with, are taught, and utilise technology during their teenage years - socially and academically. The results consistently show that laptops, desktop computers, tablets, and iPads are the most accessed types of digital technology among respondents. This suggests that both media are widely accepted for accessing digital content and provides valuable insight into how entertainment and education are being accessed in the present day. Despite the low response rate, these findings indicate a shift in how future generations are likely to access learning content, moving away from traditional hard copies of literature and communication toward more readily accessible, and easily updatable, digital alternatives.

When comparing the technology respondents have access to at home and at school, it is unsurprising that 95% (n=18) of students stated they would have enjoyed exploring healthcare career opportunities through diverse types of digital technology. To introduce and sustain the long-term interest for STEM subjects, Jiang et al. (2021) concluded that attraction could be supported via technology-enhanced learning environments and experiences, coinciding with the findings of this research. The ability of students to use a wide range of technology at home could also support their education, with these skills being transferable to enhance their ongoing learning; however, the limited access to technology in schools does restrict them in being able to fully apply their skills. This provides reassurance that, despite limited access to digital technology in schools, many young learners can access and become accustomed to using digital technology - an essential skill for most modern workplaces. This highlights a shift from the traditional norm, where schools were the primary environment for students to develop and learn skills necessary for workplace success. These results show that in the present day, many students have greater and broader access to learning opportunities at home through digital means, allowing them to acquire skills before applying them in the classroom.

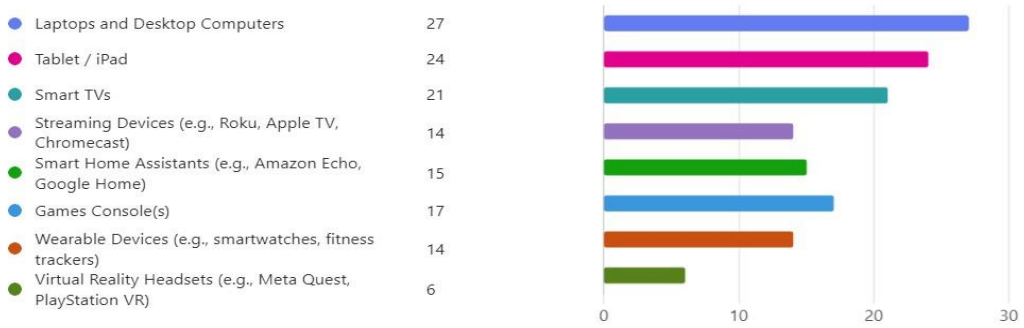


Figure 10: Types Of Digital Technology That Respondents Have Access to At Home.



Figure 11: Types Of Digital Technology That Respondents Have Access to At School.

Although 53% (n=9) of respondents stating that they had not used a VR headset before, 84% (n=16) agreed that the use of immersive technology, such as such as VR or AR, has been or would be a useful tool in their education. It is interesting to find that despite most having no experience of using immersive technology, it is perceived by students as being functional and practical in their education. It could be argued that this is due to a lack of knowledge or 'novelty factor' due to its use within the entertainment and gaming industry; however, a broader understanding around this and how the application of immersive technology in education could help to draw further conclusions. Regardless of their lack of experience in using a VR headset, 89% (n=17) agreed that the use of immersive technology would have been useful in helping gain work experience prior to enrolling on the MPharm programme. Respondents were not provided with suggestions or ideas as to how this would be achieved, and so this was down to student ideation. Interestingly, when asked to explain their answer, 26% (n=5) cited 'skills,' which signifies their interest in using VR or AR to develop professionally, and desire to increase their ability in being able to do something well. During the MPharm programme, students have numerous opportunities to develop a range of skills, including analytical thinking, communication, interpersonal abilities, research, scientific writing, and more. Since respondents did not provide further context about specific skills they referred to, it is not possible to assume a particular type of skill. Exploring students' perspectives on using VR to develop their skill sets in specific areas would be beneficial for future research and could potentially enhance the learning experience of future MPharm students.

To gain deeper insights into respondents' views on using virtual reality, they were presented with a variety of questions that allowed multiple answers. These questions were designed to explore user experiences, compare VR to traditional teaching methods, and understand how users perceive its application (Figure 12). The responses indicated that students view VR as realistic and immersive (68.42%; n=13) and as a different and innovative way to learn (63.15%; n=12). This was further supported by over half of the respondents (57.89%; n=11) stating that VR allows them to feel as though they are there, suggesting that it could benefit students by providing access to workplaces that would otherwise be inaccessible. Conversely, four respondents believed that VR was better than reading a book, highlighting the continued importance of traditional learning materials. This suggests that VR should not be used to completely replace traditional methods but rather act as a complementary tool to enhance understanding, accessibility and engagement. Notably, the most popular response was that VR allows students to learn while having fun (78.94%; n=15), underscoring the importance of incorporating enjoyable and immersive elements into educational resources, which may not always be achieved through traditional materials.

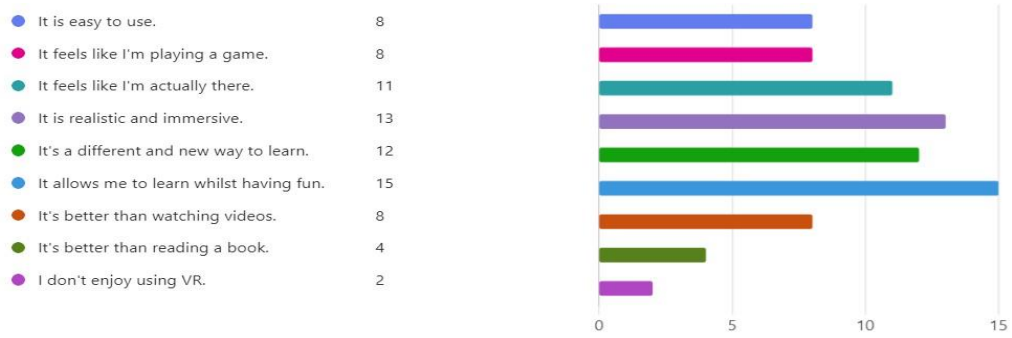


Figure 12: Respondents' Perceived Benefits of Using Virtual Reality.

To further explore the understanding and potential application of VR resources, students were presented with several statements and asked to respond using a Likert scale ranging from 'strongly disagree' to 'strongly agree' (Figure 13). The results were overwhelmingly positive, with all respondents (n=32) agreeing that the purpose of a VR resource in this context is to facilitate learning. This aligns with findings from other healthcare-related VR applications designed for similar purposes (Yeh et al., 2020). Additionally, 93.75% of respondents (n=30) agreed that the VR resource should be accessible on laptops and desktop computers, as well as portable devices such as tablets and iPads. Furthermore, 87.5% (n=28) recognised the potential for the resource to be hosted as a standalone iOS or Android smartphone application (‘app’). This emphasises the importance of accessibility for such resources and the growing reliance on digital hardware for the future of education. However, despite most respondents agreeing, the highest levels of disagreement were observed for the statements that the VR resource had to feel like a game (18.75%; n=6) and that it needed to look realistic (15.625%; n=5). Further research will be needed to explore these statements in greater detail, as responses are likely to be influenced by the proposed resource and its intended purpose. This suggests that while realism, gamification, and virtual reality are appealing and desirable features, there is no single preferred approach to creating such resources. This reinforces the idea that a 'one-size-fits-all' solution is not feasible and that a variety of learning experiences should be made available to accommodate the diverse needs of younger and future generations.



Figure 13: Respondents’ Priorities for Creating A VR Learning Resource for Teenagers.

To build on this research, future studies could incorporate qualitative methods, such as interviews or focus groups, to explore how students’ prior experiences with immersive technologies shape their responses. While participants were able to share their experiences through free-text responses, interviews and focus groups would enable richer discussions, providing deeper insights into user experiences and perspectives (Morgan, 1997; Kvale, 2007). For example, Dr. Alex George, a healthcare professional and the U.K.’s Youth Mental Health Ambassador, recently visited an NHS training facility at the University of Hertfordshire where student doctors and nurses have been using Meta Quest 3 headsets for training. Dr. George noted, ‘All of the students I spoke to said it was amazing. And they enjoyed it – it was fun’ (Henderson, R., 2024), validating the findings of this research. Personal accounts from those who have used the technology reinforce the importance of qualitative insights in understanding the user experience with immersive

technologies. Replicating this research with MPharm students from across the U.K. could provide valuable comparisons, helping to validate the findings and broaden the study's conclusions. This would contribute to a larger evidence base supporting the use of VR for pharmacy-related work experience and career promotion.

Limitations

Virtual reality has demonstrated its potential as a powerful educational and skills development tool across various sectors and workforces (Jensen and Konradsen, 2018; Radianti et al., 2020), including healthcare. Its usefulness and usability will require further and longitudinal research (Helou et al., 2023), particularly to assess the retention and practical application of the taught material. Compounding this challenge is the diversity of methodologies employed, with many studies designing their own surveys to assess user experience. While there are a variety of validated scales (Albrecht et al. 2013b; Nielsen, 1995; SanchezVives & Slater, 2005; Sutcliffe & Gault, 2004; Witmer & Singer, 1994), there remains a lack of consistency across studies, particularly when considering the broader scope of this research area. This inconsistency poses difficulties for drawing generalisable conclusions and highlights the need for standardised approaches to evaluation. Emerging bodies of work are crucial for validating the effectiveness of VR technologies and for assisting educationalists in implementing them across diverse educational and professional contexts.

This study faced several limitations. The number of respondents was lower than anticipated, and the data collection period was relatively short, limiting the breadth and depth of the findings. The research was confined to MPharm students at Cardiff University and Swansea University, which limits the generalisability of the findings to the wider MPharm student population. Their perspectives may not fully represent the views of other critical roles within the pharmacy team, and this must be taken into consideration. The researcher also relied on others to disseminate the survey which may have caused delays in its distribution. Due to time constraints, the questionnaire was not piloted with the intended audience which could have potentially affected its design and the relevance of the questions. Furthermore, delays in obtaining ethical approval significantly impacted the research timeline, underscoring the need to plan for such challenges in future, larger-scale studies.

Future Work

As the first research focusing on the use of VR for education and career promotion within the pharmacy profession, this study opens significant opportunities for further exploration. Expanding future work to include MPharm students from England and healthcare students from other professions that are currently using immersive technologies would enhance the dataset and provide greater depth to the findings. This initial research highlights the transformative potential of digital technology in education, paving the way for future studies to explore how such innovations can shape and strengthen the future healthcare workforce.

Table 3: Proposed Model for Future Work – 'Student Voice and Service Design'

Method of Learning → Importance Student Requirements ↓	**Virtual Reality (VR)**	**Traditional Learning Methods**	**Experiential Learning**	**Classroombased Learning**
It has to be easy to use.	◍			
It has to feel like a game.	◍			
It needs to look realistic and immersive.	▲			
It is a different way to learn.	▲			
It can be used to learn whilst having fun.	▲			
It needs to be better than watching videos.	◍			
It needs to be better than reading a book.	▢			
Summative Total	*51*			

Key: 0 – 5: Not favourable to have. ▢ (3pts); 5 – 10: Nice to have. ◍ (6pts); 10 – 15: Must have. ▲ (10pts)

A proposed model for future work could involve combining feedback from participants and comparing it alongside other teaching methods. This approach incorporates input from the intended users of the product, essentially applying the 'voice of the customer' (Kumar et al., 2020) to address the needs of students while adopting the principles of highly reliable organisations. An example of this model is outlined in Table 3, which includes a proposed scoring matrix. Using the questions from this study ('student requirements'), the model allows comparison between current and traditional learning methods. Each method is scored based on how favorable it is with students, resulting in a summative total. This framework enables researchers to better understand how different teaching methods compare and leverage student feedback to guide the creation or adaptation of educational approaches that align with the needs of current and future learners.

It is critical that the future workforce is adequately prepared, supported, and informed before enrolling in educational programmes or entering employment in the health and social care sector. This poses an interesting dilemma for how future generations could gain experience in such roles and how those involved in education may need to adapt their methods of teaching and assess the need for additional and sustainable methods of career promotion.

Conclusion

This study examines the potential of immersive technology, including virtual reality (VR), to enhance the promotion of pharmacy careers in Wales. Participants demonstrated strong enthusiasm for using immersive technology to explore career options, supporting their understanding of job roles and the profession before committing to study at university. The findings paint a stark picture of the ongoing challenges students face in accessing work experience opportunities. With an ageing population and an increasing reliance on the NHS workforce in the U.K., it is imperative to adopt innovative approaches to career promotion, attraction, and education. These efforts are essential to build a future-ready NHS workforce that is prepared, informed, and motivated to meet the evolving demands of healthcare.

The results from this novel, exploratory study show widespread support for its implementation, with students emphasising the need for educational tools that are engaging and user-friendly. Key factors for respondents were the ease of use, realistic design, and the addition of gamification; all of which collectively foster a fun and interactive learning environment. Participants indicated that it is desirable that any learning experiences are available on multiple platforms, with computers and smartphones emerging as their preferred devices. This highlights the need for cross-platform compatibility – ensuring user preference and enabling broader accessibility. Collectively, these results show the current desire for the digitalisation of education and training by the younger generation, appealing to them in ways to which they are accustomed due to growing up with digital technology. It also reveals the urgent need for inclusive and accessible educational tools that meet evolving learner preferences while addressing barriers like digital poverty and social deprivation. It is recommended that future studies replicate this research with a broader target audience to improve the validity and generalisability of the findings.

Future research should expand on these findings by employing qualitative methods, such as interviews or focus groups, to gather richer insights into user experiences and expectations. These steps are critical for refining the design and application of immersive technologies, ensuring their effective adoption in pharmacy education and beyond. We are living in an age of rapid technological advancement with younger generations becoming increasingly reliant on it as they grow. This compels us to innovate, adapt, and invest in preparing the next generation of health and social care professionals. How can we ensure they are equipped to meet the challenges of tomorrow if we are not able to embrace the technology that we have today?

Key Recommendations

'*Tell me and I forget, teach me and I remember, involve me and I learn*.'

Xun Kuang, Chinese philosopher (312 – 230 BC).

Immersive technology has potential option to enhance accessibility and be used as an educational tool within the pharmacy profession. By providing engaging, scalable, and cross-platform solutions, immersive technology can support the development of an informed and motivated healthcare workforce, highlighting the importance of experiences enabled by such technologies for effective learning. It is essential that those

involved in the student journey seek to address and minimise any societal and technological challenges, ensuring equity and effectiveness in educational delivery. By understanding student needs, digital technology could help overcome barriers such as limited access to work experience. Whilst the benefit of such technology is evident, these tools should serve as a complement to, rather than a substitute for, inperson experiences.

This work has enabled the researcher to create three key recommendations for future studies within this space:

- Future studies should include a broader target audience, such as MPharm students in England and other healthcare professionals, to improve the validity of findings. Separate but related studies could also be conducted to explore the needs of other key roles within the pharmacy team, including pharmacy technicians and support staff.
- Develop partnerships with educators, students, and those knowledgeable in creating immersive experiences to test the acceptance and usefulness of immersive technologies in varied educational settings, incorporating feedback to refine their application.
- Investigate how to address barriers, such as digital poverty and ethical concerns, to ensure the equitable, scalable, and effective adoption of immersive technologies in relation to pharmacy education and careers promotion.

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Appendix A: 'Psychology Terminology Glossary' (Persky, S. 2024)

Term	Definition
Cognitive priming	Exposure to a representation of an idea or feeling makes subsequent mental accessibility and application of that idea or feeling more likely.
Deindividuation	A state wherein individuals focus less on their own actions and feel less personally accountable due to a focus on group identity and loss of individual awareness.
Embodiment	Connection between the mind and the physical or digital body which exert reciprocal influence on each other. In an immersive digital setting, related to a feeling of owning and controlling an avatar body.
Empathy	The capacity to understand and relate to the feelings of another person.
Extended Self Theory	The notion that individuals define themselves in part by their possessions and elements of their online presence.
Nonverbal behavior	Expression or communication with body language, facial expression, gestures, and other non-linguistic channels.
Nonverbal leakage	Unintentional, non-conscious expression of attitudes, beliefs, or emotions through nonverbal behaviour. Often when there is a discrepancy between what someone is saying and what their nonverbal behaviour is conveying.
Online disinhibition effect	Tendency to display more uninhibited behaviour while in online (versus face-to-face) interaction.
Positive emotion	Feelings that are pleasant or satisfying. Often linked to enhanced social connection and well-being.
Presence	A subjective feeling of being physically and psychologically in a location, where that location may be a virtual environment made up of digital stimuli.
Self-regulation	The ability to control and manage mental processes like thoughts, emotions, and behaviour to achieve personal or social goals in a situation.
Social Identity Model of Deindividuation Effects	A model that predicts when individuals are particularly likely to feel depersonalization within a group and how group norms and dynamics influence activities that result.
Social Identity Theory	The development of one's self-identity rests in part on membership in social groups (e.g., religious groups) and categories (e.g., gender). From these memberships, individuals can derive self-esteem and other mental benefits.
Social influence	A constellation of processes through which individuals or groups influence the beliefs, attitudes, and behaviours of others (e.g., persuasion, conformity).
Social scripts, schemas, and norms	Cognitive frameworks to help us organize information about the social world. Scripts and schemas refer to stories or mental models of how events typically unfold. Norms refer to what is deemed acceptable within a social group.
The Privacy Paradox	A set of discrepancies in attitudes about the desire to have privacy online and ubiquitous engagement in behaviours that risk exposure or share personal data outright.
The Proteus Effect	Wherein individuals' perceptions and behaviour are shaped by the characteristics of their own avatars as well as the avatars of others.

Appendix B: Literature Search Results

Title & Author(s)	Abstract
A preliminary study on the use of second life for career counseling. Yu, F. Y., et al.	The present study intends to explore the potential of Second Life as compared to traditional face-to-face and internet counseling practices for university counseling. Different spaces and avatars have been constructed in Second Life to support university students' exploration of their career choices in a virtual environment. The perceptions of 45 university students with regards to their preference and perceived potential of different counseling channels as well as factors affecting their choice were collected. As evidenced in the study though Second Life is least preferred by the respondents when seeking counseling, its potential is well received. Suggestions for future developments are provided.
A serious game to give students careers advice, awareness and action. Moffat, D., et al.	The university Careers Service seeks new ways to reach out to students and help them to prepare for their entry into the job market. Working with the Careers Service, we designed an online web-application to gamify the students' learning of a range of knowledge, skills and experience related to career development and employability. The aim was to help students to learn new skills, and make them aware of their need for them. It took the form of a game which students would play weekly in class. The students were able to play the game outside class as well, in their own time. Those who appeared to be more engaged did so. The tasks were a mixture of in-game actions, as in any other game, and also real-world actions, like sending emails to develop networking skills. The tasks were co-designed with the help and expertise of the Careers Service staff. Students got in-game feedback for some of their in-game actions, which gave them a personalised experience through indirect communication with careers staff. We found some fair engagement of the students with the game, but it was not strong in all cases. The enhanced levels of careers support was not sufficiently valued or appreciated by the students, it seemed to us. In other ways, it was a beneficial exercise. Within the game, students were given fairly interesting tasks to perform, and some informally said that they were occasionally very useful and instructive. The game was partially successful, in our assessment, and we intend to use it again in future. However the gamification was not perfect, and we believe it suffered from some common issues, showing that gamification is not easy to get right. The more innovative aspects of the game remain interesting and worthy of future development.
A tale of two captains . . . igniting anatomy's passion. Pretorius, N. E.	'Captain my captain.' I was 16 years old when I saw 'Dead Poet's Society' the first time. It changed my life. From that moment, I wanted to enroll in university, spending my days with like-minded, knowledge-thirsty individuals, and guided into my future career by passionate lecturers like 'Mr Keating' who would teach me to view life from a different perspective. In 1994, I encountered another 'captain,' my second-year anatomy lecturer-dynamic, knowledgeable, and infectiously passionate about his subject. However, even more so, he loved teaching. It was not merely about imparting knowledge but about enriching his students' lives, guiding us to delve deep, and give more we had ever thought possible. We did not all excel, but we all tried our best. We did it because we were inspired, and more importantly, because we could not bear disappointing this person who gave us his all. Fast forward 20 years. What has changed between 1994 and 2014? I find myself faced with a completely different scenario. Why are modern students so drive-less, discipline-less, and passionless? How can we instill fervor and enthusiasm for the miracle that is the human body? Anatomy should be permeated by a sense of pride, honor, and amazement. I am baffled that students no longer marvel at the intricacies of the human body. It is not the content that remained the same. Perhaps it is all in the delivery. Is it still possible to be a lecturer who is someone's 'Captain my captain'?.

Addressing misconceptions about engineering through student-industry interaction in a videoaugmented 3D immersive virtual world. Nikolic, S., et al.	A key goal of engineering education is to ensure students are adequately prepared to enter professional practice. Unfortunately, students have been found to bring to university significant misconceptions about the types of work engineers perform, which can have an adverse impact on their readiness to fully appreciate and benefit from course activities. This paper presents a case study of how iSee, a collaborative online platform that allows for video conferencing within a three-dimensional immersive virtual world, was used to host a careers fair event in which students learned about the engineering profession and about the various engineering majors available to them by networking and interacting with alumni and faculty. The planning and execution of the event are described, along with the pedagogical, technological, and logistical considerations and design decisions that were made. Preliminary results suggest the activity, despite being low cost, was effective at generating productive dialogue between participants that focused on what students could expect upon graduating in
	terms of employment prospects, as well as the academic pathways and other learning opportunities they needed to pursue to realize their goals.
Assessing performance and engagement on a computer-based education platform for pharmacy practice Grindrod, K. et al.	A computer-based education platform was developed using a theory-based approach to help Canadian pharmacy professionals adopt their full scope of practice. […] Of the 5290 users, 68% were pharmacists, 11% were technicians, 13% were pharmacy students, and 8% were pharmacy technician students. Four clusters were identified separately for pharmacists and technicians. Clusters with the higher performance and engagement tended to have more users practicing in community pharmacies while the lower performing clusters tended have more internationally trained users. In the regression modelling, pharmacists performed better than technicians and students while students were more engaged ($p < 0.0001$). Further, internationally trained pharmacists had slightly lower scores but similar engagement compared to domestically trained pharmacists ($p < 0.0001$). Users demonstrated higher performance on modules related to scope of practice than on clinical topics and were most engaged with topics directly impacting daily practice such as influenza vaccinations and new and emerging subjects such as cannabis. The cluster analysis suggests that performance and engagement with a computer-based educational platform in pharmacy may be more related to place of practice than to personal demographic factors such as age or gender.
Assistive technology as reading interventions for children with reading impairments with a oneyear follow-up. Lindeblad, E., et al.	This pilot study investigated the possible transfer effect on reading ability in children with reading difficulties after a systematic intervention to train and compensate for reading deficiencies by using applications in smartphones and tablets. The effects of using assistive technology (AT) one year after the interventions were completely studied. School related motivation, independent learning and family relations were also considered. This paper provides implications in how to facilitate reading impaired pupils' learning process and realizes the need to challenge the concept of reading to change to fit modern means of gaining information. Implications for rehabilitation: Children with reading impairment could benefit from assistive technology in regards of their reading development process and increase their chances of not falling behind peers. Assistive technology as applications in smartphones and tablets may aid children with reading impairment to have an equal platform for learning in school as their peers without reading difficulties. Assistive technology could facilitate the information gaining process and subsequently increase motivation to learn and increase interest in reading activities. Assistive technology had wider effects on its users: stigmatizing situations when leaving the classroom for special education were avoided and positive effects on family life were noted.
Career and work-based learning interventions for young recipients of Supplemental Security Income. Tucker, M. S., et al.	The Workforce Innovation and Opportunity Act prioritized provision of vocational rehabilitation (VR) services to young adults with disabilities, reinforcing the importance of assisting young persons with disabilities to prepare for and engage in employment. Findings suggest that gender, age, and disability did not contribute to differences in provision of services to young SSI recipients. Additional findings underscore the importance of fostering youth and parent expectations about youth engaging in work after completing high school.

Career choice of adolescents: Can occupational VR 360-degree videos facilitate job interest? Spangenberger, P. and S. C. Freytag	The recent increase in accessibility of stand-alone Head-Mounted Displays (HMDs) has been recognised by companies who use them for recruitment purposes. By filming employees on the job site with 360-degree cameras, jumping into an occupational environment via a HMD has become a possibility for young career seekers. However, career choice depends on various influential factors (e.g. socialisation, self-efficacy, norms, experiences or career choice readiness). Thus, the question arises how and if VR 360-degree videos for occupational orientation can play a supporting role in this process. The presented pilot study examines the effects of exposure to occupational VR 360-degree videos on the development of occupational interest. 41 students experienced a variety of occupational VR 360-degree videos in a classroom setting. A significant increase in job interest before and after exposure was found. Our results indicate a positive experience and favourable ratings towards the application as useful for career orientation and for providing occupational information. We conclude that VR 360-degree videos are a promising tool for gaining occupational information and initiate self-reflection. We suggest future research with larger cohorts using the same VR application to further investigate which features are regarded as helpful in career orientation for young adults.
Developing a 3D quest game for career guidance to estimate students' digital competences. Prokhorov, O. V., et al.	This paper reveals the process of creating a career guidance 3D quest game for applicants who aim to apply for IT departments. The game bases on 3D model of computer science and information technologies department in the National Aerospace University "Kharkiv Aviation Institute". The quest challenges aim to assess the digital competency level of the applicants and first-year students. The paper features leveraged software tools, development stages, implementation challenges, and the gaming application scenario. The game scenario provides for a virtual tour around a department of the 3D university. As far as the game replicates the real-life objects, applicants can see the department's equipment and class-rooms. For the gaming application development team utilized C# and C++, Unity 3D, and Source Engine. For object modeling, we leveraged Hammer Editor, Agisoft PhotoScan Pro, and the photogrammetry technology, that allowed for realistic gameplay. Players are offered various formats of assessment of digital competencies: Test task, puzzle, assembling a computer and setting up an IT-specialist workplace. The experiment conducted at the open house day proved the 3D quest game efficiency. The results of digital competence evaluation do not depend on the testing format. The applicants mostly preferred to take a 3D quest, as more up-to-date and attractive engagement.
Developing VR content for digital career guidance in the context of the pandemic. Estrada, J. G. and E. Prasolova-Forland.	This paper presents our reflection on adapting our methodology for developing training content for young jobseekers to new influencing factors. The development process centers around small development teams working incrementally to expand a suit of VR applications being used for career guidance, so-called 'immersive job taste'. COVID19 measures have already impacted our ability to carry out user evaluations. Our process can be negatively affected by a headset vendor's new policy. This paper 's contribution is a perspective on the lessons learned and challenges of creating content for a set of VR-based training and career guidance apps targeted at young job seekers, as a part of Virtual Internship project. © 2021 IEEE.
Development and Assessment of an Interprofessional Education Simulation to Promote Collaborative Learning and Practice L. Iverson, et al.	Although students expressed some awkwardness in working as a team, most stated that they could use their discipline-specific expertise to aid in the care of the patient, as well as learn and respect the other team member’s knowledge and contributions. … Student comments demonstrated the importance that the experience had in recognizing their role in collaborative care: I realized that I could have played my role as a pharmacist better. That is, not only answering the question that was asked of me but also to interpret how they were going to use that information to improve patient care.
Development of a pharmacy critical care elective utilising online casebased patient simulations Staffieri, P. et al.	A total of 11 out of the 12 students self-reported that the online in-class case format utilising EHR simulation technology improved their problem-solving skills, with one student disagreeing. All students self-reported that their ability to formulate an evidence-based, patient specific pharmacotherapeutic plan had improved, along with their interest in critical care. When asked if EHR simulation technology should be incorporated into other courses in the pharmacy curriculum, nine out of the 12 students agreed, one neutral, and two disagreed.

Development of career guidance quests using WebAR Shepiliev, D. S., et al. (2021)	Career guidance quests that involve solving intellectual and search problems in a game are associated with one's future career, being one of modern means of recruiting school leavers to vocational and higher educational institutions. Such specific computer tools of virtual and augmented reality as pupils' mobile Internet gadgets can enhance visual character and interactivity of quest problems. The article deals with applying augmented reality in the web environment to solving these tasks. The authors propose a prototype of a career guidance quest system using WebAR technology.
Differences in transitional needs of high school students with and without learning disabilities. Dowdy, C. A., et al.	Studies investigating the post-high-school vocational status of individuals with disabilities have frequently found that these individuals are more likely to be unemployed, underemployed, or employed part-time, when compared to nondisabled peers. Transition programs are needed for adolescents with disabilities to facilitate their vocational success. The current study surveyed 80 high school students with learning disabilities (LD) and 80 nondisabled (NLD) peers to determine their transitional needs. Results indicated that (a) more students with LD than NLD students are involved in transition programs; (b) career goals were established by the majority of both groups; (c) parents provided most of the assistance in making career decisions; and (d) twice as many NLD students as students with LD wanted to go to college, while twice as many students with LD as NLD students wanted to enter the job market. More students with LD than NLD students were aware of vocational rehabilitation (VR) services, but the number was still below 50%. The majority of the information about VR services came from the school.
Digital Career Guidance Technologies: Using Virtual Reality. Demareva, V., et al.	In recent years, career guidance has become an increasingly technologymediated phenomenon. In 2021, we conducted a series of experiments with representatives of different age groups using virtual and augmented reality together with technologies for collecting data on the subject's response to professional content and changing test conditions. The study sample consisted of 10 secondary school students, 10 high school seniors, 10 first-year students, 10 final-year undergraduate students, and 10 graduate students. They passed career guidance tests according to their professional choice and, in addition, from possible related professions. A virtual reality helmet as well as heart rate and skin-galvanic response sensors were used in the tests. The analysis of the collected data shows that there are reliable differences in people's reactions to extreme conditions simulated during the experiment such as a decrease in the test taking time, the introduction of a sound sequence accompanying real professional activity, as well as the simulation of sudden managerial decisions, and possible man-made disasters inherent to various professions. The obtained results of changes in heart rhythm and skin-galvanic reaction data can make highly reliable forecasts with regard to the person's behavior under the conditions of real professional actions, as well as possible ways of preparing for and overcoming difficulties in mastering specific professions
Early findings from the Wisconsin PROMISE project: Implications for policy and practice. Hartman et al.	An overview of early findings from the Wisconsin PROMISE project site related to VR engagement, employment, and earnings outcomes of youth and family participants provides lessons learned that can be applied to VR practice.
Education and Training Tools for the Implementation of the Directive and the Three Rs. Louhimies, S. and M. Holloway.	European Parliament special funding allowed the European Commission to establish a number of projects aimed at improving awareness, uptake and implementation of the Three Rs and nonanimal alternatives in the EU. These projects covered a wide range of activities with a specific focus on developing open access educational and training tools and resources for a variety of target audiences ranging from secondary school to early career scientists, from training providers and trainees to competence assessors. Modern technologies play an increasingly important part in today's educational delivery. The tools developed will use interactive learning techniques, for example those used in some of the open access eModules. These can be accessed through a central user-friendly platform hosted by ETPLAS (Education and Training Platform for Laboratory Animal Science). The same platform will also host specific tools for course and competence assessors. Finally, the participants will be able to explore what virtual reality has to offer when introducing tomorrow's scientists to the in vitro world.

E-Learning through virtual reality applications: The case of career counseling. Kostopoulos, K. P., et al.	VR can be defined as a three-dimensional space that provides a strong degree of interaction with the user, including real-time simulation and interactions through multiple channels senses. It is not just a reproduction of conventional reality, but creates synthetic realities without precedent. It has been used in various fields, e.g. education, medicine, architecture, assistance to persons with disabilities, etc. VR leads to the development of new forms of counseling, e.g. via asynchronous learning platform, videoconferencing, social networking, etc. By using the three-dimensional virtual immersive learning environments of "Open Workshop on Information Literacy" of Patras' University Library, we organized and conducted three educational workshops about career consulting with 50 participants. The Open Workshop is an open and free blended learning initiative for providing flexible training services on academic & professional development to the university's academic community and beyond. In this paper, the results through practice of such an initiative are described, i.e. the prerequisites for its success, its capabilities/restrictions, the participants (and potential) and the way they participated, users' feedback (evaluation and outcomes) and the possibilities/limitations of Virtual Reality (VR) applications in Career Counseling and especially in providing educational and vocational information through already implemented actions.
Emerging Pharmacotherapy and Health Care Needs of Patients in the Age of Artificial Intelligence and Digitalization Zarowitz, B.J.	Advances in the application of artificial intelligence, digitization, technology, iCloud computing, and wearable devices in health care predict an exciting future for health care professionals and our patients. Projections suggest an older, generally healthier, better-informed but financially less secure patient population of wider cultural and ethnic diversity that live throughout the United States. A pragmatic yet structured approach is recommended to prepare health care professionals and patients for emerging pharmacotherapy needs. Clinician training should include genomics, cloud computing, use of large data sets,
Empowering young job seekers with virtual reality. Prasolova-Forland, E., et al.	This paper presents the results of the Virtual Internship project that aims to help young job seekers get insights of different workplaces via immersive and interactive experiences. We designed a concept of 'Immersive Job Taste' that provides a rich presentation of occupations with elements of workplace training, targeting a specific group of young job seekers, including high-school students and unemployed. We developed several scenarios and applied different virtual and augmented reality
	concepts to build prototypes for different types of devices. The intermediary and the final versions of the prototypes were evaluated by several groups of primary users and experts, including over 70 young job seekers and high school students and over 45 various professionals and experts. The data were collected using questionnaires and interviews. The results indicate a generally very positive attitude towards the concept of immersive job taste, although with significant differences between job seekers and experts. The prototype developed for room-scale virtual reality with controllers was generally evaluated better than those including cardboard with 360 videos or with animated 3D graphics and augmented reality glasses. In the paper, we discuss several aspects, such as the potential of immersive technologies for career guidance, fighting youth unemployment by better informing the young job seekers, and various practical and technology considerations.

Enhancing virtual site visits via bi-directional coordination between construction sites and classrooms. Olayiwola, J., et al.	Several studies have provided empirical evidence that providing learners with field experiences can enhance the contextual understanding of the relationships between theory and practice. Site visits have the potential of stimulating students' interest in the domain knowledge and skills, while also enhancing their professional development. For students pursuing careers in the construction industry, one way of gaining field experience has been by physically observing the construction process and engaging with the site personnel. Such experiences are particularly beneficial as industry practitioners are constantly devising innovative methods and practices of delivering safer, quicker, and more sustainable projects, which students can learn from. However, it is usually difficult to provide these experiences due to cost, safety, weather, and schedule constraints, and the inability of the project sites to accommodate large class sizes. Even when access to construction sites is granted, the following concerns still exist: the educational quality of the site visit is highly dependent on the activities that are occurring on the day of the visit; students with disabilities have difficulty navigating the job sites; and there are limited opportunities for students to engage with field personnel. This paper describes a specific effort that seeks to facilitate real-time bidirectional communication/interaction between field personnel on the construction site, and students and instructors in the classroom. It argues for the effective integration of computational resources, such as unmanned aerial systems, mixed reality, and eyetracking, with construction engineering education, and outlines how bi-directional coordination can be maintained between the construction site and the classroom. The opportunity offered by the adoption of these computational resources to make the construction field experience more accessible is discussed and the key benefits highlighted.
Establishing clinical pharmacist telehealth services during the COVID19 pandemic Segal, E.M. et al	In this article, we highlight our process of expediting the implementation of telehealth services. This process included obtaining authorization for the credentialed pharmacists to provide telehealth services, completion of training modules, implementation of new technology platforms, development of new workflows, and utilization of resources for providers and patients to facilitate successful completion of telehealth visits. We also highlight the consent and documentation components crucially important to the telehealth visit and share some of our successes,
Evaluation of Vaccination Training in Pharmacy Curriculum: Preparing Students for Workforce Needs Bushell, M. et al.	Students found value in the use of mixed reality to enhance student understanding of the anatomy of injection sites. […] 2.1.3. Simulation To simulate environments and prepare students for real experience, the training program used the following: roleplays, mannequins, standardized patients, and mixed reality. Students had to role play and administer vaccinations to both a pediatric and adult low fidelity mannequin. A mixed reality simulation technique using the Microsoft Hololens headmounted devices along with the GIGXR applications Holohuman and Holopatient were used in the face -to-face delivery. The two applications were used to augment the students understanding of anatomy and physiology and to view a simulated patient who was portraying symptoms of anaphylaxis. Holohuman is an anatomy application that allows a student to gain a spatial understanding of anatomy and walk through the holographic body. As the student walks through the holographic image, layers of virtual anatomy peel away to reveal the underlying structures. This provided students with a unique way of identifying landmarks (i.e., deltoid muscle) for intramuscular (IM) vaccination. It was used to enable students to visualize the shoulder (synovial) joint and to recognize why a shoulder injury related to vaccine administration Innovative technologies in pharmacy education 9 (SIRVA) would occur if given too high. Mixed reality has the power to engage the learner in a variety of interactive ways, which until this point have not been possible
Evidence for simulation in pharmacy education.	…the University of Pittsburgh School of Pharmacy has embraced innovative approaches to learning and documented advancement of clinical pharmacy education. This brief report will discuss advances in national and international pharmacy

Seybert, A.L. et al.	education, as well as the PittPharmacy experience with simulation education. A particular emphasis is on human patient simulation, computer- based simulation, virtual patient, and gaming in the settings of direct patient care-related education and assessment. The available literature and the experience at PittPharmacy shows improvement in learner satisfaction, knowledge enhancement, critical thinking skills, and problem solving in patient care topics. The evidence included provides support for the use of simulation to advance clinical pharmacy education and can serve to encourage further scholarship in this area
Exploring virtual reality as a platform for distance team-based learning. Coyne, L et al.	Online distance education has become popular in pharmacy education, but it can be challenging to provide engaging experiences such as team-based learning (TBL) in this format. This study explored the utility of virtual reality (VR) as a platform to provide the engaging elements of TBL, without students needing to be physically present in the same room. […] The response of participants to this study was positive and the overall conclusion was that VR has the potent
Forces driving change in pharmacy education: Opportunities to take academic, social, technological, economic, and political into the future Rhoney, D.H. et al.	These technologies—collectively referred to as XR—have long held promise within education, and while their cost (both to develop content and to deploy widely) remains generally high, their capability keeps expanding. The different realities afford different experiences for the student, but they share a basic approach in allowing a student to express knowledge and demonstrate skills within a realistic simulation. The question is if pharmacy education is ready for these emerging technologies. There is an opportunity to capitalize on the information that has been gained prior to and through the pandemic to create a national level collaboration for creating knowledge-based resources in different professional education settings.
Gamefication of Youth's Career Guidance Self-Identification. Poliakov, M., et al.	The work is devoted to solving the youth's professional orientation problem in modern conditions of limited offline communication. The urgency of development of new methods and tools of adolescents' professional orientation, which are based on modern information technologies, is shown. The research's focus is aimed at the introduction of computer game technologies in the work of career guidance centers, pre-university departments of colleges and higher education institutions. The expediency and effectiveness of the existing professional orientation computer game tasks usage in career guidance work with youth who need decision support at the stage of choosing a future profession are substantiated. It is shown that in the conditions of virtual reality the estimate reliability of personal qualities for compliance with a certain professional activity depends on the selection of game tasks. A clear criterion for automatic measurement of activity interest in professional activity, which depends on the task selection time, is proposed. There are fragments of computer game tasks that allow a person to self-estimate their ability to perform activities in different situations and professional relationships without communicating with career counselors and psychologists.
Girls Tech Camp: Librarians Inspire Adolescents to Consider STEM Careers. Stapleton, S. C., et al.	Motivated by a desire to encourage girls to pursue science, technology, engineering and math (STEM) studies, librarians at the Marston Science Library (Marston) at the University of Florida (UF) developed Girls Tech Camp (GTC), a summer camp designed to introduce middle-school girls to creative technologies used in these fields. This week-long summer day camp launched in 2016 and continued in the summers of 2017 and 2018. Each year, the camp brought twenty-two 6th-8th grade girls into an academic science library to build experience with emerging technologies and increase interest in pursuing further studies or a career in STEM. The camp introduced the girls to a range of technologies, including 3D modelling, 3D printing, augmented reality, Arduino microcontrollers, light sensors, digital video production, computer coding, and conductive crafts. Through hands-on activities, guest lectures, and campus field trips, youth interest and confidence in using technology expanded, and participants experienced student and research life at a university. This paper describes the development, operation, and assessment of hosting a camp in an academic library to inspire girls to pursue STEM studies.

Human-Centered Work: How Pharma Can Move to a Blame-Free Culture Shanley, A.	The article discusses importance of simplifying procedures and training in pharmaceuticals industries to prevent costly morale, quality, and compliance problems. Topics discussed include information on need for focus on training, testing, and auditing for pharmaceutical and medical device companies; rising mergers and acquisitions in pharmaceutical industry; and role for virtual and augmented reality, in setting up risk-free learning environments.
Immersive job taste: A concept of demonstrating workplaces with virtual reality. Fominykh, M. and E. Prasolova-Forland	This paper presents a new concept of 'Immersive Job Taste' - interactive virtual reality demonstration of a workplace that aims to give a feeling of going through an average workday of a professional with elements of basic training. The main target audiences of Job Taste simulations are young job seekers who can be aided in selecting a career path at school or a welfare center, choosing the first or a new occupation, often after a period of being unemployed. The design methodology behind the Immersive Job Taste concept includes presentation of a workplace, typical tasks, feedback on performance, and advice on applying for jobs in the specific industry. We developed several scenarios and applied different virtual and augmented reality concepts to build prototypes for different types of devices. The prototypes were evaluated by several groups of primary users and experts. The results indicate a generally very positive attitude towards the concept. In this paper, we discuss the potential impact of applying the concept and directions for future work.
Immersive Research Experiences for High School Students Aimed at Promoting Diversity and Visibility in Pharmacy Education J. E. McLaughlin, et al.	Two challenges frequently faced by schools of pharmacy are the training of a workforce that reflects the racial and ethnic diversity of the populations they serve, as well as raising public awareness of the mission and impact of pharmacy schools. One underutilized strategy in addressing these challenges is directly engaging high school students, whose race and ethnicity more closely reflect the increasing diversity of the US population, in immersive research experiences at schools of pharmacy. Motivated by the multidisciplinary nature of pharmaceutical sciences that involve integration of various science, technology, engineering, and mathematics (STEM) disciplines, the UNC Eshelman School of Pharmacy created the Young Innovators Program (YIP). The program is an eight-week paid summer internship that immerses participants in cuttingedge and innovative research. Through careful planning, strategic collaboration, and a purposeful recruitment process, we believe pharmacy education could benefit from the expansion of immersive Innovative technologies in pharmacy education 10 programs that promote the engagement of racially and ethnically diverse high school students in real-world research.
Inspiring Young Learners Toward a Career in Healthcare Using Simulation. Yeh, V. J., et al.	To inspire young learners toward a career in healthcare and provide them opportunities to learn lifesaving skills, a hospital-based simulation center collaborated with a local middle school to develop a 88-minute simulation-based educational activity. The activity consisted of eight 10-minute stations on lifesaving and basic medical skills. One hundred fifty students participated. Evaluation surveys showed students favored stations with extensive hands-on activities and valued the opportunity to interact with health professionals. Students also reported more interest in science careers after the visit. This collaborative effort is time-efficient and low-budget simulation-based learning experience that had an immediate impact on middle school students.
Intelligent web platform for vocational guidance. Cruz, A. F., et al.	The vocational guidance process helps students in their career choices, it provides a better understanding and motivates to them to do it themselves. The lack of trained professionals to provide career guidance and the need of organized register system to help them to manage the guidance process, all this allowed the creation of Computer Assisted Career Guidance Systems (CACGS) as a part of the solution, however many of these systems have been developed for people in contexts with different characteristics as Colombian and is difficult to use their outcomes either to give guidance by counselors and to be interpreted by the students specifically from Popayan city. This paper presents a web platform designed to support vocational guidance process taking into account the students expectations on their career elections. In this research's stage the use of the intelligent web platform for vocational guidance is evaluated using a web search which includes usability metrics, and their answers help to measure the web interfaces acceptance and improve the learning process about realistic, investigative, artistic, enterprising and conventional (RIASEC) environments of

	the Holland's theory and how the web platform helps the students in their self-knowledge process.
Introducing Augmented Reality Technology to Enhance Learning in Pharmacy Education: A Pilot Study. J. Schneider, et al.	AR technology can position the learner within a real-world context whilst enabling participatory learning practices. While the results of this study require further investigation, it is clear that AR technology has the potential to engage and stimulate students in a way that could create a more inclusive learning environment. This study has identified the benefits that AR can bring to tertiary pharmacy education. AR technology can be implemented at minimal cost to the creator and the learner as the vast majority of students own mobile devices. Innovative technologies in pharmacy education Web-based AR platforms are easy to learn and implement and can provide educators with a simple introduction to the world of augmented and virtual reality technology. Further research is required to investigate the use of AR for learning about a range of different medications and build on the implementation of AR in tertiary pharmacy education.
It's Like I'm Really There": Using VR Experiences for STEM Career Development. Jiang, Y., et al.	Research suggests that the likelihood of students entering into science, technology, engineering, and mathematics (STEM) careers can be increased by promoting and maintaining students' interest in STEM during middle school years, a critical developmental stage when students' interests begin to solidify. One way to attract students to STEM is through technology-enhanced learning environments and experiences, which can spark and cultivate the long-term interest needed to pursue STEM careers. Virtual reality (VR) can potentially increase access to such STEMrelated experiences for all students due to its educational and technological affordances. Currently, there has been little exploration of the intersection between VR and career development for K-12 students. This study, therefore, aims to address this gap by exploring the use of VR 360 videos for STEM career exploration. Data were collected using focus group interviews with 39 primarily Latinx middle school students who participated in the summer enrichment program. These interviews were conducted immediately after a VR 360 video activity that featured female characters and/or characters from racial minorities in order to best support students who are underrepresented in STEM fields. The findings support the potential of VR as a tool for career development if content, possible physical side effects, and scaffolding are considered. The implications for research and practice are discussed.
JobTIPS: A Transition to Employment Program for Individuals with Autism Spectrum Disorders. Strickland, D., et al.	This study evaluated the effectiveness of an internet accessed training program that included Theory of Mind-based guidance, video models, visual supports, and virtual reality practice sessions in teaching appropriate job interview skills to individuals with high functioning Autism Spectrum Disorders. In a randomized study, twenty-two youth, ages 16-19, were evaluated during two employment interviews. Half received a training intervention following the initial interview and the half who served as a contrast group did not. Their performance pre and post intervention was assessed by four independent raters using a scale that included evaluation of both Content and Delivery. Results suggest that youth who completed the JobTIPS employment program demonstrated significantly more effective verbal content skills than those who did not.
Making healthy connections: introducing nursing as a career choice to middle school students. Knight, M., et al.	The current economic climate has resulted in many experienced nurses returning to the workforce. Despite this, the nursing shortage is looming in our future and the recruitment of a diverse nursing workforce reflective of the population remains a high priority. The Merrimack Valley in northeastern Massachusetts has two large cities, Lawrence and Lowell, in which the Hispanic and the Southeast Asian populations are disproportionately higher than state and national levels. Through the University of Massachusetts Lowell's Bring Diversity to Nursing Project, partnerships with both city school systems were developed and after-school programs aimed at highlighting nursing as a career choice were initiated. Mr. Thompson's Heart is the focus of a middle school, pre-entry program developed by faculty. Introducing career choices in middle school gives students fundamental information about careers and how to begin investigating them. Mr. Thompson's Heart introduces nursing as a career choice combining career information with a focus on developing healthy lifestyle habits. Multiple hands on activities create excitement and interest in the nursing profession.

Metycoon: A game-based approach to career guidance. Dunwell, I., et al.	Understanding the relationship between immediate decisions and long-term career prospects is a vital skill in a job market which is becoming increasingly globalised, competitive and dynamic. The application of digital technologies and multimedia to career-guidance offers the potential to go beyond the confines of the classroom and provide a depth of insight into career decisions and their consequences in interactive and engaging forms. This paper reports on an approach which uses a serious game as an approach to career guidance incorporating game-based elements such as character development and decision-making alongside a visual and user-centric approach to fostering engagement. Deployed online and targeted evaluation questionnaires at a UK audience, the developed 'MeTycoon' game provides both direct access to learners and other resources encouraging its use in blended contexts by teachers and career support professionals. Analysis of the game uptake and user engagement reveal encouraging levels of user engagement with the game's website generating 38,097 visits and 408,247 views of career videos embedded within the game. An online survey of players (n=91) with closed and semi-structured questions provides some insight into players' perspective, demonstrating MeTycoon's approach, in which pedagogic elements such as informational videos are closely integrated into the game's mechanics were perceived as an intuitive method for facilitating learning.
More than coffee – a World Café to explore enablers of pharmacy practice research O. Kavanagh, et al.	The most commonly discussed barriers inhibiting research were workload, technology limitations and financial considerations. Organisational leadership to prioritise and coordinate research efforts, training to build research capacity, building on existing examples of excellence and initiation of bottom-up community-based research projects were identified in our study as opportunities to enhance pharmacist involvement in research and ultimately patient health outcomes.
Narrative Integrated Career Exploration Platform. Shahriar, S., et al.	Career and technical education play a significant role in reducing high school and college dropouts as well providing necessary skills and opportunities to make suitable career decisions. The recent technological advances have benefited the education sector tremendously with the introduction of exciting innovations including virtual and augmented reality. The benefits of NL and game-based learning are well-established in the literature. However, their implementation has been limited to the education sector. In this research, the design and implementation of a Narrative Integrated Career Exploration (NICE) platform is discussed. The platform contains four playable tracks allowing students to explore careers in artificial intelligence, cybersecurity, internet of things, and electronics. The tracks are carefully designed with narrative problemsolving reflecting contemporary real-world challenges. To evaluate the perceived usefulness of the platform, a case study involving university students was performed. The results clearly reflect students' interest in narrative and game-based career exploration approaches.
Online versus classroom learning in pharmacy education: Students' preference and readiness. Q. Y. Lean, et al.	There was no significant difference between the knowledge scores when comparing online learning and face-to-face learning, suggesting online learning was as effective as the face-to-face learning method. The majority of students reported that they enjoyed online learning and found that online learning was a useful learning tool. Having said that, most students purported a preference for a blended learning approach. The students valued the Innovative technologies in pharmacy education interaction available in face-to-face learning and the time flexibility offered by online learning. Conclusion: Online and face-to-face learning methods were found equally effective for student learning, yet pharmacy students denoted that they favoured a blended learning approach. Although computer and innovative technologies diversify existing teaching and learning methodologies, matching students' learning needs is crucial when selecting the delivery approach to maximise student learning outcomes
Pharmacy students' receptiveness of virtual reality and perception of its impact on curriculum. P. Carcamo, et al.	Virtual reality (VR) uses advanced technology to create an immersive, interactive, and hands-on experience. Published research has demonstrated that the use of VR in the classroom may enhance academic achievement by increasing learner engagement; however, the literature did not include pharmacy students. Understanding pharmacy student receptiveness and acceptance of VR is important to understand how to incorporate to maximize impact. Pharmacy students appear receptive to the use of VR in the classroom. Further investigation of the value of VR in pharmacy education should be explored.

PlayScope: Augmented microscopy as a tool to increase STEM engagement. La Plante, C., et al.	The PlayScope is an interactive, smartphone-based microscope that combines phone based gaming with traditional microscopy via augmented reality technology. The PlayScope provides instruction and project-based learning opportunities that address the developmental needs and media consumption preferences of middlethrough highschool students, connecting students to fundamental biotechnology concepts in an engaging way. By transforming microscopy into an interactive process the PlayScope puts the student in the role of the scientist, allowing them to interact directly with simple organisms and actively engage in an experience that provokes curiosity and creativity. The PlayScope has the potential to increase student understanding of living systems that are currently taught through abstract textbooks, static models, and directive hands on materials that have remained unchanged for decades, with a long term objective of increasing the number of young people who choose science related career paths.
Preparing Pharmacists for Collaborative / Integrated Health Settings. Ascione, F.J.	Pharmacy practice is changing to accommodate the need for pharmacists to be better team members in newly emerging collaborative care and integrated health systems. […] These curricular decisions should be based on existing and new research on the effectiveness of IPE on student's attitudes, knowledge, skills, and behavior. A key decision is how to create effective interactions between pharmacy students and those of other professions. Educational emphasis should be directed toward team building skills, not just individual competencies. The pharmacy faculty probably need to enhance their teaching abilities to accommodate this change, such as learning new technology (e.g., simulations, managing online exchanges) and demonstrating a willingness to teach students from other professions.
Process Evaluation of the BOOST-A™ Transition Planning Program for Adolescents on the Autism Spectrum: A Strengths-Based Approach. Hatfield, M., et al. (2018)	A process evaluation was conducted to determine the effectiveness, usability, and barriers and facilitators related to the Better OutcOmes & Successful Transitions for Autism (BOOST-A™), an online transition planning program. Adolescents on the autism spectrum (n = 33) and their parents (n = 39) provided feedback via an online questionnaire. Of these, 13 participants were interviewed to gain in-depth information about their experiences. Data were analyzed using descriptive statistics and thematic analysis. Four themes were identified: (i) taking action to overcome inertia, (ii) new insights that led to clear plans for the future, (iii) adolescent empowerment through strengths focus, and (iv) having a champion to guide the way. The process evaluation revealed why BOOST-A™ was beneficial to some participants more than others.
Purposive game production in educational setup: Investigating team collaboration in virtual reality. Timcenko, O., et al.	With increasing amount of research and applications in Virtual Reality (VR), there is a growing need to educate future professionals in this field. Thus, it is crucial to motivate young persons to choose this career, especially as many developed countries report not enough interest for STEM educations in general. In this poster, we will present an experiment conducted with undergraduate students on their final year of studying. The whole education is organized within Problem Based Learning paradigm (Aalborg model), and students work in groups to solve a problem chosen by themselves and only broadly defined by the semester theme. For this experiment, we have organized a special Production Group, of a size of three ordinary semester groups (21 persons), and required that within the semester theme "Audio-Visual Experiments" a meaningful problem using VR should be investigated, by developing and testing a VR application. The students were assigned specific roles, as if they were working on a real project in a real company – thus a bigger size of the group. Several Oculus Rift Development Kit 2 sets were available. After reviewing literature, the group formulated a research question: "Does virtual reality have an effect on group communication effort in a collaborative environment?" To answer this question, the group developed a 3D VR puzzle game with several levels. In order to solve puzzles, participants needed to collaborate and communicate in VR, which is a field that still requires research. The students tested several scenarios, using triangulation method of observations, screen recording and questionnaire, and developed ideas why something might work or not. Three teachers were supervising the students, and the fourth was observing the whole process. During supervision hours, and interviews with the students after the production was finished, we were able to learn about their learning process and get information on their motivations and challenges in using this novel technology. This poster will present both students work setup, testing process and conclusions, and teachers' observations on the process.

Qualitative evaluation of a standardized patient clinical simulation for nurse practitioner and pharmacy students. L. Koo, et al.	This article describes a qualitative evaluation of an interprofessional educational experience for nurse practitioner and pharmacy students using standardized patients and physicians role-playing physicians in clinical scenarios. Small groups of students and faculty facilitators worked through two clinical scenarios that were based on the expected emergence of the patientcentered medical homes. … Participants expressed improved understanding of individual roles, increased confidence, and a better sense of interprofessional support. The educational experience themes included the benefits of a realistic nature of the simulation and the need for improved student orientation to roles and expectations prior to the clinical simulations.
Research on recruiting simulations and career center services in virtual environments. Stankovic, J., et al.	The paper is focused on technologies used for student online learning on recruiting process, within career advising services. The results of this research show positive effect of virtual environments in preparation for active job seeking, especially job interviews. Different games, simulations and other online services presented in the paper are developed to help potential and current job seekers to improve their employability. The mentioned tools improved overall quality of career counselling services, providing a realistic experience. The results of the paper show potential benefits of cooperation between career centres and companies that provide preparation modules for recruitment and selection, in the terms of candidate job prospects and employer branding. Disadvantages of the virtual environment conditions, in this sense, could be overcome by relevant additional services of career centers.
Simulation of vocational activities: experimental evidence of (no) changes in vocational interests. Martoncik, M., et al.	Many school-age pupils are undecided about their future vocation. This often stems from a lack of occupational information or lack of vocationally related experience. The goal of this study was to develop and evaluate an intervention focused on the possibility of changing vocational interests through the simulation of vocational activities. The sample consisted of 250 pupils who were finishing primary school. The intervention was constructed for practical and artistic interests and consisted of workbooks that aim to simulate these vocational activities. MANCOVA showed no effect in the change of vocational interests among the pupils. An alternative idea of intervention in the form of virtual reality simulations is also presented.
Smart Career Guidance System. Kamal, A., et al.	We have developed a career guidance system that helps those students who are about to begin their higher education. Most of the time, students are not aware of what career path to follow or which academic major is in accordance with their interests. The system analyzes students' skills, abilities, and interests and recommends the five fields which are most suitable for them. This project helps students identify a specific domain that
	fits their skills and interests. Smart Career Guidance System is a web-based application built on the Django framework. We have deployed various Machine Learning techniques and algorithms to mimic a one-on-one meeting with an experienced career counselor. The data was collected in the form of a questionnaire that was based on Holland Occupational Themes and the Theory of Multiple Intelligences. A total of 392 graduates completed this online survey. SMOTE oversampling is used to evaluate the machine learning classifiers since the data is highly imbalanced. We tested XGBoost and Random Forest classifiers for recommending the best-suited career options which furnish AUC-ROC performance scores of 0.9952 and 0.9963 respectively. A fine-tuned version of the Random Forest Classifier has successfully attained an AUC-ROC performance score of 0.9976 which indicates the minimal false-positive rate. Ms. Areej Kamal, Ms. Hadia Rafiq and Ms. Batul Naushad have collaboratively conducted all activities of the project including data collection and cleaning, literature review, testing of ML models and development of the final solution. Mr. Shahab Tahzeeb directed and supervised all phases of the project with his immense knowledge and expertise.
St. Mary's school disaster prep club. DeGraff, A	The Youth Preparedness Council (YPC) has drawn adolescent leaders from around the United States who have interest and promise in helping their communities in emergency preparedness activities. As seen in this successful project, positive interactions between first responders and youth allow for first responders to directly and indirectly (through the YPC) connect with students and communities for preparedness by providing appropriate resources, education programs, training/drilling opportunities, and career discussions. These activities are very important in accomplishing the YPC and FEMA's goals of enhancing community emergency preparedness and resiliency.

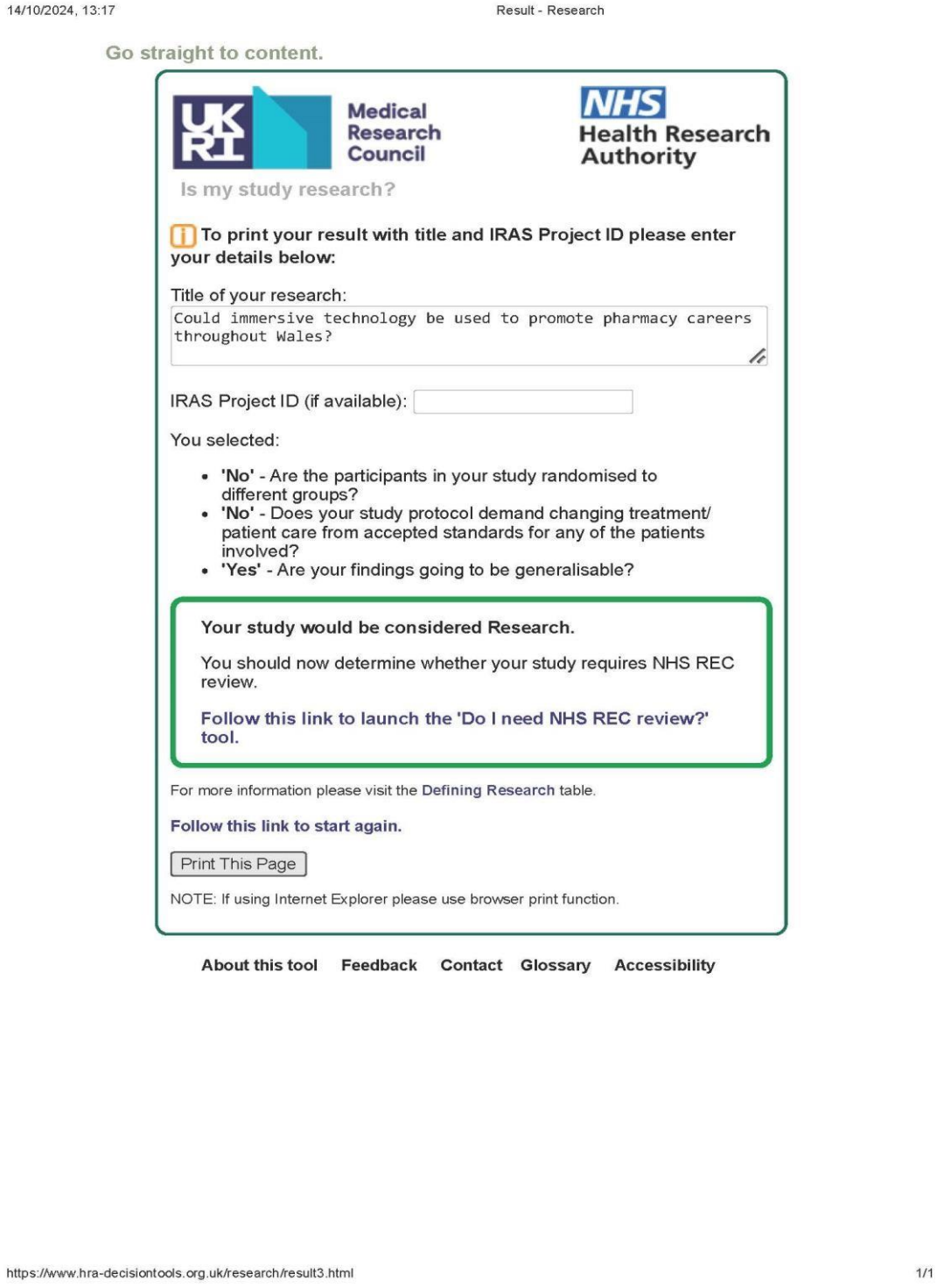
STEM Career Exploration Events: Middle School Students' Experiences and Expressions of STEM Identity and Possible Selves. Redick, S. K.	Solving some of the greatest problems facing humanity – pandemics, climate change, access to clean water – will depend on a diverse STEM workforce creating socially just solutions. Thus, there is a need to broaden participation in STEM to bring diverse perspectives to bear on these complex problems. Broadening STEM participation relies on understanding how students identify with and envision futures in STEM. Middle school represents a critical time for students' identity development, and therefore, for their potential career exploration. In order to better understand the influence of identity and possible selves on middle school students' career exploration, this study examined middle school students' experiences of a STEM career exploration event and explored how students expressed their STEM identities and STEM possible selves in this context. I conducted a multiple case study, with data collection consisting of semi-structured and photo elicited interviews, surveys, classroom observations, and student-created videos. The findings of this study revealed that students leveraged personal interests and learning preferences to engage in STEM Career Day participatory structures. Students expressed STEM identities and possible selves that intersected with their ideas about STEM people and salient factors of whole-person identities. Notably, social identities were often overlooked or disregarded by students. This social identity colorblindness was identified as an area of future study because of the large body of prior research that indicates the significance of social identities in STEM. Implications drawn from these findings point to the importance of offering students active roles in designing, participating in, and reflecting on STEM career exploration events. Additionally, drawing on students' ideas about identities presents opportunities to support their expressions of and connections to their personal STEM identities and possible selves. Finally, researchers and educators should consider engaging students throughout the STEM career exploration event process in order to create more inclusive experiences that nurture and broaden students' ideas about possible selves in STEM.
Teaching healthy habits to a diverse population of youth by using interactive demonstration models. Lee, S. M., et al.	The objective of this study was to evaluate the effectiveness of an interactive health exhibit in garnering the interest of youth in healthcare and science. Our exhibit has been effective in reaching a diverse population of youth and has increased their interest in healthcare and science as well as expanded their knowledge on the hazards of smoking.
The "Warrior" system: a new useful emergency simulator to train clinical pharmacists in emergency medicine Huang, C. et al.	The implementation of the "Warrior" emergency treatment system was very successful. In the training of clinical pharmacists, it provides a rich and realistic clinical experience and improves the teaching effect. The system development continues, since many modules are currently imperfect, including the endocrine and coagulation systems. Furthermore, drugs are presently administered via intravenous injections and intravenous drips, but oral drug systems will also be developed in the future. Moreover, the influence of drug interactions, which are important data for the work of clinical pharmacists, will be developed. Simultaneously, we will create more clinical cases and presentations, so that students can obtain greater clinical experience. Since the Warrior system has just begun to use, so the sample size was small, we will continue to promote it in the training of clinical pharmacists, we will do wider research, and provide research support to improve the improvement of the "Warrior" system. Briefly, the "Warrior" emergency simulator system provides a good training path for clinical pharmacists; some achievements have already been made, and the system will acquire more features in the future
The development of job sheet practice shield metal arc welding assisted augmented reality. Djatmiko, R. D., et al.	The purpose of this research is measuring the feasibility of a job sheet of shielded arc metal welding practice assisted augmented reality. This research used the method of research and development studies (R&D). The research was conducted on 32 students of class X at vocational high school Muhammadiyah 1 Salam. Data collection techniques were conducted using a questionnaire. The questionnaire was validated by an evaluation of the expert. The instrument test included 30 respondents outside the research sample. Data analysis technique performed with quantitative descriptive analysis technique percentage. The result of this research is in form of a job sheet practice welding SMAW using augmented reality.

The development of STEAM career education program using virtual reality technology. Park, N.	This paper provides the research cases of the STEAM education program and utilization of virtual reality in the training programs. It proposes the STEAM education program on virtual reality and the teaching methods for 3rd~4th graders of elementary schools. The training program, textbooks and teaching materials were developed in consideration of the level of intellectual development and interest of 3rd~4th graders.
The Past, Present, and Future of Virtual Reality in Pharmacy Education. L. Coyne, et al.	Earlier versions of VR have been used to provide pharmacy students with activelearning opportunities for many years. However, until recently technology has been restricted to two-dimensional computer screens, expensive simulation mannequins, and static paper-based cases. The latest VR technology involves head-mounted displays that provide interactive 360o environments. This is a crucial step forward in the utility of VR for pharmacy education, as the 360° environment allows for experiences that can immerse the learner in active learning scenarios that would not be otherwise possible. […] Virtual reality environments could be used to provide highfidelity pharmacy simulations, field trips through the human body, and even opportunities to learn from mistakes, which is usually not feasible with real patients. The full extent to which VR will be used in the pharmacy curriculum is not yet clear and dependent on the development of appropriate software, but early opportunities may involve experiential and laboratory simulation. Widespread adoption of VR for use in pharmacy education will be dependent on overcoming comfort issues, high cost, and the limited educational content available. With more research and development, particularly software development, VR has the potential to become an integral part of pharmacy education.
The role of self-efficacy, flexibility, and gender in pharmacy students' health information technology readiness R. J. Jacobs, et al.	With the increased adoption of HIT in pharmacy practice, innovative approaches to HIT education are needed. Curricula that help students overcome obstacles to embracing technology may now be warranted. With enhanced training and engagement involving more than just didactic lessons, pharmacy students may not only feel confident in their ability to embrace HIT in future practice but feel professional satisfaction, increasing the likelihood for improved patient care and health system sustainability.
Unlocking the potential of introduction to teaching courses through simulations. Sebastian, R. and A. Krishnamachari.	Introduction to teaching courses are often tasked with helping students make an informed career choice and building their knowledge of the field. In this mixed-methods study, we investigated 98 students' responses to a challenging, mixed-reality simulation and which factors influenced their responses. Our goal was to understand the utility of simulations for introduction to teaching courses. We found that students generally perceived the simulation as challenging and useful, with many building skills during practice and sharing new insights into teaching afterwards. Students' prior experiences working with children were associated with their performance and perceptions. Implications for teacher education are discussed.
Using simulations as a persuasive technology in secondary school technical curriculum. Mastaglio, T. W. and G. C. Harrison	This paper provides an overview of the use of simulation technology to influence attitudes of secondary school students toward trade occupation. It is an instantiation of the concept of persuasive technology built upon an understanding of the use of computers in education, specifically simulation-based learning. The effort described here, the SkiliTek Project developed at Norfolk State University. is focused on familiarizing students with occupational opportunities. At-risk students in inner city schools and poor rural areas arc not provided adequate information about career
	opportunities available in trade occupations; counseling programs and school curriculums focus on preparing students for post scholastic education and not occupations. Also, there are limited resources and expertise in secondary school faculty and staff regarding the working world of tradesman. SkillTek uses computer simulation to provide a virtual workplace experience for a portfolio of trades. A Department of Labor funded pilot demonstrated the efficacy of the approach using a prototype curriculum package developed for two occupational clusters: healthcare services and heavy equipment operations. Current work is refining the pilot based on evaluations conducted in 2002 and expanding the curriculum to cover more occupational clusters while exploring theoretical issues in persuasive technology and building partnerships with industry and regional schools.

Using visual stimuli in narrative career interventions: effects of image-supported storytelling on interview anxiety and performance. Lin-Stephens, S., and M. Manuguerra.	While narrative approaches flourish in contemporary career guidance, insufficient attention has been paid to the sensory input of narrative construction. This study concerns supporting narrative construction with visual stimuli. We examined whether image-supported storytelling preparation improved interview anxiety and performance. Using within-subject repeated measures, we found that although interview anxieties conceived by interviewees and perceived by assessors were negatively associated with interview performance, an image-supported intervention improved performance rating, appearance anxiety and assessor-perceived interviewee anxiety. Combined with practice, the intervention also alleviated other dimensions of interview anxiety, showing the value of visual input in narrative interventions.
Utilizing social media for social work: insights from clients in online youth services. Chan, C., and S. S.-y. Ngai	This study explored and conceptualised service users' experiences in online outreach projects supported by the Hong Kong SAR government. Fifteen active users were interviewed. The study used thematic analysis to explore service users' experiences that might not have been possible without technology. Participant utterances were nonmutually-exclusively tagged with a specific theme. Each utterance reflected an aspect of user experience which combined a technical component with a service-need component. Six themes were identified, including: (i) Personalised newsfeeds help identify service information and news, (ii) Online status indicators improve service accessibility, (iii) Online communications enable a disinhibition effect, (iv) Asynchronous communications facilitate continual feedback loops, (v) Incomplete communicative modalities may cause misunderstanding and (vi) Asynchronous communication may disrupt conversations. The findings reveal that there are middlelevel concepts between broad social work concepts and ever-changing technology. Implications for research and practice are discussed.
Virtual Reality in Pharmacy: Opportunities for Clinical, Research, and Educational Applications. Ventola, C.L.	Virtual reality (VR) has been widely studied and applied in numerous medical applications. In pharmacy, VR can potentially be applied as follows: adjunctively or as a replacement for pharmacotherapy; in drug design and discovery; in pharmacist education; and in patient counseling and behavior modification. Research applying VR in pharmacy is currently limited; however, interest in these applications is increasing. The majority of studies conducted during the past decade have found VR to be safe and effective, and to promote a high degree of user satisfaction. VR technology has become increasingly affordable, flexible, and portable, enabling its use for therapeutic purposes in both inpatient and outpatient environments. But despite the compelling features of VR, a number of challenges exist, such as validation of clinical efficacy, cost/accessibility and usability issues, technical capabilities, and acceptance. This article discusses the potential for the use of VR in pharmacy for clinical, research, and educational applications
Virtual Reality Job Interview Training in Adults with Autism Spectrum Disorder. Smith, M., et al.	single-blinded randomized controlled trial. Adults with autism spectrum disorder were randomized to VR-JIT (n = 16) or treatment-as-usual (TAU) (n = 10) groups. VR-JIT consisted of simulated job interviews with a virtual character and didactic training. Participants attended 90 % of laboratory-based training sessions, found VR-JIT easy to use and enjoyable, and they felt prepared for future interviews. VR-JIT participants had greater improvement during live standardized job interview role-play performances than TAU participants (p = 0.046). A similar pattern was observed for self-reported self-confidence at a trend level (p = 0.060). VR-JIT simulation performance scores increased over time (R = 0.83). Results indicate preliminary support for the feasibility and efficacy of VR-JIT, which can be administered using computer software or via the internet.
Virtual Reality Simulation in Interprofessional Round Training for Health Care Students: A Qualitative Evaluation Study S. Y. Liaw, et al.	Early exposure to team care through IPE virtual reality simulation can foster understandings of the interdependent roles of health care professionals toward patientcentered care. For greater clinical impact, a further recommendation is to supplement with workplace-based team training to contextualize learning with practice settings.

Virtualization of the academic offer of the business Administration Career in a local public university. Del Carpio Ramos, H. A., et al.	The growing demand for the business Administration career exceeds the face-to-face academic offer. The government is required to implement strategies to close this social gap and achieve the inclusion of young people who seek to have the skills to participate in the highly competitive labor market. The objective of the research is to interpret the justification of the virtualization of the business Administration career to increase the local public offer. A qualitative exploration was carried out to analyze the trend in virtualization of education and the global presence of the career by means of an a posteriori sample; Then, under the quantitative approach, the frequency of the career is described by continent and at the local level; the local public supply and demand are compared, and the perception of virtual studios is surveyed. The results lead to the conclusion that it is possible to virtualize the career under political decisions and budget reprogramming.
Waypass: A gamified self-knowledge quest for teenagers. García, O., et al.	Teenagers need some guidance in order to decide the itinerary that best suits their competences and professional interests. They need to be aware of their abilities, a fundamental knowledge to have a successful access to the labour market. This short paper presents the preliminary results of an edutainment platform, Waypass, a gamified tool conceived to guide and empower young people during their vocational development process, as well as to get help from careers advisers and to share and look-up contents with the latest information. Waypass looks like a game and happens where they like to be. In fact, it works as they do: by challenging and helping them learn by discovery. It is a customer centric approach to educational guidance and social inclusion

Appendix C: NHS Health Research Authority - 'Is my study research?' Decision Tool Result



14/10/2024, 13:17 Result - Research

Go straight to content.

Medical Research Council

NHS Health Research Authority

Is my study research?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

Could immersive technology be used to promote pharmacy careers throughout Wales?

IRAS Project ID (if available):

You selected:

- **'No'** - Are the participants in your study randomised to different groups?
- **'No'** - Does your study protocol demand changing treatment/ patient care from accepted standards for any of the patients involved?
- **'Yes'** - Are your findings going to be generalisable?

Your study would be considered Research.

You should now determine whether your study requires NHS REC review.

Follow this link to launch the 'Do I need NHS REC review?' tool.

For more information please visit the Defining Research table.

Follow this link to start again.

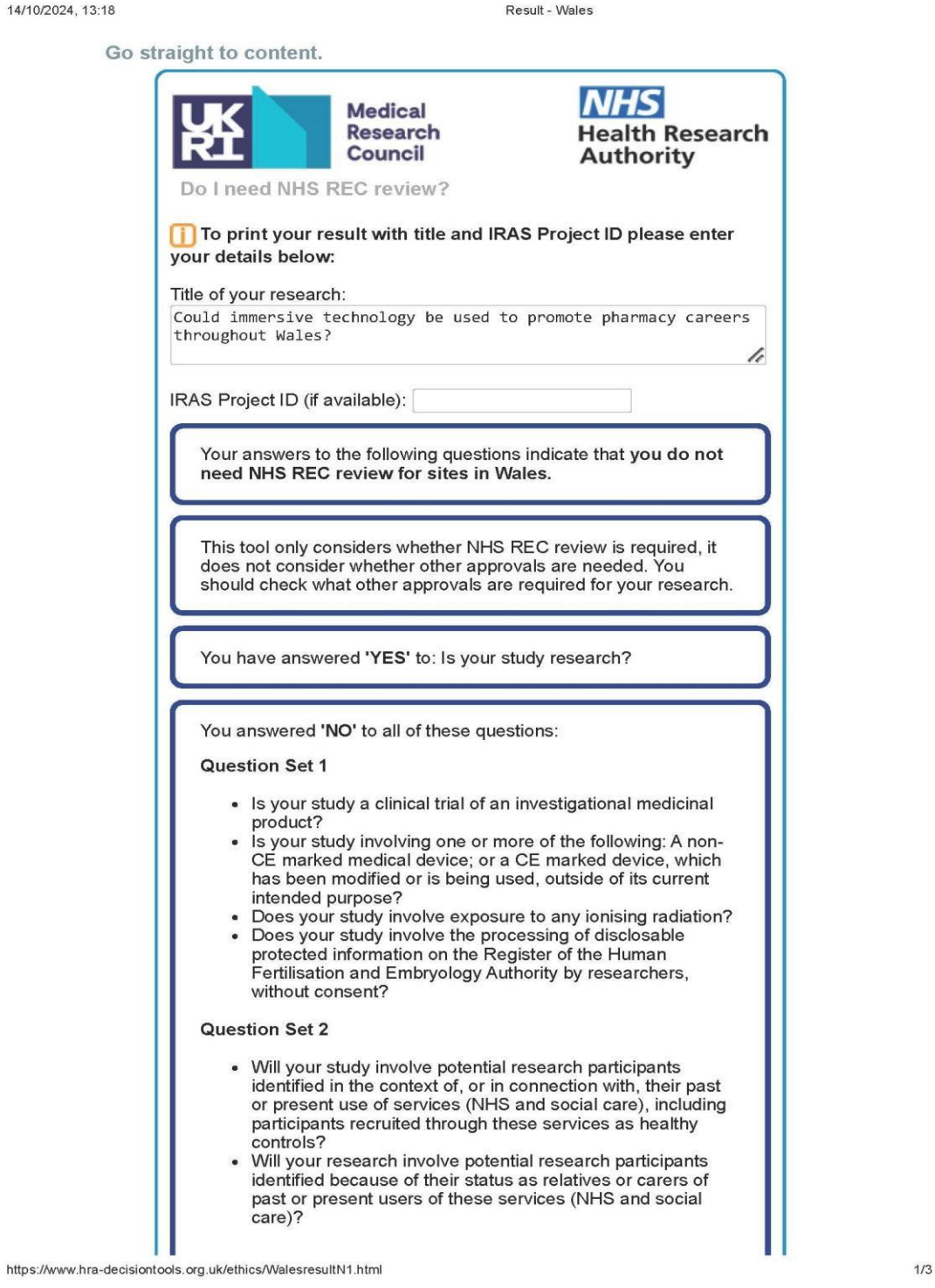
Print This Page

NOTE: If using Internet Explorer please use browser print function.

About this tool Feedback Contact Glossary Accessibility

https://www.hra-decisiontools.org.uk/research/result3.html 1/1

Appendix D: NHS Health Research Authority - Research Ethics Committee (REC) Decision Tool Result



14/10/2024, 13:18 Result - Wales

Go straight to content.

Medical Research Council

NHS Health Research Authority

Do I need NHS REC review?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

Could immersive technology be used to promote pharmacy careers throughout Wales?

IRAS Project ID (if available):

Your answers to the following questions indicate that **you do not need NHS REC review for sites in Wales.**

This tool only considers whether NHS REC review is required, it does not consider whether other approvals are needed. You should check what other approvals are required for your research.

You have answered **'YES'** to: Is your study research?

You answered **'NO'** to all of these questions:

Question Set 1

- Is your study a clinical trial of an investigational medicinal product?
- Is your study involving one or more of the following: A non-CE marked medical device; or a CE marked device, which has been modified or is being used, outside of its current intended purpose?
- Does your study involve exposure to any ionising radiation?
- Does your study involve the processing of disclosable protected information on the Register of the Human Fertilisation and Embryology Authority by researchers, without consent?

Question Set 2

- Will your study involve potential research participants identified in the context of, or in connection with, their past or present use of services (NHS and social care), including participants recruited through these services as healthy controls?
- Will your research involve potential research participants identified because of their status as relatives or carers of past or present users of these services (NHS and social care)?

https://www.hra-decisiontools.org.uk/ethics/WalesresultN1.html 1/3

- Will your research involve prospective collection of tissue (i.e. any material consisting of or including human cells) from any past or present users of these services (NHS and social care), including participants recruited as healthy controls?
- Will your research involve prospective collection of information from any past or present users of these services (NHS and social care)?
- Will your research involve the use of previously collected tissue and/or information from which individual past or present users of these services (NHS and adult care), are likely to be identified by the researchers, either directly from that tissue or information, or from its combination with other tissue or information in, or likely to come into, their possession?
- Will your study involve patients (or tissue or information relating to patients) receiving treatment in an independent establishment in Wales or for the purposes of an independent establishment in Wales?

Question Set 3

- Will your research involve the storage of relevant material from the living or the deceased on premises in England, Wales or Northern Ireland without a storage licence from the Human Tissue Authority (HTA)?
- Will your research involve storage or use of relevant material from the living, collected on or after 1st September 2006, and the research is not within the terms of consent for research from the donors?
- Will your research involve the analysis of human DNA in cellular material (relevant material), collected on or after 1st September 2006, and this analysis is not within the terms of consent for research from the donor? And/or: Will your research involve the analysis of human DNA from materials that do not contain cells (for example: serum or processed bodily fluids such as plasma and semen) and this analysis is not within the terms of consent for research from the donor?

Question Set 4

- Will your research involve at any stage procedures (including use of identifiable tissue samples or personal information) involving adults who lack capacity to consent for themselves, including participants retained in study following the loss of capacity?
- Is your research health-related and involving offenders?
- Does your research involve xenotransplantation?
- Is your research a social care project funded by the Department of Health and Social Care (England)?
- Will the research involve processing confidential information of patients or service users outside of the care team without consent? And/ or: Does your research have Section 251 Support or will you be making an application to the Confidentiality Advisory Committee (CAG) for Section 251 Support?

If your research extends beyond **Wales** find out if you need NHS REC review by selecting the 'OTHER UK COUNTRIES' button below.

OTHER UK COUNTRIES

If, after visiting all relevant UK countries, this decision tool suggests that you do not require NHS REC review follow this link for final confirmation and further information.

Print This Page

NOTE: If using Internet Explorer please use browser print function.

About this tool Feedback Contact Glossary Algorithm Accessibility

Appendix E: Swansea University - Ethical Approval Letter

Swansea University
Prifysgol Abertawe

Approval Date: 23/09/2024

Research Ethics Approval Number: 1 2024 11477 10384

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	Could digital technology be used to promote pharmacy careers throughout Wales?
Applicant name	GERAINT JONES
Submitted by	GERAINT JONES /

Full application form link: https://swansea.forms.ethicalreviewmanager.com/Project/Index/13657

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 23/09/2024

Rhif Cymeradwyo Moeseg Ymchwil:

Diolch am gyflwyno cais moeseg ymchwil am gymeradwyaeth foesegol a chan gyflwyno'r ddogfennaeth ofynnol drwy'r platfform ar-lein.

Teitl y Prosiect	Could digital technology be used to promote pharmacy careers throughout Wales?
Ehwyl Ymgeisydd	GERAINT JONES
Cyflwynwyd gan	GERAINT JONES /

Dolen i ffurflen gais lawn: https://swansea.forms.ethicalreviewmanager.com/Project/Index/13657

Page 1 of 2

Mae'r pwyllgor moeseg Humanities and Social Sciences wedi cymeradwyo'r cais moeseg ymchwil, yn amodol ar yr amodau a amlinellir isod:

Amodau cymeradwyo

1. Mae'r gymeradwyaeth yn seiliedig ar yr wybodaeth a roddir yn y cais, a gwneir y gwaith yn unol â hyn. Yr ymgeisydd sy'n gyfrifol am sicrhau bod yr holl reoliadau, polisïau a deddfau mewnol ac allanol perthnasol yn cael eu dilyn.

- Gall y prosiect hwn gael ei adolygu gan y pwyllgor o bryd i'w gilydd. Gellir atal neu ddirymu'r gymeradwyaeth ar unrhyw adeg os bydd yr amodau'n cael eu torri.
- Caiff unrhyw addasiadau sylweddol i'r cais a gymeradwywyd eu cyflwyno i'r pwyllgor moeseg cyn i'r fath newidiadau gael eu rhoi ar waith.

Amodau penodol ynghylch y cais hwn:

Barnwyd bod y cais yn risg Low i'r Brifysgol.

Dim amodau ychwanegol.

Datganiad o gydymffurfiaeth

Penodir y pwyllgor yn unol â'r trefniadau llywodraethu ar gyfer pwyllgorau moeseg ymchwil. Mae'n cydymffurfio â chanllawiau Ymchwil ac Arloesi yn y DU (UKRI) a'r concordat i gefnogi uniondeb ymchwil.

Cadeirydd Ymchwil a Moeseg, Humanities and Social Sciences

Prifysgol Abertawe.

Os oes gennych ymholiadau ynghylch yr hysbysiad hwn, yna mae croeso i chi gysylltu â gweinyddwr moeseg ymchwil eich cyfadran.

- Ar gyfer Gwyddoniaeth a Pheirianneg, e-bostiwch FSE-Ethics@abertawe.ac.uk

- Ar gyfer Meddygaeth, Iechyd a Gwyddor Bywyd, e-bostiwch FMHLS-Ethics@abertawe.ac.uk
- Ar gyfer y Dyniaethau a'r Gwyddorau Cymdeithasol, e-bostiwch FHSS-Ethics@abertawe.ac.uk

Appendix F: Participant Information Sheet (English)

Swansea University
Prifysgol Abertawe

PARTICIPANT INFORMATION SHEET

Project Title: 'Could immersive technology be used to promote Pharmacy careers throughout Wales?'
You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?
The aim of this research is to explore whether digital and immersive technology can support education. Swansea University and Health Education & Improvement Wales (HEIW) are researching and collecting data on the use of digital and immersive technology to promote careers in Pharmacy. This work aligns with Actions 5 and 16 of HEIW's 'Strategic Pharmacy Workforce Plan'.

To participate in this study, you must:

- Be an undergraduate student enrolled in an MPharm (Master of Pharmacy) program in Wales.

Your participation in this study will take approximately should take approximately 10 minutes to complete, and your responses will remain anonymous.

Who is carrying out the research?
The data is being collected by Geraint Jones who is a student of the School of Management, Swansea University. This study has received ethical approval from the Humanities and Social Sciences Ethics Committee (Research Ethics Approval Number: 1 2024 11477 10384 and was approved on 23rd September 2024).

What happens if I agree to take part?
We will ask you to complete a questionnaire relating to your experience of using digital and immersive technologies and your experience relating to Pharmacy. You will be asked about any previous or current use of digital technologies at home and at school, and if you have used a virtual reality (VR) headset before. Additionally, you will be asked for your thoughts on the most important aspects of creating a virtual reality learning resource. This will help gather insights into what features, content, and learning methods you value when engaging with VR educational tools.

Your participation in this study will take approximately should take approximately 10 minutes to complete. All responses will remain anonymous. You will only be required to complete this questionnaire once.

As this data will be collected via an online form, consent will be obtained via a 'Yes' or 'No' response. Should consent not be provided, the online form will not permit you to continue.

An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. (*Note that all information presented in any reports or publications will be anonymous and unidentifiable.)*

Are there any risks associated with taking part?
The research has been approved by the Humanities and Social Sciences Ethics Committee. There are no significant risks associated with participation.

Swansea University
Prifysgol Abertawe

Data Protection and Confidentiality
Your data will be processed in accordance with the Data Protection Act 2018 and the UK General Data Protection Regulation (UK GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected laptop computer which only Geraint Jones (Lead Researcher) has access. Responses will be saved on an online database which requires two-factor authentication (2FA), of which only Geraint Jones can access. As responses will be collected via an online form, your consent will be stored in combination with your responses.

Please note that as the data collected will be submitted anonymously, it will not be possible to identify and remove your data at a later date should you decide to withdraw from the study. Please note that as this data will be collected via an online form, once the data has been submitted online you will be unable to withdraw your information.

What will happen to the information I provide?
An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. (*Note that all information presented in any reports or publications will be anonymous and unidentifiable.)*

Is participation voluntary and what if I wish to later withdraw?
Your participation is entirely voluntary – you do not have to participate if you do not want to. Please note that as this data will be collected via an online form, once the data has been submitted online you will be unable to withdraw your information.

Data Protection Privacy Notice
The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data and can be contacted at the Vice Chancellors Office.

No personal data collection will be stored as part of this research, and any responses will be processed for the purposes outlined in this information sheet. Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you. As this data will be collected via an online form, consent will be obtained via a 'Yes' or 'No' response. Should consent not be provided, the online form will not permit you to continue.

The legal basis that we will rely on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the Humanities and Social Sciences Ethics Committee, Swansea University.

The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

How long will your information be held?
Data will be preserved and accessible **for a minimum of 10 years after completion of the research**. Records from studies with major health, clinical, social, environmental or heritage importance, novel intervention, or studies which are on-going or controversial should be retained for at least 20 years

Swansea University
Prifysgol Abertawe

after completion of the study. It may be appropriate to keep such study data permanently within the university, a national collection, or as required by the funder's data policy.

What are your rights?
You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer:-

University Compliance Officer (FOI/DP)
Vice-Chancellor's Office
Swansea University
Singleton Park
Swansea
SA2 8PP
Email: dataprotection@swansea.ac.uk

How to make a complaint
If you are unhappy with the way in which your personal data has been processed, you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied, then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -

Information Commissioner's Office,
Wycliffe House,
Water Lane,
Wilmslow,
Cheshire,
SK9 5AF
www.ico.org.uk

What if I have other questions?
If you have further questions about this study, please do not hesitate to contact us:

Geraint Jones
Department of
Swansea University
2382789@swansea.ac.uk

Dr. Paul Davies
Department of
Swansea University
paul.g.davies@swansea.ac.uk

Appendix G: Participant Information Sheet (Cymraeg)

Swansea University
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TAFLEN WYBODAETH I GYFRANOGWYR

Teitl y Prosiect: 'A ellid defnyddio technoleg drochi i hyrwyddo gyrfaoedd Fferylliaeth ledled Cymru?'
Fe'ch gwahoddir i gymryd rhan mewn peth ymchwil. Cyn i chi benderfynu a ydych am gymryd rhan ai peidio, mae'n bwysig eich bod yn deall pam mae'r ymchwil yn cael ei gynnal a beth fydd yn ei olygu. Darllenwch y wybodaeth ganlynol yn ofalus.

Beth yw pwrpas yr ymchwil?
Nod yr ymchwil hwn yw archwilio a all technoleg ddigidol a throchi cefnogi addysg. Mae Prifysgol Abertawe ac Addysg a Gwella Iechyd Cymru (AaGIC) yn ymchwilio ac yn casglu data ar y defnydd o dechnoleg ddigidol a throchi i hyrwyddo gyrfaoedd mewn Fferylliaeth. Mae'r gwaith hwn yn cyd-fynd â Chamau Gweithredu 5 ac 16 o 'Gynllun Gweithlu Fferylliaeth Strategol ' AaGIC.

I gymryd rhan yn yr astudiaeth hon, rhaid i chi:

- Bod yn fyfyriwr israddedig sydd wedi cofrestru ar raglen MPharm (Meistr Fferylliaeth) yng Nghymru.

Bydd eich cyfranogiad yn yr astudiaeth hon yn cymryd tua 10 munud i'w chwblhau, a bydd eich ymatebion yn aros yn ddienw.

Pwy sy'n cynnal yr ymchwil?
Mae'r data'n cael ei gasglu gan Geraint Jones sy'n fyfyriwr yn Ysgol Reolaeth, Prifysgol Abertawe. Mae'r astudiaeth hon wedi derbyn cymeradwyaeth foesegol gan Bwyllgor Moeseg y Dyniaethau a'r Gwyddorau Cymdeithasol (Rhif Cymeradwyo Moeseg Ymchwil: 1 2024 11477 10384 ac fe'i cymeradwywyd ar 23 Medi 2024).

Beth fydd yn digwydd os byddaf yn cytuno i gymryd rhan?
Byddwn yn gofyn i chi lenwi holiadur yn ymwneud â'ch profiad o ddefnyddio technolegau digidol a throchi a'ch profiad yn ymwneud â Fferylliaeth. Gofynnir i chi am unrhyw ddefnydd blaenorol neu gyfredol o dechnolegau digidol gartref ac yn yr ysgol, ac a ydych wedi defnyddio clustffon rhith-wirionedd (VR) o'r blaen. Yn ogystal, gofynnir i chi am eich barn ar yr agweddau pwysicaf ar greu adnodd dysgu rhith-realiti. Bydd hyn yn helpu i gasglu mewnwelediadau i ba nodweddion, cynnwys, a dulliau dysgu rydych chi'n eu gwerthfawrogi wrth ymgysylltu ag offer addysgol VR.

Bydd eich cyfranogiad yn yr astudiaeth hon yn cymryd tua 10 munud i'w chwblhau. Bydd pob ymateb yn aros yn ddienw. Dim ond unwaith y bydd angen i chi lenwi'r holiadur hwn.

Gan y bydd y data hwn yn cael ei gasglu trwy ffurflen ar-lein, ceir caniatâd trwy ymateb 'Ie' neu 'Na'. Os na roddir caniatâd, ni fydd y ffurflen ar-lein yn caniatáu ichi barhau.

Bydd dadansoddiad o'r wybodaeth yn rhan o'n hadroddiad ar ddiwedd yr astudiaeth a gellir ei gyflwyno i bartïon â diddordeb a'i gyhoeddi mewn cyfnodolion gwyddonol a chyfryngau cysylltiedig. (*Sylwer y bydd yr holl wybodaeth a gyflwynir mewn unrhyw adroddiadau neu gyhoeddiadau yn ddienw ac yn anadnabyddadwy.)*

A oes unrhyw risgiau yn gysylltiedig â chymryd rhan?
Mae'r ymchwil wedi'i chymeradwyo gan Bwyllgor Moeseg y Dyniaethau a'r Gwyddorau Cymdeithasol. Nid oes unrhyw risgiau sylweddol yn gysylltiedig â chyfranogiad.

Swansea University
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Diogelu Data a Chyfrinachedd
Bydd eich data'n cael ei brosesu yn unol â Deddf Diogelu Data 2018 a Rheoliad Diogelu Data Cyffredinol y DU (UK GDPR). Bydd yr holl wybodaeth a gesglir amdanoch yn cael ei chadw'n gwbl gyfrinachol. Dim ond yr ymchwilydd/tîm ymchwil fydd yn gweld eich data.

Bydd yr holl ddata electronig yn cael ei storio ar liniadur a ddiogelir gan gyfrinair a dim ond Geraint Jones (Ymchwilydd Arweiniol) sydd â mynediad iddo. Bydd yr ymatebion yn cael eu cadw ar gronfa ddata ar-lein sy'n gofyn am ddilysiad dau ffactor (2FA), a dim ond Geraint Jones all gael mynediad iddi. Gan y bydd ymatebion yn cael eu casglu trwy ffurflen ar-lein, bydd eich caniatâd yn cael ei storio ar y cyd â'ch ymatebion.

Sylwch, gan y bydd y data a gesglir yn cael ei gyflwyno'n ddienw, ni fydd yn bosibl nodi a dileu eich data yn ddiweddarach os byddwch yn penderfynu tynnu'n ôl o'r astudiaeth. Sylwch, gan y bydd y data hwn yn cael ei gasglu trwy ffurflen ar-lein, unwaith y bydd y data wedi'i gyflwyno ar-lein, ni fyddwch yn gallu tynnu'ch gwybodaeth yn ôl.

Beth fydd yn digwydd i'r wybodaeth y byddaf yn ei darparu?
Bydd dadansoddiad o'r wybodaeth yn rhan o'n hadroddiad ar ddiwedd yr astudiaeth a gellir ei gyflwyno i bartïon â diddordeb a'i gyhoeddi mewn cyfnodolion gwyddonol a chyfryngau cysylltiedig. (*Sylwer y bydd yr holl wybodaeth a gyflwynir mewn unrhyw adroddiadau neu gyhoeddiadau yn ddienw ac yn anadnabyddadwy.)*

A yw cyfranogiad yn wirfoddol a beth os dymunaf dynnu'n ôl yn ddiweddarach?
Mae eich cyfranogiad yn gwbl wirfoddol – nid oes rhaid i chi gymryd rhan os nad ydych am wneud hynny. Sylwch, gan y bydd y data hwn yn cael ei gasglu trwy ffurflen ar-lein, unwaith y bydd y data wedi'i gyflwyno ar-lein, ni fyddwch yn gallu tynnu'ch gwybodaeth yn ôl.

Hysbysiad Preifatrwydd Diogelu Data
Y rheolydd data ar gyfer y prosiect hwn fydd Prifysgol Abertawe. Swyddog Diogelu Data'r Brifysgol sy'n goruchwylio gweithgareddau'r brifysgol sy'n ymwneud â phrosesu data personol a gellir cysylltu ag ef yn Swyddfa'r Is-gangellorion.

Ni chaiff unrhyw ddata personol ei gasglu fel rhan o'r ymchwil hwn, a bydd unrhyw ymatebion yn cael eu prosesu at y dibenion a amlinellir yn y daflen wybodaeth hon. Bydd gweithdrefnau moesegol safonol yn golygu y byddwch yn rhoi eich caniatâd i gymryd rhan yn yr astudiaeth hon drwy lenwi'r ffurflen ganiatâd a roddwyd i chi. Gan y bydd y data hwn yn cael ei gasglu trwy ffurflen ar-lein, ceir caniatâd trwy ymateb 'Ie' neu 'Na'. Os na roddir caniatâd, ni fydd y ffurflen ar-lein yn caniatáu ichi barhau.

Mae'r sail gyfreithiol y byddwn yn dibynnu arni i brosesu eich data personol yn angenrheidiol ar gyfer cyflawni tasg a gyflawnir er budd y cyhoedd. Mae'r cyfiawnhad budd cyhoeddus hwn wedi'i gymeradwyo gan Bwyllgor Moeseg y Dyniaethau a'r Gwyddorau Cymdeithasol, Prifysgol Abertawe.

Y sail gyfreithiol y byddwn yn dibynnu arni i brosesu categorïau arbennig o ddata fydd prosesu yn angenrheidiol at ddibenion archifo er budd y cyhoedd, dibenion ymchwil wyddonol neu hanesyddol neu ddibenion ystadegol.

Am ba mor hir y bydd eich gwybodaeth yn cael ei gadw?

Swansea University
Prifysgol Abertawe

Bydd data'n cael ei gadw ac yn hygyrch **am o leiaf 10 mlynedd ar ôl cwblhau'r ymchwil**. Dylid cadw cofnodion o astudiaethau sydd â phwysigrwydd iechyd, clinigol, cymdeithasol, amgylcheddol neu dreftadaeth mawr, ymyrraeth newydd, neu astudiaethau sy'n barhaus neu'n ddadleuol am o leiaf 20 mlynedd ar ôl cwblhau'r astudiaeth. Gall fod yn briodol cadw data astudio o'r fath yn barhaol o fewn y brifysgol, mewn casgliad cenedlaethol, neu fel sy'n ofynnol gan bolisi data'r cyllidwr.

Beth yw eich hawliau?
Mae gennych hawl i gael mynediad at eich gwybodaeth bersonol, i wrthwynebu prosesu eich gwybodaeth bersonol, i gywiro, i ddileu, i gyfyngu ac i drosglwyddo eich gwybodaeth bersonol. Ewch i dudalennau gwe Diogelu Data'r Brifysgol i gael rhagor o wybodaeth am eich hawliau.

Dylid gwneud unrhyw geisiadau neu wrthwynebiadau yn ysgrifenedig i Swyddog Diogelu Data'r Brifysgol:-

Swyddog Cydymffurfiaeth y Brifysgol (FOI/DP)
Swyddfa'r Is-Ganghellor
Prifysgol Abertawe
Singleton Park
Abertawe
SA2 8PP
E-bost: dataprotection@swansea.ac.uk

Sut i wneud cwyn
Os ydych yn anhapus â'r ffordd y mae eich data personol wedi'i brosesu, gallwch yn y lle cyntaf gysylltu â Swyddog Diogelu Data'r Brifysgol gan ddefnyddio'r manylion cyswllt uchod.

Os ydych yn dal yn anfodlon, yna mae gennych yr hawl i wneud cais yn uniongyrchol i'r Comisiynydd Gwybodaeth am benderfyniad. Gellir cysylltu â'r Comisiynydd Gwybodaeth yn:-

Swyddfa'r Comisiynydd Gwybodaeth,
Wycliffe House,
Water Lane,
Wilmslow,
Cheshire,
SK9 5AF
www.ico.org.uk

Beth os oes gennyf gwestiynau eraill?
Os oes gennych gwestiynau pellach am yr astudiaeth hon, mae croeso i chi gysylltu â ni:

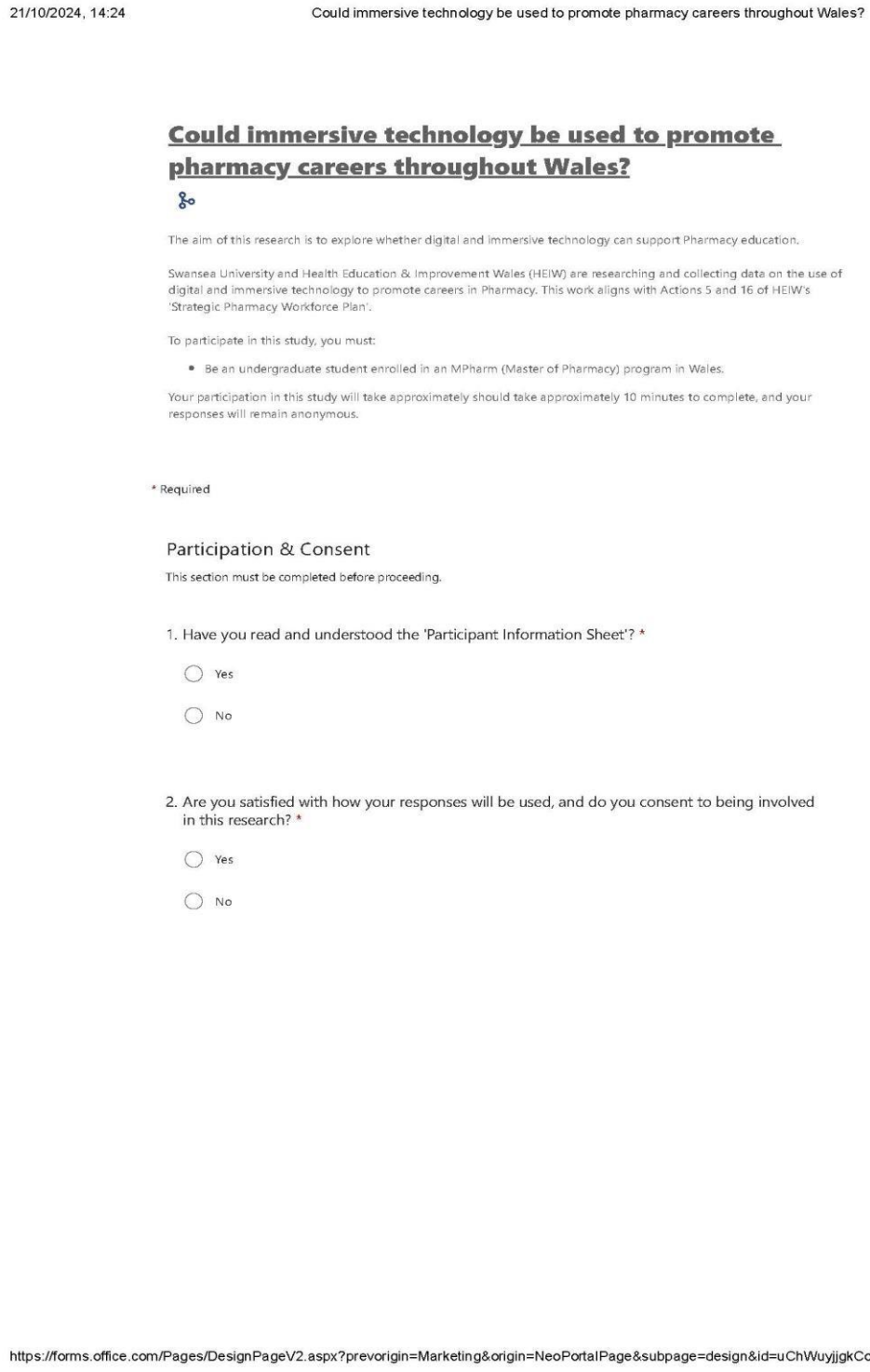
Geraint Jones
Adran
Prifysgol Abertawe
2382789@swansea.ac.uk

Dr. Paul Davies
Adran
Prifysgol Abertawe
paul.g.davies@swansea.ac.uk

Appendix H: Summary of Questionnaire Method

Participant Selection	Inclusion criteria: Undergraduate students enrolled on an MPharm programme in a Welsh University. Exclusion criteria: Students not enrolled in an MPharm program in Wales. Postgraduate students. Students in non-pharmacy-related programmes.
Survey Distribution	A 'Linktree' webpage was created with direct links to the PIS and MSF. This method was chosen as it allowed dissemination of all relevant documentation in a single webpage link and is convenient and accessible for users. The 'Linktree' webpage link was then disseminated via email to all MPharm students in Cardiff University and Swansea University. A quick-response (QR) code was also created to support engagement and traction.
Survey Format	The questionnaire was an interactive MSF survey that utilised the 'branching' feature for several questions. This feature guided participants to the next relevant question, ensuring that all applicable questions were completed.
Survey Design	The survey is a mixed-methods questionnaire consisting of 22 questions. However, depending on the responses, some questions might be skipped due to 'branching', and this results in the participant answering less than 22 questions. Participants were asked whether they had read and understood the Participant Information Sheet, whether they were satisfied with how their responses would be used, and if they consented to participating in the research before being granted access to the full questionnaire. In total, the questionnaire consisted of: 13 closed questions; 5 open questions; 3 multiple-choice questions; 1 rating scale question. It was estimated that completing the questionnaire would take approximately 10 minutes. The design aimed to be concise while maintaining the attention of participants.

Appendix I: Microsoft Form - 'Could immersive technology be used to promote pharmacy careers throughout Wales?' (English)



21/10/2024, 14:24 Could immersive technology be used to promote pharmacy careers throughout Wales?

Could immersive technology be used to promote pharmacy careers throughout Wales?

The aim of this research is to explore whether digital and immersive technology can support Pharmacy education.

Swansea University and Health Education & Improvement Wales (HEIW) are researching and collecting data on the use of digital and immersive technology to promote careers in Pharmacy. This work aligns with Actions 5 and 16 of HEIW's 'Strategic Pharmacy Workforce Plan'.

To participate in this study, you must:

- Be an undergraduate student enrolled in an MPharm (Master of Pharmacy) program in Wales.

Your participation in this study will take approximately should take approximately 10 minutes to complete, and your responses will remain anonymous.

* Required

Participation & Consent

This section must be completed before proceeding.

1. Have you read and understood the 'Participant Information Sheet'? *

- ◯ Yes
- ◯ No

2. Are you satisfied with how your responses will be used, and do you consent to being involved in this research? *

- ◯ Yes
- ◯ No

https://forms.office.com/Pages/DesignPageV2.aspx?prevorigin=Marketing&origin=NeoPortalPage&subpage=design&id=uChWuyjjgkCoVkM8ntyP... 1/7

About You

This section is about you and your experience prior to enrolling on the MPharm programme.

3. Which university do you attend? *

- ◯ Cardiff
- ◯ Swansea

4. Please tell us what year of study that you are currently in. *

- ◯ Foundation Year
- ◯ 1st Year
- ◯ 2nd Year
- ◯ 3rd Year
- ◯ 4th Year

5. Why did you decide to study pharmacy? *

6. At what age did you decide to study pharmacy? *

Please enter a numerical figure.

7. Did you have any experience of working within a pharmacy setting before enrolling on the programme? *

- ◯ Yes
- ◯ No

8. Please state what experience you had and where you worked.

9. Were you restricted in gaining experience of working within a pharmacy setting before enrolling on the programme? *

- ◯ Yes
- ◯ No

10. Please explain your answer

Digital & Immersive Technology

This section will ask questions relating to digital and immersive technology.

'The Topol Review' released by Health Education England in 2019 defined immersive technology as *'a deeply engaging, multisensory, digital experience, which can be delivered using VR, AR, 360° video, mixed reality and other technologies. Formats vary.'* Virtual reality (VR) and augmented reality (AR) technologies create immersive experiences by blending digital elements with the real world.

- VR fully immerses users in computer-generated 3D environments using headsets.
- AR overlays digital content onto the physical world through devices like smartphones or smart glasses, enhancing real-world interactions with virtual elements.

11. Do you have access to digital technology at home? *

- ◯ Yes
- ◯ No

12. If yes, what types of digital technology do you have at home? *

Please choose all that apply.

- ☐ Laptops and Desktop Computers
- ☐ Tablet / iPad
- ☐ Smart TVs
- ☐ Streaming Devices (e.g., Roku, Apple TV, Chromecast)
- ☐ Smart Home Assistants (e.g., Amazon Echo, Google Home)
- ☐ Games Console(s)
- ☐ Wearable Devices (e.g., smartwatches, fitness trackers)
- ☐ Virtual Reality Headsets (e.g., Meta Quest, PlayStation VR)

13. Did you have access to digital technology in school? *

- ◯ Yes
- ◯ No

14. If yes, what types of digital technology did you have at school? *
Please choose all that apply.

- [ ] Laptops and Desktop Computers
- [ ] Tablet / iPad
- [ ] Smart TVs
- [ ] Smart Whiteboards
- [ ] Games Console
- [ ] Virtual Reality Headsets (e.g., Meta Quest, PlayStation VR)

15. While you were in school, would you have enjoyed exploring healthcare career opportunities through different types of digital technology? *

- ◯ Yes
- ◯ No

16. Have you used a virtual reality (VR) headset before? *

- ◯ Yes
- ◯ No

17. What do you think are the benefits of using virtual reality? *
Please choose all that apply.

- [ ] It is easy to use.
- [ ] It feels like I'm playing a game.
- [ ] It feels like I'm actually there.
- [ ] It is realistic and immersive.
- [ ] It's a different and new way to learn.
- [ ] It allows me to learn whilst having fun.
- [ ] It's better than watching videos.
- [ ] It's better than reading a book.
- [ ] I don't enjoy using VR.

18. Do you think the use of immersive technology, such as virtual reality (VR) or augmented reality (AR) would have been useful in helping you gain work experience prior to enrolling on the MPharm programme? *

- ◯ Yes
- ◯ No

19. Please explain your answer *

20. Do you think the use of immersive technology, such as virtual reality (VR) or augmented reality (AR), has been or would be a useful tool in your education? *

- ◯ Yes
- ◯ No

21. Please explain your answer *

Key Considerations for VR Learning

This section will focus on understanding the most important aspects of creating a virtual reality learning resource. It will help gather insights into what features, content, and learning methods are valued by students when engaging with VR educational tools.

22. For a piece of homework, you have been asked to create a virtual reality (VR) learning resource for teenagers. Which of the following are important to you? *

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
It has to be easy to use.	○	○	○	○	○	○
It has to feel like a game.	○	○	○	○	○	○
It needs to look realistic.	○	○	○	○	○	○
It has to be fun.	○	○	○	○	○	○
It can be used to learn.	○	○	○	○	○	○
It needs to be free.	○	○	○	○	○	○
It can be used on laptops and desktop computers	○	○	○	○	○	○
It can be used as a smartphone app (e.g. iOS &Android).	○	○	○	○	○	○
It can be used on portable devices (e.g. tablets and iPads).	○	○	○	○	○	○

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Microsoft Forms

Appendix J: Microsoft Form - 'A ellid defnyddio technoleg drochi i hybu gyrfaoedd fferylliaeth ledled Cymru?' (Cymraeg / Welsh)

A ellid defnyddio technoleg drochi i hybu gyrfaoedd fferylliaeth ledled Cymru?

Nod yr ymchwil hwn yw archwilio a all technoleg ddigidol a throchi cefnogi addysg Fferylliaeth.

Mae Prifysgol Abertawe ac Addysg a Gwella Iechyd Cymru (AaGIC) yn ymchwilio ac yn casglu data ar y defnydd o dechnoleg ddigidol a throchi i hyrwyddo gyrfaoedd mewn Fferylliaeth. Mae'r gwaith hwn yn cyd-fynd â Chamau Gweithredu 5 ac 16 o 'Gynllun Gweithlu Fferylliaeth Strategol' AaGIC.

I gymryd rhan yn yr astudiaeth hon, rhaid i chi:

- Bod yn fyfyriwr israddedig sydd wedi cofrestru ar raglen MPharm (Meistr Fferylliaeth) yng Nghymru.

Bydd eich cyfranogiad yn yr astudiaeth hon yn cymryd tua 10 munud i'w chwblhau, a bydd eich ymatebion yn aros yn ddienw.

* Required

Cyfranogiad a Chaniatâd

Rhaid cwblhau'r adran hon cyn symud ymlaen.

1. Ydych chi wedi darllen a deall y 'Daflen Wybodaeth i Gyfranogwyr'? *

- ◯ Ydw
- ◯ Nac ydw

2. A ydych yn fodlon ar sut y bydd eich ymatebion yn cael eu defnyddio, ac a ydych yn cydsynio i gymryd rhan yn yr ymchwil hwn? *

- ◯ Ydw
- ◯ Nac ydw

Amdanoch Chi

Mae'r adran hon yn ymwneud â chi a'ch profiad cyn cofrestru ar y rhaglen MPharm.

3. Pa brifysgol ydych chi'n ei mynychu? *

- ◯ Caerdydd
- ◯ Abertawe

4. Dywedwch wrthym ym mha flwyddyn astudio yr ydych ar hyn o bryd. *

- ◯ Blwyddyn Sylfaen
- ◯ Blwyddyn 1af
- ◯ 2il Flwyddyn
- ◯ 3edd Blwyddyn
- ◯ 4ydd Blwyddyn

5. Pam wnaethoch chi benderfynu astudio fferylliaeth? *

6. Ar ba oedran wnaethoch chi benderfynu astudio fferylliaeth? *

Rhowch ffigur rhifiadol.

7. A oedd gennych unrhyw brofiad o weithio mewn lleoliad fferylliaeth cyn cofrestru ar y rhaglen? *

- ◯ Ie
- ◯ Na

8. Nodwch pa brofiad a gawsoch a lle buoch yn gweithio.

9. Oeddech chi'n gyfyngedig i gael profiad o weithio mewn lleoliad fferylliaeth cyn cofrestru ar y rhaglen? *

- ◯ Ie
- ◯ Na

10. Eglurwch eich ateb

Technoleg Ddigidol a Throchi

Bydd yr adran hon yn gofyn cwestiynau yn ymwneud â thechnoleg ddigidol a throchi.

Diffiniodd 'The Topol Review' a ryddhawyd gan Health Education England yn 2019 dechnoleg ymdrochol fel 'profiad digidol *aml synhwyraidd , hynod ddiddorol, y gellir ei gyflwyno gan ddefnyddio VR, AR, fideo 360°, realiti cymysg a thechnolegau eraill. Mae fformatau'n amrywio.*'

Mae technolegau realiti rhithwir (VR) a realiti estynedig (AR) yn creu profiadau trochi trwy gyfuno elfennau digidol â'r byd go iawn.

- Mae VR yn trochi defnyddwyr yn llwyr mewn amgylcheddau 3D a gynhyrchir gan gyfrifiadur gan ddefnyddio clustffonau.
- Mae AR yn troshaenu cynnwys digidol ar y byd ffisegol trwy ddyfeisiau fel ffonau smart neu sbectol smart, gan wella rhyngweithiadau byd go iawn ag elfennau rhithwir.

11. Oes gennych chi fynediad at dechnoleg ddigidol gartref? *

- ◯ Ie
- ◯ Na

12. Os oes, pa fathau o dechnoleg ddigidol sydd gennych gartref? * Dewiswch bob un sy'n berthnasol. *

Dewiswch bob un sy'n berthnasol.

- ☐ Gliniaduron a Chyfrifiaduron Bwrdd Gwaith
- ☐ Tabled / iPad
- ☐ Teledu clyfar
- ☐ Dyfeisiau Pfrydio (e.e. Roku, Apple TV, Chromecast)
- ☐ Cynorthwywyr Cartref Clyfar (e.e., Amazon Echo, Google Home)
- ☐ Consol(au) Gem
- ☐ Dyfeisiau Gwisgadwy (e.e. smartwatches, tracwyr ffitrwydd)
- ☐ Clustffonau Realiti Rhithwir (e.e. Meta Quest, PlayStation VR)

13. Oedd gennych chi fynediad i dechnoleg ddigidol yn yr ysgol? *

- ◯ Ie
- ◯ Na

14. Os ie, pa fathau o dechnoleg ddigidol oedd gennych chi yn yr ysgol? *
Dewiswch bob un sy'n berthnasol.

- [ ] Gliniaduron a Chyfrifiaduron Bwrdd Gwaith
- [ ] Tabled / iPad
- [ ] Teledu clyfar
- [ ] Byrddau Gwyn Smart
- [ ] Consol Gemau
- [ ] Clustffonau Rhithwirionedd (e.e. Meta Quest, PlayStation VR)

15. Tra oeddech chi yn yr ysgol, a fyddech chi wedi mwynhau archwilio cyfleoedd gyrfa gofal iechyd trwy wahanol fathau o dechnoleg ddigidol? *

- ◯ Ie
- ◯ Na

16. Ydych chi wedi defnyddio clustffon rhith-realiti (VR) o'r blaen? *

- ◯ Ie
- ◯ Na

17. Beth ydych chi'n meddwl yw manteision defnyddio rhith-realiti? *
Dewiswch bob un sy'n berthnasol.

- [ ] Mae'n hawdd ei ddefnyddio.
- [ ] Mae'n teimlo fel fy mod i'n chwarae gêm.
- [ ] Mae'n teimlo fy mod i yno mewn gwirionedd.
- [ ] Mae'n realistig ac yn trochi.
- [ ] Mae'n realistig ac yn trochi.
- [ ] Mae'n ffordd wahanol a newydd o ddysgu.
- [ ] Mae'n caniatáu i mi ddysgu wrth gael hwyl.
- [ ] Mae'n well na gwylio fideos.
- [ ] Mae'n well na darllen llyfr.
- [ ] Dydw i ddim yn mwynhau defnyddio VR.

18. Ydych chi'n meddwl y byddai defnyddio technoleg drochi, fel rhith-wirionedd (VR) neu realiti estynedig (AR) wedi bod yn ddefnyddiol i'ch helpu i gael profiad gwaith cyn cofrestru ar y rhaglen MPharm? *

- ◯ Ie
- ◯ Na

19. Eglurwch eich ateb os gwelwch yn dda. *

20. Ydych chi'n meddwl bod defnyddio technoleg drochi, fel rhith-wirionedd (VR) neu realiti estynedig (AR), wedi bod neu y byddai'n arf defnyddiol yn eich addysg? *

- ◯ Ie
- ◯ Na

21. Eglurwch eich ateb os gwelwch yn dda. *

Ystyriaethau Allweddol ar gyfer Dysgu VR

Bydd yr adran hon yn canolbwyntio ar ddeall yr agweddau pwysicaf ar greu adnodd dysgu rhith-realiti. Bydd yn helpu i gasglu mewnwelediadau i ba nodweddion, cynnwys, a dulliau dysgu sy'n cael eu gwerthfawrogi gan fyfyrwyr wrth ymgysylltu ag offer addysgol VR.

22. Ar gyfer darn o waith cartref, gofynnwyd i chi greu adnodd dysgu rhith-realiti (VR) ar gyfer pobl ifanc yn eu harddegau. Pa rai o'r canlynol sy'n bwysig i chi? *

	Anghytuno'n Gryf	Anghytuno	Anghytuno Ychydig	Cytuno Ychydig	Cytuno	Cytuno'n Gryf
Mae'n rhaid iddo fod yn hawdd ei ddefnyddio.	○	○	○	○	○	○
Mae'n rhaid iddo deimlo fel gêm.	○	○	○	○	○	○
Mae angen iddo edrych yn realistig.	○	○	○	○	○	○
Mae'n rhaid iddo fod yn hwyl.	○	○	○	○	○	○
Gellir ei ddefnyddio i ddysgu.	○	○	○	○	○	○
Mae angen iddo fod yn rhad ac am ddim.	○	○	○	○	○	○
Gellir ei ddefnyddio ar liniaduron a chyfrifiaduron bwrdd gwaith.	○	○	○	○	○	○
Gellir ei ddefnyddio fel ap ffôn clyfar (e.e. iOS ac Android).	○	○	○	○	○	○
Gellir ei ddefnyddio ar ddyfeisiau cludadwy (e.e. tabledi ac iPads).	○	○	○	○	○	○

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Microsoft Forms

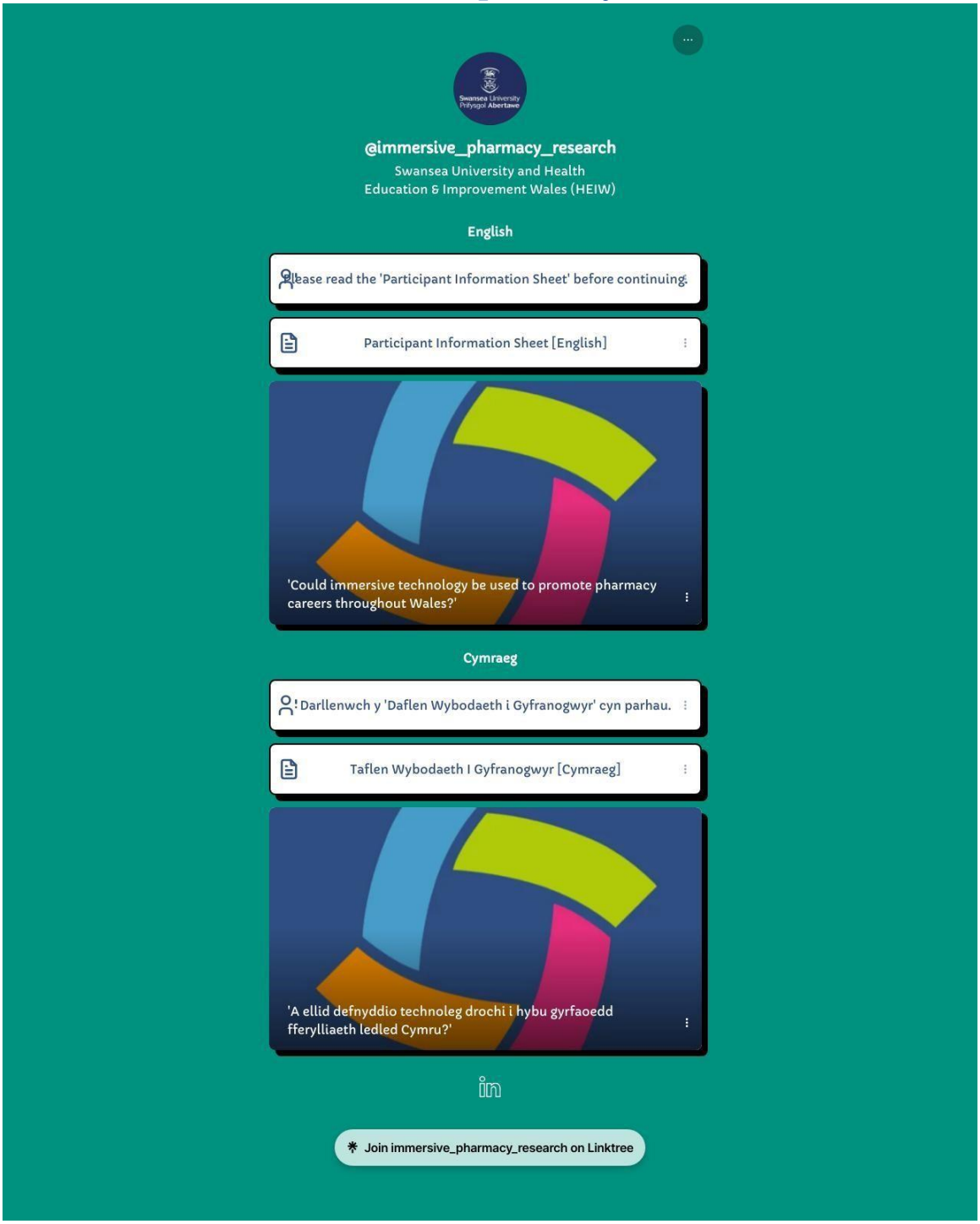
Appendix K: QR Code - 'Could immersive technology be used to promote pharmacy careers throughout Wales?' (English)



Appendix L: QR Code - 'A ellid defnyddio technoleg drochi i hybu gyrfaoedd fferylliaeth ledled Cymru?' (Cymraeg / Welsh)



Appendix M: 'Linktree' - @immersive_pharmacy_research



Appendix N: 'Invitation to Participate in Research on Digital and Immersive Technology in Pharmacy Education'

From: [redacted]
To: [redacted]
Cc: Geraint Jones (HEIW)
Subject: Invitation to Participate in Research on Digital and Immersive Technology in Pharmacy Education
Date: 24 October 2024 12:37:55

WARNING: This email originated from outside of NHS Wales. Do not open links or attachments unless you know the content is safe.

Please see the message below sent on behalf of a colleague at HEIW:

Dear MPharm Student (and future Pharmacist!),

I hope this email finds you well.

Earlier this year, I shared my interest in researching how digital and immersive technologies can enhance education in the pharmacy profession. This research aligns with the Strategic Pharmacy Workforce Plan set by Health Education and Improvement Wales (HEIW), an NHS organisation that are responsible for the education and training for staff within NHS Wales. I am excited to inform you that this project has been approved by the Swansea University Ethics Committee, and I am now able to start my data collection.

As a current MPharm student at Cardiff or Swansea University, you are part of the key audience for this study. Your participation would be invaluable in helping us explore innovative approaches to pharmacy education. The questionnaire is designed to gather insights into how these technologies might support learning and development in the field.

How to Participate:

- You can access all relevant documents and the questionnaire through the following link: linktr.ee/immersive_pharmacy_research.
- The questionnaire is available in both **English** and **Welsh**.
- Responses are needed by **22nd November 2024**.

Your input could contribute to valuable findings, and all participation will be acknowledged in the final published research.

Thank you for considering taking part in this exciting and novel project!

Cofion caredig | Kind regards,

Geraint Jones | Geraint.Jones4@wales.nhs.uk
Ef/Fe | *He/Him*
Fferyllydd | Pharmacist
Esiamplwyr Bevan | Bevan Exemplar
Addysg a Gwella Iechyd Cymru (AaGIC) | Health Education and Improvement Wales (HEIW)

Appendix O: 'LinkedIn' Social Media Post



Geraint Jones (He/Him) • You
Pharmacist | Strategic Pharmacy Workforce Plan Lead | Bevan Exemplar
20m •

🚀 Exciting Research Alert! 💻

I'm thrilled to announce that my research on how digital and immersive technologies can support pharmacy education has officially been approved by the Swansea University Ethics Committee! 🙌 This project also aligns with Actions 5 and 16 of **Health Education and Improvement Wales (HEIW)/Addysg a Gwella Iechyd Cymru (AaGIC)**'s Strategic Pharmacy Workforce Plan. 📍

💡 What's the plan?
The data collection window is open, and I'm reaching out to MPharm students at **Cardiff University / Prifysgol Caerdydd** and **Swansea University** to get involved. Your input is key to understanding how we can bring innovative tech into pharmacy education! 💊🎮

✨ How can you help?
You need to be an MPharm student at Cardiff or Swansea University to take part. Simply read the Participant Information Sheet and then fill out a short questionnaire via Microsoft Forms – it's available in both English and Welsh, and shouldn't take more than 10 minutes of your time!

🔗 All the details and links are available here: **https://lnkd.in/d7wzq_fE**

🗓️ Deadline for responses: 22nd November 2024.

Thank you! 🙌

#PharmacyResearch #DigitalInnovation #ImmersiveTech #MPharm #HEIW #SwanseaUniversity #CardiffUniversity

Appendix P: Results for Q5: 'Why did you decide to study pharmacy?' – Summary of student responses.

To help patients improve their health
I worked in a pharmacy when I was 16 and decided it was what I wanted to do as a career.
To advance treatments and innovate the pharmaceutical field in my country
I wanted to study a healthcare subject and eventually found my way into pharmacy
I like maths and science and wanted to help people
I've always been interested in becoming a healthcare professional, and after my A-levels (math, biology and chemistry), the pharmacy course seemed to align with my interests.
I wanted to make a positive difference to both peoples health and wellbeing and I liked the amount of career opportunities available to me.
I wanted to work in the healthcare industry, and have a variety of options after I graduate. I hope to complete a medicine course after I graduate.
I want to help people within the community, and feel like I'm making a positive impact in people's lives.
Pharmacy is a profession involving vulnerable people that I have always had a willingness to try and help. Doing my degree will massively aid me with my interest of helping people.
Stable job market, good earning potential, and an interest in medical professions
I wanted a career in healthcare which was a mix of patient facing work and scientific knowledge
Due to my interest in pharmacy
The subject area and skills you learn are really varied.
Because of a passion for chemistry and maths. I also did not want an office job where I would spend most of the time sitting around all day. I was definitely interested in healthcare sciences from year 11 and new that a career in this area was suited to my passions and qualities
It seemed like a career path I could study in relation to my A Level subjects. I wanted to be in healthcare but was unsure which to choose.
I was rejected from dentistry and Cardiff offered pharmacy instead
Because of my love for working with people and helping those around me, as well as my enthusiasm towards biology and chemistry.
I really enjoyed the subject of chemistry in A Level and found it highly intriguing so pharmacy was a career that I also looked into. It appealed to me because of the various opportunities available within the industry and the potential to help others in such an impactful way.
Because I always had a dying passion to be a pharmacist
I wanted to use my knowledge science and chemistry to drive back death and suffering.
Lots of Career opportunities from this degree. I enjoy chemistry and maths
high demand in Pharmacist in community and interest towards drugs and medication
because I am interested in learning around medications, and how they are used to treat diseases
Because my work experience showed that the work life balance seems much more favourable than medicine and the course is interesting
I got rejected from studying a different course and then had the opportunity to apply to study pharmacy and after getting the offer I decided to continue to study pharmacy.
I am interested in contributing to local communities in a meaningful manner.
I think it's a good career and the role is developing a lot, excited to see what the future holds for pharmacists
I have always wanted to work within healthcare and was always interested in how a little tablet can have such effects on the body so it was a no brainer for me to apply to study pharmacy.
I really liked chemistry and wanted to help people like doctors do. Combined makes a pharmacist
I had an interest in medical science, did work experience in a pharmacy and really enjoyed it
Preferred the style of course to medicine, wanted to be a clinical, patient facing role

Acknowledgments

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I would like to express my gratitude to the Pharmacy Deanery at Health Education and Improvement Wales, especially the Senior Leadership Team, for their support and guidance throughout my time with the organisation. Their dedication and support towards me whilst adapting to an unfamiliar environment has been significant in shaping my experience. I also extend my sincere thanks to the 'Strategic Pharmacy Workforce Plan' Team for their hard work and contributions, especially Michele Sehrawat, Christian Favager, Jodie King and Joe Llewellyn.

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Developing a tool kit to support Multi-modelled rehabilitation in NHS Wales

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Abstract:

The study will look at the impact of multi-modelled rehabilitation, mostly recognised as multi-morbidity services or clinics in the literature. Such approaches are used to support the ever-increasing chronic health population and aim to support the person's needs over their health issues. The aim of the study was to identify if a tool kit for support were needed to help develop such services, how would it look. The study was a qualitative digital survey of NHS staff across Wales involved in multi-modelled rehabilitation in varied forms.

The results provided alongside the literature the need to support national guidance and local population need, by developing an initial iteration of a toolkit, like national quality statements and frameworks developed by some of the literature.

The confirmation that a strategy for multi-modelled rehabilitation is likely to be more helpful nationally as opposed to a particular format (e.g. inter or multi-disciplinary services) was confirmed in the literature, however with little understanding of true multi-disciplinary working for long term condition management mention in this field of healthcare, more work is needed to expand any education, training and iteration of truly multi-modelled rehabilitation and its long term benefits for the people who access the support, the staff, the health service and all other relevant stakeholders.

Keywords: Multi Model rehabilitation, Multi Morbid rehabilitation, Multi-modelled/Morbidity MDT services and clinical leadership.

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Introduction

Background

National statistics suggest the population requiring health services by professionals such as Allied health professional are becoming more persistent in nature (Bonner, Havas & Stone et al., 2020 and Lo, Chen, Lu et al., 2024, McPhail, 2016). Continued pressures on National Health Services (NHS) require new approaches to maintain and progress quality of care (White, 2014, Bonner et al., 2020 and Lo et al., 2024).

A proposed way to improve patient experience is thought to be in improving the communication skill set of the health professional (Wilson, Chalonera, Osborna, Gauntlett-Gilberta, 2017). The Welsh government has used public health initiatives such as 'Making every contact count' (Welsh Government, 2021) and this project will also review more recent related strategic approaches.

At national level, recognition of supporting the needs of a service user by moving away from medically modelled expert approaches (Iacobucci, 2018) has seen the creation of Co-productive approaches (Essen, Varlander & Liljedal, 2016) to help to explore need. An approach to supporting need over condition specific approaches is the aim of Multi-morbid/modelled rehabilitation as will be demonstrated in the literature review.

Based on the critical review of literature the development of a research question will be created. It is hypothesized that NHS services and staff are not fully prepared to change services to Multi-morbid/modelled from tradition siloed services. The literature will review the evidence prior to refining the research and approach for this project of work.

Literature review: Developing a tool kit to support Multi-modelled rehabilitation in NHS Wales

This literature review will focus on the most recent up to date knowledge associated with Multi-morbid/modelled rehabilitation locally, nationally and across the world. If relevant older data and literature may be discussed including any relevant qualitative information from varied formats, where appropriate.

The review of literature aims to tackle the ability to provide information in relation to the development of a tool kit for Multi-morbid/modelled rehabilitation within multi-disciplinary team (MDT). Within this review it will demonstrate critical evaluation through critical debate around the concepts of how multiple services and pathologies can be supported differently using a more consistent approach to long-term condition management as opposed to the current varied approaches seen in the National Health Service (NHS) (Kuliski et al, 2019). Where possible the literature will link into practice within the NHS. To achieve this firstly Multi Modelled or Multi Morbid working and multi-disciplinary team working will be defined. The reason behind why these approaches must be considered in relation to population and NHS service need will be explored, including the importance of 'what matters' to people (NHS England, 2019) and what is prudent healthcare (White, 2014), alongside its importance, taking into account the strengths and weaknesses of each area.

To meet the aims of this literature review and research project as a whole the literature search included using the programme reading, iFind library, Voyager databases (NHS search engine) and Google scholar. Keywords searched where considered as main search words but were not limited to these due to the lack of research in the fields - Multi Model rehabilitation, Multi Morbid rehabilitation, Multi-modelled/Morbidity MDT services and clinical leadership. To make the research relevant to health services the date restriction of the last 8 years was put in place with the main concentration of papers focusing on the last 5 years, however some more relevant papers outside of the timescales have been considered. Due to the timescale of the literature within the context of the module, sources were limited to an original search for 54 online paper resources.

All literature will be referenced in the below referencing section as well as all literature within the body of this document. The reference will follow Havard format as per university directive.

Introductions and definitions

People are now living with more complex health needs than ever before, resulting in the need of innovative health care options such as Multi-model or morbidity services (Bell, Vedsted, & Kraus et al., 2023).

Bell et al., (2023) are very specific with the definition of what they perceive multi-morbid clinics to be stating that a one-day assessment offered to complex health care needs for patients using multi-disciplinary staffing, therefore the use of differing healthcare professionals.

Bonner et al., (2020) and Lo et al., (2024) suggest the need for Multi-morbidity clinics has come from the restrictive approach of healthcare being condition specific, which they feel is not helpful or convenient to the patient, when attempting to optimise health improving, especially when living with a chronic condition. Kabir, Conway & Ansari et al., (2024) recognise Multi-morbid health issues are more prevalent with increased age and will impact on primary care services alongside secondary care.

Wallace, Salisbury & Guthrie et al., (2015) despite being an older paper defines the challenges and needs of people and services when considering Multi-morbid or modelled services, especially in the areas of ideal early intervention in primary care. Firstly, Wallace et al., (2015) clearly defines a person being Multi-morbid, is to have two or more persistent health conditions. Wallace also describes the typical challenges of living with multiple health issues, which include, but limited to reduced quality of life, decrease in function, increased access to healthcare, increased use of polypharmacy and associated drug complexities, alongside worsening psychological distress.

Leadership and preparation

Bell et al., (2023) reviewed the care of a large number of people accessing Multi-modelled care and demonstrated its benefits as being able to bridge and exceed the ability of traditional healthcare through the use of multi-disciplinary skill set sharing and access. The national aim of such services and clinics in Wales is perceived to ensure people access generalist/versatile care as soon as it is available to prevent medicalisation or over-reliance of specialities (Welsh Government, 2021). Bell et al., (2023) however focus on the benefits of having access to multiple contacts with speciality skill sets and noted an older population of people in 70-80 age bracket accessing the service. Despite showing innovation in developing such research the paper may also show discrepancies in its approach to being truly Multi-modelled for the needs of current healthcare. It should be noted it was an American paper, and the data was from as far back as 2012, despite it being published in 2023.

When considering the engagement of NHS Wales staff in the use of Multi-modelled approaches it is helpful to see that Bonner et al., (2020) research highlight good physical health outcomes being maintained long term simply from having nurse advice and support. This appears to be fitting with the national aims of being more prudent with healthcare approaches in Wales (White, 2014), although it may be quite linear as per older medical models by only having one professional in the study. Bell et al., (2023) mix of staffing skill set possibly offered more varied healthcare options. Bonner et al., (2020) study did not go into detail about psychological well-being, and this will be key especially when considering what communication skills are needed for NHS Wales staff to progress Multi-modelled clinics. Bonner et al., (2020) does however show a great example of how resources can fit seamlessly into the traditional community outpatients' settings, meeting the Welsh Government aims to bring healthcare closer to the community (Welsh Government, 2021). Bonner et al, (2020) suggest that the model should be further embedded closer to home in primary care settings.

The support to best prepare a person accessing care will also be key. Kwaitana, Chisoni & van Breevoort et al., (2024) describes the use of the Anderson-Newman theoretical framework for health utilization. This is used to assess primary care accessibility, but highlights areas to improve on ways to get the best out of health engagement. Kwaitana et al., (2024) suggests ensuring family support, easy access to healthcare in relation to distance, a friendly service and improved function. Key areas considered that this over 50s study group identified as areas to avoid were a lack of person-centred approach, and a reduction of healthcare staff being involved. Regular review was also deemed important. Sussex, Smith & Wu., (2024) agreed with Kwaitana et al., (2024) in relation to key areas of buy-in, however they consider the strategic areas for success in multi-morbid care are recognising that we need to re-organised health to be across differing health conditions and symptoms. Improving self-management support resources and capturing what matters to the patients are key as outcomes for success in multi-modelled services. Although these key areas may support principles of change to multi-modelled rehabilitation, Sussex, Smith & Wu (2024) acknowledged the challenge of bringing aspects of healthcare together to truly support Multi-modelled services.

An innovative way to ensure services are designed to effectively meet the populations may be to integrate a co-design approach when creating such a health pathway (Essen, Varlander & Liljedal, 2016). Nixon, Cooper, Donetto, Youssef & Robert (2023) looked at the journey of patients and staff when managing HIV with other health conditions. The authors identified key areas of improvements whereby co-design could be of benefit, these being 1) medical records/information sharing, 2) appointment management and 3) care co-ordination and streamlining. All the above learning points would fit well with the local and national needs of healthcare to drive success (NHS England, 2019 and the Welsh Government, 2021). This is also highlighted internationally with Wu, Xue & Huang., (2023) recognising that without true systems and people integration barriers will remain for people living with multi-morbid issues. Wu et al., (2023) specifically recognise the multiple pathway appointments needed, negative health outcomes from these appointments, duplication of healthcare and therefore cost.

Intervention

Wallace et al., (2015) describe key processes needing to take place to offer successful Multi-morbidity care; these are to identify early your patient group that have an element of complexity and secondly, once identified to ensure they have time to discuss their needs in extended slot sessions. With key resources including time possibly being perceived as limited this is a crucial piece of information when considering key Welsh Government (2021) concepts of being able to 'tell your story once' and ensuring key health communications initiatives such as 'shared decision making' and 'what matters to you' (NHS England, 2019). Eto, Samuel & Henkin et al., (2023) considered the ethical consideration of how multi-morbidity can impact differing populations, with a higher percentage of Asian and Black groups thought to be more susceptible to early onset of multiple long-term conditions as would living in a situation of social deprivation. De Gans, Maessen & Van de Pol (2023) highlighted how intra and interprofessional working is essential to improve efficacy and quality of care for multi-morbid patients. Significant reductions in future hospital admissions were noted in the multi-professional format of care, and interestingly these patients on average went on to having an increased number of appointments with Allied health professionals. As a cheaper resource than medics, this could be recognised as a future saving, however, to see benefit of such outcome healthcare providers such as the NHS will need to acknowledge the workforce demands that such models may place upon their structures.

The National clinical framework (Welsh Government, 2021) acknowledged the challenge of the pandemic and how it had encouraged Wales to offer digital interventions at a significantly higher percentage. With some services returning to previous face to face interventions it is interesting to see Wong, McCambridge & Barrett (2023) recognising that virtual interventions appear to cater well for frailer clients, people with multiple health conditions and people living in rural areas. This study related to heart failure and interestingly reduced onward referral to secondary care services by 84% following the virtual consultations. The study highlighted that by continuing with a digital approach it could also impact cost effectiveness of healthcare through reduced future appointments with other services. The barriers of digital assessments were not highlighted as a concern and may need to be taken into consideration when reviewing this data.

Maintenance

The health board area being considered for Multi-modelled rehabilitation is likely to need innovative resources to support assessment, intervention and maintenance. Digital innovation has been one way some areas of Wales have considered healthcare progress. In Multi-morbidity rehabilitation Medina-Garcia, Lopez-Rodriguez & Lozano-Hernandez, (2024) looked at the benefits of technological applications to support self-management of people over the age of 60 to manage multi-morbid conditions. The study showed a high number of people engaging in technology, however the authors recognised that more research was needed as it felt the efficiency of the service was not sufficient. Developing a clear technological plan for supporting people in rural healthcare for multiple conditions may be a key area to successfully expand healthcare when resources are limited as previously mentioned above by Wong et al., (2023). An area of progression may be the wearable technology section of health innovation as well as developing digital infrastructure. Little research appears to exist specifically for multi-modelled rehabilitation although Neves, Haghighi & Pereira (2023) suggest its benefits are strengthened with chronicity of the population to track non-medical approaches to health regarding monitoring of physical activity and sleep.

Literature review conclusion

The literature has explored areas of leadership required to consider the preparation phase for developing multi-modelled/morbidity rehabilitation services and went on to consider how intervention is offered and most importantly how such care can be maintained.

It is clear from the literature that healthcare services across the world is having to consider differing ways to manage older patients accessing services with more than one health condition. Previously and in some instances currently world-wide healthcare services provide siloed services specialising in one set of healthcare provision for a specific health condition. The settings will appear to vary from face to face or digital formats, and the exploration of data collection using the persons perceived experience and also outcomes such as wearable physical health technology can all play a part in improving patients and staff ability to do well in multi morbid/modelled services.

The above literature has exampled differing approaches to healthcare, and despite differing approaches the main theme of supporting peoples' multi-morbid issues as opposed to being condition specific appears to have advantages for the person accessing care, the local health services and the clinicians offering such services.

Challenges appear to be healthcare services' ability to offer resources across traditional service and staffing boundaries to offer truly Multi-modelled/morbid rehabilitation approaches. Further research in innovative areas such as wearable technology is needed to understand how to fully enhance technology for health in this population of people.

Based on the literature review this information has provided this study with a purpose to confidently review in a small study the needs of NHS staff who currently work in, are developing, or may work in Multi-modelled/morbid rehabilitation services. In understanding the need, this may allow for clarity for what key information/strategy is needed to develop a 'tool kit' for the successful development of Multi-morbid/modelled rehabilitation services.

It is acknowledged that from the literature there is little recognition of 'Multi-Modelled' rehabilitation and therefore it should be considered as a local healthcare definition that may become more relevant as health services modernised. The perception of Multi-modelled care based on local services is the amalgamation of service pathways such as Pulmonary and Neurorehabilitation looking to offer similar needs-based care for people as opposed to being referred to siloed healthcare pathways to then only receive repeated healthcare treatments. It is acknowledged that the national definition of the terminology is 'Multi-Morbidity', however, to keep relevant to local service development 'Multi-modelled' will continue to be used in the document to represent relevance to local healthcare.

Literature has also enabled the development of the research questions below as suggested by Creswell and Creswell (2018)

1. Do NHS staff working in Multi-morbid/modelled rehabilitation services require further training/support to develop services.
2. Would a toolkit be a helpful product to support development of Multi-modelled/morbid services for NHS strategist?

Methodology

A qualitative research approach was chosen for the study and the reason for this will be explained further in this section. Firstly, qualitative research can be defined by Creswell and Creswell (2018) as an 'approach for exploring and understanding the meaning individuals or groups ascribe to social or human problems' p.4. They go on to suggest that qualitative research is an inductive style, with a focus on meaning and reporting of complex situations. MS forms were used as a format to ask NHS workers who have previous, currently or may have a future known opportunity to work in Multi-Modelled rehabilitation services, with people living with multi – morbid health issues.

It is acknowledged that other formats of methodology could have been explored for such a research project, including two differing groups of staff or patient groups being a part of chronic condition service. These could have been randomly selected for either a multi-modelled rehabilitation approach or a traditional

medically modelled approach to healthcare using a quantitative quasi-experimental method (Creswell and Creswell, 2018).

A questionnaire which is defined by Artino, Durning and Phillips (2022) as a survey method of data collection and is further broken down into a 'self-administered survey, regardless of medium' p.2. was emailed to 20 people with relevant experience of meeting the above criteria. All were either non-clinical administrative or managerial staff or allied health professional clinical staff. Two clinicians worked nationally in strategic roles and therefore may have considered themselves as 'non-clinical'. Invites were sent across 4 health boards, the NHS executive and Health education improvement Wales to provide a wide spectrum of answers from across Wales's healthcare system.

Each participant received this email template shown below -

> *'Hi all,*
>
> *This is a questionnaire relating the PG dip cert I am completing following my year in the climb programme.*
>
> *You are invited to complete this before September 6th, 2024.*
>
> *Thanks again – please see the MS form questionnaire below. It should take you just a few minutes to complete.*
>
> *https://forms.office.com/Pages/ResponsePage.aspx?id=uChWuyjjgkCoVkM8ntyPrvwKZSmakB5LsUESZj33THhURFNJUFJFMEpPUEgwWlZJTEZYQUVQMU5BSy4u '*

Based on the literature and due to time constraints and ethical considerations it was decided upon a method of reviewing qualitative NHS staff feedback only. Staff had the option to complete the MS form and make contact with the project student author to provide further narration about all aspects of multi-modelled rehabilitation.

The MS form was broken down into information about the study, the 12 questions to complete and each person was asked to read a supporting 'participation agreement document'.

A PDF document showing the content of the MS form can be seen in the Appendices as appendix A. The participation agreement document can be seen under appendix B.

As the research is qualitative in nature it will focus on specific instructed questions with multiple choice and the qualitative data will also provide areas to offer a person's narrative by using 'free text' sections. For others wishing to expand on these answers they have the option to provide details to be contacted for further discussion as this has been demonstrated to be helpful when needing to review more difficult communication challenges in healthcare such as Nilsson and Furaker, (2012) paper reviewing healthcare conflict. Despite being an older paper, it provides useful approaches to offer narrative reviews if required.

Sussex et al. (2024) provided the most similar methodology by taking a thematic analysis approach to planning to evaluate the information provided by the people in their specific study. They reviewed the perspective of a team supporting people living with multi-morbid issues that were seen in primary care settings, similar to our local services in West Wales which would be community based. The 6 main themes taken from this study were mentioned in the literature review suggesting more is needed to be done to improve multi-modelled approaches, notably with engagement with multiple stakeholders and to challenge barriers. The results from this current project of work would aim to confirm the challenges, however, expand on new knowledge to progress the development of a multi-modelled/morbidity tool kit for staff and NHS services.

Based on the literature review and the chosen method, it would be hypothesized from the above content that healthcare services seeking to develop multi-modelled/morbidity rehabilitation services require a 'toolkit' to provide clear guidance for how to implement.

Results

Data is provided by MS forms and analysed by MS Excel and provides data on all 12 questions. Answers from question 1-10 are provided to ensure anonymisation of data. Question 11 and 12 provided people with

options to offer further advice and discussion. Only two people took this offer up, but due to limited time this information will be reviewed as part of future work linked to this subject.

Of the 20 people selected from a large proportion of NHS staff, 15 responded. People invited were staff who had previously been part of multi-modelled/morbid services or were considering moving into this type of role or may feel they have experienced offering such an approach but in an ad hoc, unofficial format. Of the 20 invited to complete the form, please see the data breakdown below.

Data showed a near split of 8 clinical staff and 7 that classed themselves as non-clinical, however it should be noted that from this group people in strategic roles with previous clinical backgrounds may have recognised themselves as non-clinical due to their lack of current engagement with patients in a face-to-face capacity. This may imply the feedback is generally coming from a higher percentage of clinical staff backgrounds overall.

Just over a quarter of the group, interestingly, did not feel they were in a leadership position to make positive change linked to multi-modelled/morbidity rehabilitation, however more positively 10 of the group did appear to consider themselves able to support change.



Figure 1. Provide insight image of 67% of staff feeling they can influence the leadership decisions associated with developing Multi-modelled rehabilitation.

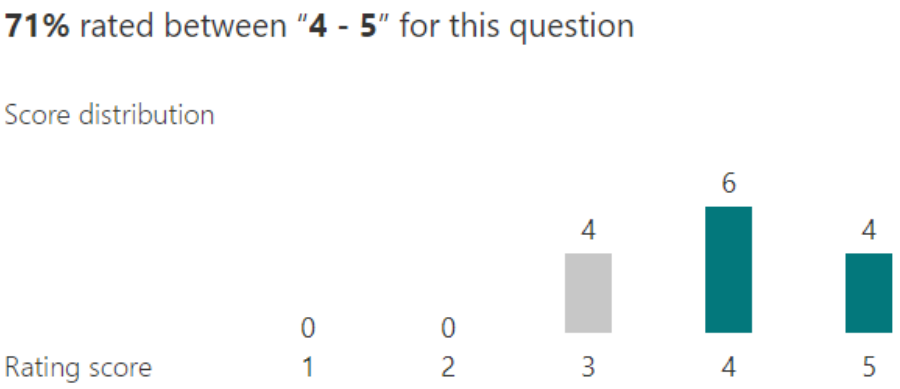


Figure 2. Provides the insight breakdown of question 4. This demonstrating that all the people surveyed reported a good knowledge of what Multi-modelled rehabilitation is.

From a scaling of knowledge about the subject all the participants felt comfortable with what Multi-modelled/morbidity rehabilitation was, however, confidence in how to effectively implement such services was more marked within the group.

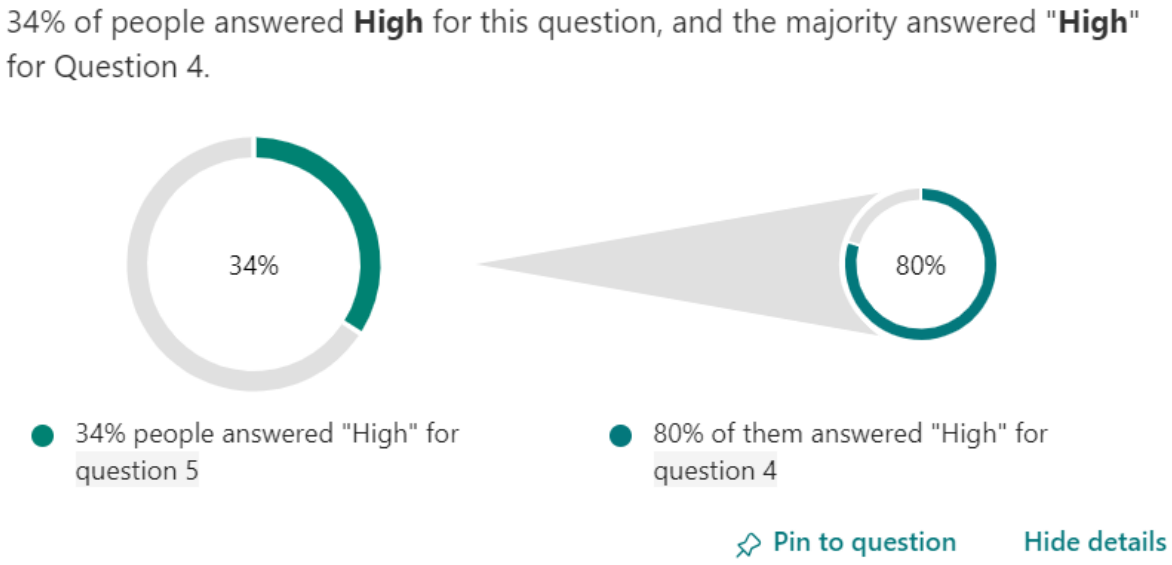


Figure 3. This diagram demonstrates a high knowledge awareness of 'Multi-modelled' rehabilitation based on question 4., however when considering the staff's confidence to implement such services the percentage drops considerably to 34% of staff stating they were confident to implement such a service.

All 15 participants appeared to have clear definitions of what multi-modelled/morbidity rehabilitation is with themes mentioned in relation to shared decision making, co-production of care and insuring people have a chance to tell us what is important to them.

Participants were also clear that Multi-modelled or morbid were defined as having two or more health issues when thinking about a condition definition. Others however focussed on the meaning being associated with a multi-disciplinary team of health workers who would offer a needs-based approach as opposed to a medical interventional approach to healthcare.

Chronicity or long-term conditions were also defined as being part of the understanding for what multi-modelled or morbidity rehabilitation is.

Numerous service needs were noted, with clear definitions of what Multi-Modelled or Morbidity rehabilitation is and ensuring this is presented to all stakeholders to understand. An understanding on the training need and remit of health professionals in the area of work was also highlighted.

Training on communications skills were noted with regards to Shared decision making and Co-productive approaches. Although not a communication approach, but a model of care, the bio-psychosocial approach was mentioned as needed to develop the service effectively. As a clinician understanding scope of practice between each differing health professional also appeared important.

Resources considered for an effective service were primarily digital infrastructure for a virtual approach, however fully costed staffing resources was also mentioned. When asked to select one resource in question 8. digital resources came out as the main need, although in the 'other' option many used this to highlighted, all areas were equally important to some degree.

It was mostly agreed that all participants would envisage care to be as close as possible to home or in the community with only three of the people wishing for differing venues such as a rehabilitation setting, or in the local primary care centre or via digital platforms.

The 15 participants provided a wide range of answers to support question 10. With its aim to find out how staff and patients could fully understand the aim of a multi-modelled and multi-morbidity rehabilitation

service approach. Answers focussed on pre-education such as you tube videos, information sessions alongside strong statements for support of the benefit.

One participant suggested the language used for the services was seemingly very medically focussed and therefore could consider a name change to a 'generalist' approach, the same wording as used as part of the question. None of the 15 appeared to feel that the specialist titles of professionals or care would be under any form of threat as long as the multi-disciplinary approach of services were truly collaborative and were not lost in such an approach.

75% of the group expressed interest in being part of further discussions and development of the multi-modelled/morbidity rehabilitation approaches.

Discussion

The literature demonstrated an up-to-date evidence base for multi-modelled or morbidity rehabilitation (Bell et al., 2023, and Lo et al., 2024) and as mentioned in the literature review it may not have always described a truly multi-disciplinary approach but instead described clinics that saw people with multiple health issues (Bonner et al., 2020). Despite the inter or uni-disciplinary approach of some studies, it is important to recognise that the development of a framework of support for people for long term health issues appears to provide improvements in health despite any unique format (Gans et al., 2023, Kwaitana et al., 2024).

The method of a qualitative questionnaire approach as seen in the method section was a sensible approach to review thoughts and perceptions of Multi-modelled rehabilitation staff and how created information that has allowed this work to consider further progress in this field of healthcare.

Defining Multi-modelled rehabilitation

Instead, as per the initial theme of questioning an approach of following a framework or a toolkit of advice may be the considered the best approach when trying to spread and scale multi-modelled rehabilitation or morbidity services with Kwaitana et al., (2024) suggested such a format of principles that could be taken to champion against as gold standard requirements with the specific mention of the Anderson-Newman theoretical framework for health utilization. We can of course compare it to the National guidance such as the NICE guidance (NICE, 2016), however, this is still a non-multi-disciplinary approached description at times and may need further review and update as it is now 8 years old. When considering the current research, we have also taken into account that not all approaches seem to have a bio-psychosocial approach to supporting someone's needs and in doing so can remain medically focussed and instead result in people/patients being more focussed on their health condition. This may inadvertently drive the self-preservation of medically modelled approaches and not achieve the aims of the national strategy as described earlier by Welsh Governments National Clinical Framework (2021) and NHS England (2019) Long term plan. Sussex et al., (2024) and Nixon et al., (2023) recognised this as challenging but suggested working across traditional borders and finance challenges of healthcare. The results of the staff questionnaire demonstrated that before developing new service pathways more time is likely needed to define what is meant by such approaches. This paper attempted to group Multi-Modelled rehabilitation and Multi-Morbidity rehabilitation. The aim of the project may have been better suited to focus on one of the definitions. 'Multi-Morbidity' was seen as a far more common terminology with little information about Multi-modelled. A Multi-modelled rehabilitation service should be defined based on the staff feedback as a service that supports multi-needs, however multi-morbidity is a well-established terminology which defines a health provision for people with chronic conditions and more than one health issue (McPhail, 2016, Medina-Garcia R, 2024, Wu et al., 2023). Further work should be considered regarding language with the evidence of linear approaches in multi-morbidity rehabilitation and comments in the questionnaire feedback suggested 'multi-morbid' is quite a medically focussed use of language.

Where and how?

Thematic analysis of the data as described by other studies such as Sussex et al., (2024) provided the above information in the results section have provided alongside the literature that closer to home approaches, in the community or in the home, for example via digital interventions are how such programmes of care must be approached. This would appease the national ask of key strategic papers (Welsh Government, 2021) but maybe it does not factor in the reality of current financial challenges, limited rehabilitation space and reduced digital infrastructure of local NHS services. It could be of note that the

highest percentage of staff suggesting closer to home care were non-clinical. This may be worth considering that clinical staff who are attempting to run services with more awareness of the challenges of healthcare, such as availability of venues and resources, were less focused on this as a key answer.

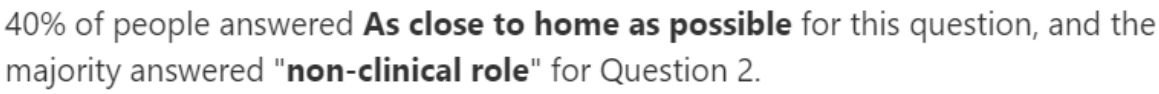


Figure 4. This provides the insights information created from the questionnaire stating that 40% of staff surveyed answering question 9. Chose having rehabilitation closer to home as a key enabler, which is more consistent with national and strategic aims.

The literature does not acknowledge this due to limited research focusing on current reduced resource, but is acknowledged in certain areas (NHS Confederation, 2023) thus allowing us to conclude the need for change is relevant, but strategic messaging must filter into the mainstream actions for health and social care locally. Medina-Garcia et al., (2024) and Wong et al., (2023) demonstrate successful digital approaches and the questionnaire data suggest staff are open to such formats. Multi-morbidity approaches naturally have the ability to better pool resources across traditional service formats and therefore can be considered a part of current NHS solutions but require leadership at every level. It was concerning to see that a quarter of the people who completed the questionnaire did not feel they were in a leadership position to move services forward. Nilsson, K. and Furaker, C. (2012) have highlighted the importance of communication within leadership to move healthcare forward and initiatives such as patient communication via 'what matters to you', 'shared decision making, and making every contact count' are mentioned as part of national drivers (Welsh Government, 2021, NHS England, 2019), therefore as well as defining the Multi-modelled rehabilitation is, it also needs a backing of all leaders that staffing at all levels should have excellent communication skills and values to work together to achieve excellent healthcare (West, 2021). West (2021) particularly highlights the importance of compassionate leadership to drive such a change and ensuring healthcare change fails due to concerns such as excessive work demands, increased stress levels, absenteeism and staff turnover, which inadvertently turn such innovation into failure through learned helplessness p.190.

The model of care from question 9 and 10. suggest staff are wishing to develop a tiered approach to care with introductory levels of healthcare focused on ideas such as you tube or digital resources. This would fit well into the discussion about the use of generalist health advice and possibly allow multiple people to access support without sitting on multiple waiting lists as supported by Eto, et al, (2023) and Kabir et al, (2024). Specialist can then be accessed where required, however with pooling of resource and thinking differently such as via digital formats NHS Wales could aim to offer services closer to home, using the right clinician and reducing the need for people to tell their story more than once via this approach whilst meeting national agenda requirements.

Inevitably people will need to be seen in specialist rehabilitation areas, however with limited NHS space for rehabilitation more work is needed to look at research for this issue and it is not covered in the work, however it is acknowledged across the UK as an issue (Alliance Scotland, 2024). This may be an opportunity where an aim to de-medicalise healthcare has been mentioned, therefore brining areas of green space and community free settings into play should be considered as possible further study opportunities to expand multi-modelled rehabilitation.

The challenge of defining success with multi-modelled care must lie with what is important to the person accessing the service. Excellent co-produced discussions must take place to provide a realistic and prudent (White, 2014) healthcare for people with chronic health issues. Following a framework such as described by Kwaitana et al., (2024) would be a good starting point, however this could evolve with varied stakeholder involvement, for example with the development of a panel of people with lived experience to guide key decisions with goals for patients (Nixon et al, 2023).

Review of analysis

The qualitative survey approach served its purpose for obtaining information to pick up relevant themes in relation to multi-modelled/morbidity rehabilitation services. As part of a more thorough form of methodology a mixed methods approach as suggested by Creswell & Creswell (2018) would allow for collection of

quantitative data from such services and allow an expansion of the surveys into other forms of information such as narrated interview formats. Both additions could have been considered for this work with more time and resources and may have better challenged the information from the initial survey. We saw that some of the group reached out requesting more options for specific questions and a large contingent stating they would wish to be part of further study. Whilst we may mainly consider qualitative data when considering an initial iteration of a 6 point multi-modelled/morbidity rehabilitation service model design and Toolkit (Kwaitana et al., 2024), quantitative data would also progress the research. For example, any notable reductions in the use of medications, attendance at primary care appointments or emergency care appointments and other physical changes in a person's health would be invaluable.

The word 'Specialist' in relation to questions 10's feedback was most used in the answers provided and therefore it would be important to ensure future service developments are clear on the role of a specialist in a needs-based services to avoid any issue challenging any loss of role in a generalist environment of healthcare.

Future opportunities and barriers

The project was undertaken within a short space of time, meaning a larger pool of staff members may have been accessed with more time, resulting in a wider opinion. The challenge of creating such a work programme approved by ethics resulted in a limited approach to understating patient perspective throughout the work. We know from NHS England (2019) and the Welsh Government (2021) that engaging stakeholders is key to providing better care for all services, but in particular for multi-modelled services (Nixon et al., 2023).

The questionnaire provided an option to reach out to discuss the project further and two people made contact stating they would have preferred a multiple-choice section for question 8. with 75% wishing to engage more with the project. This could have been trialled with a smaller group to have provided feedback, however when reviewed in a small group of academic and non-clinical staff it was not raised, although the interest in making this a bigger piece of work is clear.

As Wales looks for differing approaches it should also be noted that the paper did not look specifically at the challenges of paediatric long-term conditions, and this is something that could be considered for future research.

Conclusion

The initial question posed by this project was to consider if a toolkit could be created to help bridge the gap national documentation wishing for multi-modelled/morbidity rehabilitation services to become a reality, but staff and patients not knowing necessarily how they could be created.

The literature review was not able to provide a large amount of data relating to poor knowledge base, but highlighted the need and benefit of such models of care to help manage increasing populations of people living with more than one health condition and therefore having multiple needs.

The literature provides examples of frameworks and key strategic areas to consider such as digital interventions.

The method of a survey based qualitative questionnaire allowed for people who working in and around the field of Multi-modelled/morbidity rehabilitation across Wales to provide fast and efficient information relating to knowledge, concerns and needs for developing such services well.

The results demonstrated a mix of clinical and non-clinical, with clear ideas about multi-modelled services requiring a set of rules that could be applied. This essentially could with more work be considered as national or local quality statements to ensure the standards of multi-modelled rehabilitation across the nation. A wider pool of people, including people of lived experience (Nixon et al., 2023) will certainly have added more relevant learning and content to further enhance this work, however this appears to be an exciting initial iteration.

The discussion provided an opportunity to merge the literature with the thinking of the healthcare staff involved in the survey. The literature appeared to support a clear strategy over a specific formula, which would work well as a national strategy given each health board has different needs, populations and

landscapes across Wales. The staff who completed the survey however were clear that a lot of educational work would be needed for patients and staff to see the need and benefit, and also appreciating the resources that may need to sit with the work, such as digital and rehabilitation space. Opportunities now are clear from this project to consider going further into qualitative and quantitative studies of multi-modelled/morbidity rehabilitation and truly embedding the work nationally using the below key themes drawn from this work.

A developing tool kit for Multi-modelled rehabilitation service development must most likely consider the below key themes: –

1. Clearly define what it is to help staff, patients and other stakeholders.
2. Must ensure staff have the correct communication skill sets and leadership opportunities.
3. Digital and rehabilitation infrastructure is needed and will therefore need local strategic support or national where resources allow.
4. Tired approach to care, sharing resources and ensuring access to the right clinicians at the right time.
5. Non-medical approaches in non-medical arena's away from traditional healthcare settings.
6. Outcomes – improved quality of life and function, whilst living with a long-term health issue e.g. family support, easy access to healthcare in relation to distance, a friendly service and improved function (Kwaitana et al., 2024).

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Appendix A: Questionnaire for staff

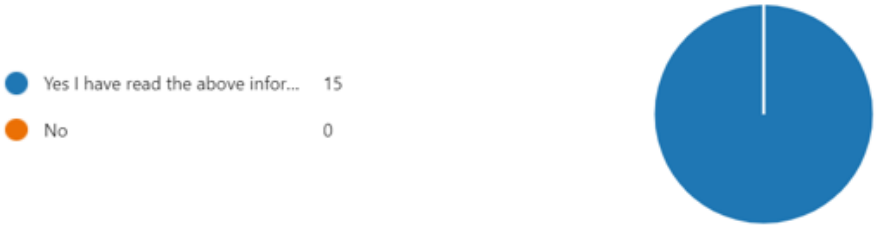
A) Q1.

Results Summary

View results

1. Please confirm you have read and agree to the above information and the additional information provide in the supporting document attached in your email invite.

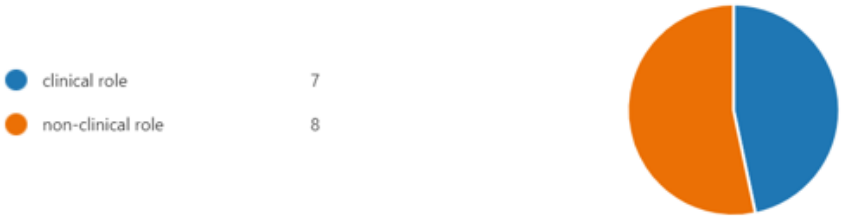
More Details



Q2.

2. What type of NHS role do you work in?

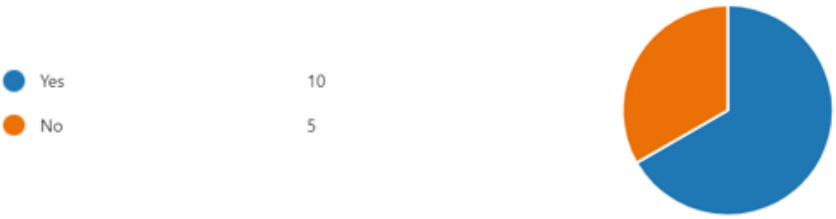
More Details Insights



Q3.

3. Do you believe you are in a leadership position that could allow you to shape multi-morbid rehabilitation in the area/region you work in?

More Details Insights

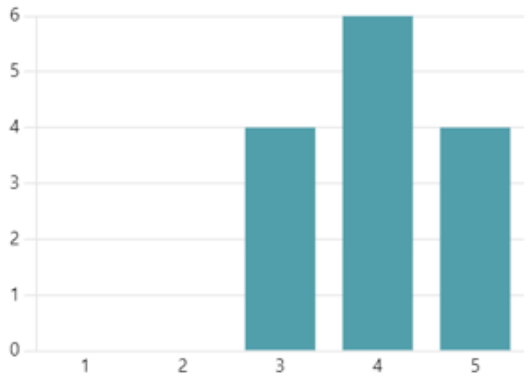


Q4.

4. How would you rate your understanding of what Multi-Morbid (Modelled) rehabilitation is?

More Details Insights

4.00
Average Rating

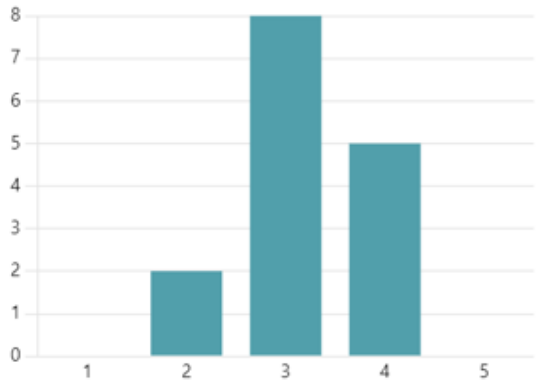


Q5.

5. How would you rate your confidence to offer a gold standard multi-morbid (Modelled) rehabilitation services to the people who may access them?

More Details Insights

3.20
Average Rating



Q6.

6. How would you define what multi-morbid rehabilitation services are? (Please keep the answer to a maximum of 300 words and consider the information in the questionnaire description regarding NICE guidance if you require additional information).

More Details Insights

15
Responses

Latest Responses

"Rehabilitation for people with two or more chronic conditions where access t...

"I would define multi-morbid rehab services as a group of multi-disciplinary ...

"Multi model rehabilitation is a holistic individualised assessment and interve...

9 respondents (**60**%) answered **long term** for this question.



Q7.

7. What training needs do services and people require to offer a truly Multi-Morbid (Modelled) rehabilitation service?

More Details Insights

15
Responses

Latest Responses

"Comprehensive understanding of multi morbidity, interdisciplinary collabora...

"Possibly an overview of the conditions that they have not normally come acr...

"Scope of Practice - What is within remit of multi morbidity and when a pers...

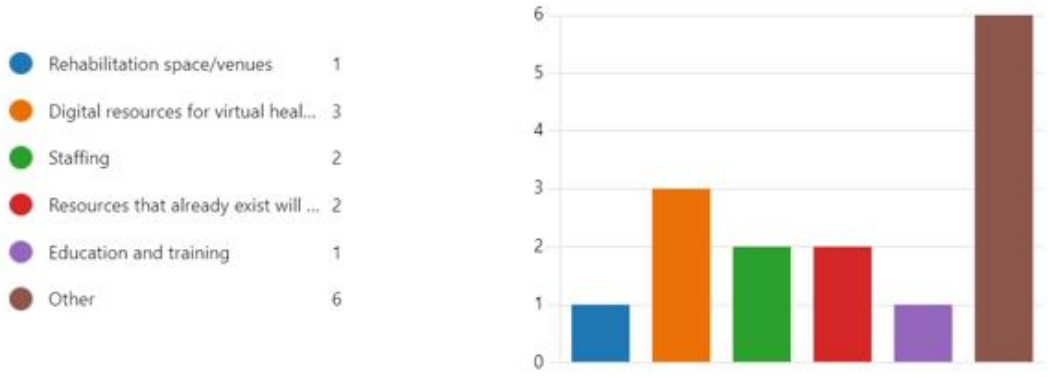
9 respondents (**60**%) answered **services** for this question.



Q8.

8. What additional resources do you feel services may require to provide gold standard multi-morbid services?

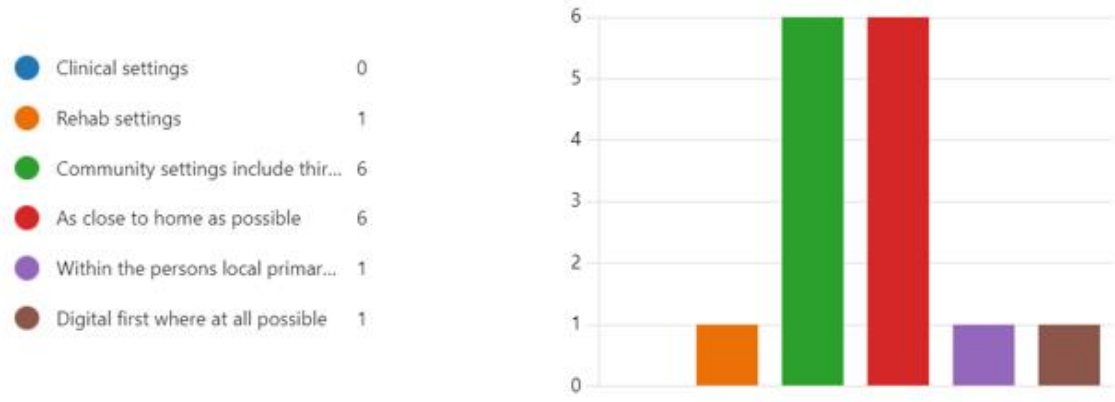
More Details



Q9.

9. Where should Multi Modelled Rehabilitation service be predominantly held at?

More Details Insights



Q10.

10. Multi-morbid services will have specialist health clinicians as part of the service model. The support for people may be generalist in elements of its content, therefore how could we explain the importance of these versatile approaches to other health professionals, future patients and other relevant stakeholders?

More Details Insights

15
Responses

Latest Responses

"Generalists provide comprehansive care coordination and longitudinal overs..."

"short you tube video explanations that everyone can access?"

"Professionals range across the specialist, generalist spectrum. It is important..."



Q11.

11. Thank you for participating in this questionnaire. To be contacted to speak in more detail please let us know.

More Details Insights



Q12.

12. Please provide email or telephone number to talk in more detail.

More Details

Please note – information available to be shared on request but hidden from results to avoid data breach and not accessed unless people in the study made contact with the project lead to continue learning for the project as per question 11's offer.

Appendix B: Supporting participation agreement document

Participation agreement information



Multi-morbidity (Model) Rehabilitation services - Are clinicians and services prepared?

Research - You are being asked to take part in a small research project by completing this MS form questionnaire.

Purpose - Assessment of current NHS staff thoughts on the progression of multi-morbid/model rehabilitation services to ascertain current and future need of the local population.

Participation - To participate you must be a NHS employee working in or have links to multi-morbid/model rehabilitation. It is estimated the questionnaire will take less than five minutes to complete. Participation is completely voluntary and all information is anonymised, therefore will remain confidential. Data collected will be used for solely academic purposes for this research project. A copy of the final publication of the research can be provided on request. See contact details below.

Who is it for? ....., Service Lead for Multi model Rehabilitation in a local health board is a current a student completing the PG certification for Advanced Management (Applied Innovation) and is completing the work.

Ethical consideration - The work has been approved by Swansea University ethics group. Due to it being a non-patient contact survey it has not met the threshold for requiring NHS ethics approval.

My options –

If you would want to participate after reading this section then you will be led through a questionnaire to allow the project to try and understand current knowledge of multi-morbid/Model rehabilitation and what this should or could look like moving forward. Please complete the sections in an anonymised format.

My information –

Once the data is submitted you will be unable to withdraw the information. The information will be shared with relevant stakeholders only (e.g. University course provider). Should the research be published wider the data will continue to remain anonymised (e.g. poster presentation or integrated into published research paper). A request to withdraw information post completion of this questionnaire is unlikely to be possible due to the anonymised nature of the document, making it difficult to remove specific data.

Data Protection Privacy Notice

The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data and can be contacted at the Vice Chancellors Office. Your personal data will be processed for the purposes outlined in this information sheet. Standard ethical procedures will involve you providing your consent to participate in this study by completing a consent form which is an online tick box. The legal basis that we will rely on

to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the Swansea University Research Ethics Committee. The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes. Please read attached information booklet for further guidance about data, rights, complaints and further contact.

To support your knowledge on the subject please consider current NICE guidance by copying this into your browser - Overview | Multimorbidity: clinical assessment and management | Guidance | NICE may provide more understanding to support your answers.

Participation agreement

How long will your information be held?

Data will be preserved and accessible for a minimum of 10 years after completion of the research. Records from studies with major health, clinical, social, environmental or heritage importance, novel intervention, or studies which are on-going or controversial should be retained for at least 20 years after completion of the study. It may be appropriate to keep such study data permanently within the university, a national collection, or as required by the funder's data policy.

What are your rights?

You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights. Any requests or objections should be made in writing to the University Data Protection Officer:

University Compliance Officer (FOI/DP)
Vice-Chancellor's Office
Swansea University
Singleton Park
Swansea
SA2 8PP
Email: dataprotection@swansea.ac.uk

How to make a complaint

If you are unhappy with the way in which your personal data has been processed, you may in the first instance contact the University Data

Protection Officer using the contact details above. If you remain dissatisfied, then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at:
Information Commissioner's Office,
Wycliffe House,
Water Lane,
Wilmslow,
Cheshire,
SK9 5AF
www.ico.org.uk

What if I have other questions?

If you have further questions about this study, please do not hesitate to contact us:
Gethin Harries, Service Lead, Multi Model Rehabilitation, Consultant Therapist for Long Term Conditions. Email: 809861@swansea.ac.uk
Dr Helen Yu, School of Management Swansea University, Email: Helen.Yu@swansea.ac.uk

By continuing to complete the associated MS forms questionnaire you have confirmed that you agree with the following statements:

1. I (the participant) confirm that I have read and understand the information presented above and within the MS form for this study.
2. I understand that my participation is voluntary. I understand that the information I provide is anonymous and once the questionnaire is submitted, I cannot withdraw my response.
3. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
4. I understand that I am free to ask any questions at any time before and during the study.
5. I have been informed that the information I provide will be safeguarded.
6. I am happy for the information I provide to be used (anonymously) in academic papers and other formal research outputs.
7. I agree to the researchers processing my personal data in accordance with the aims of the study described in the Participant Information Sheet. I am aware that the questionnaire is anonymous.

Appendix C: Ethics approval – NHS and Swansea University

NHS and Swansea University ethics approval process



You have answered **'YES'** to: **I**s your study research?

You answered **'NO'** to all of these questions:

Question Set 1

- **I**s your study a clinical trial of an investigational medicinal product?
- **I**s your study involving one or more of the following: A non-CE marked medical device; or a CE marked device, which has been modified or is being used, outside of its current intended purpose?
- Does your study involve exposure to any ionising radiation?
- Does your study involve the processing of disclosable protected information on the Register of the Human Fertilisation and Embryology Authority by researchers, without consent?

Question Set 2

- Will your study involve potential research participants identified in the context of, or in connection with, their past or present use of services (NHS and social care), including participants recruited through these services as healthy controls?
- Will your research involve potential research participants identified because of their status as relatives or carers of past or present users of these services (NHS and social care)?

- Will your research involve prospective collection of tissue (i.e. any material consisting of or including human cells) from any past or present users of these services (NHS and social care), including participants recruited as healthy controls?
- Will your research involve prospective collection of information from any past or present users of these services (NHS and social care)?
- Will your research involve the use of previously collected tissue and/or information from which individual past or present users of these services (NHS and adult care), are likely to be identified by the researchers, either directly from that tissue or information, or from its combination with other tissue or information in, or likely to come into, their possession?
- Will your study involve patients (or tissue or information relating to patients) receiving treatment in an independent establishment in Wales or for the purposes of an independent establishment in Wales?

Question Set 3

- Will your research involve the storage of relevant material from the living or the deceased on premises in England, Wales or Northern Ireland without a storage licence from the Human Tissue Authority (HTA)?
- Will your research involve storage or use of relevant material from the living, collected on or after 1st September 2006, and the research is not within the terms of consent for research from the donors?
- Will your research involve the analysis of human DNA in cellular material (relevant material), collected on or after 1st September 2006, and this analysis is not within the terms of consent for research from the donor? And/or: Will your research involve the analysis of human DNA from materials that do not contain cells (for example: serum or processed bodily fluids such as plasma and semen) and this analysis is not within the terms of consent for research from the donor?

Question Set 4

- Will your research involve at any stage procedures (including use of identifiable tissue samples or personal information) involving adults who lack capacity to consent for themselves, including participants retained in study following the loss of capacity?
- Is your research health-related and involving offenders?
- Does your research involve xenotransplantation?
- Is your research a social care project funded by the Department of Health and Social Care (England)?
- Will the research involve processing confidential information of patients or service users outside of the care team without consent? And/ or: Does your research have Section 251 Support or will you be making an application to the Confidentiality Advisory Committee (CAG) for Section 251 Support?

Swansea University ethical approval process –

Supervisor	Multi-morbidity (Model) Rehabilitation services - Are clinicians and services prepared?			10680
Hi Helen, corrections made to ethics. Please can you consider signing the document for ethics approval. Thanks Gethin		28/08/2024 06:32	28/08/2024 13:47	Signed

Acknowledgements

I would like to thank the Climb programme, Powys Teaching Health Board and Hywel Dda University Health Boar Therapy directorates for allowing me to complete this work. I would also like to thank Helen Yu my supervisor to allow for the work to be completed to standard and my wife and young family for supporting the time and sacrifice used to complete this project.

An Exploration of Allied Health Professions Working in Cancer Rehabilitation and their Perceptions on Applying Compassionate Leadership to Support Their Service

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Abstract:

Cancer rehabilitation involves supporting individuals across the cancer care trajectory. The study sets out to explore the perceptions of allied health professions working within cancer rehabilitation, to gain a perception of whether staff are applying compassionate leadership to support their workplace. Compassionate leadership is identified as a key driver to support with the well-being of others, and delivering healthcare with compassion and kindness, makes a significant difference. The study will support the underlying theory of compassionate leadership, as there is clear evidence that compassionate leadership supports with increased motivation and high levels of well-being, which results in high quality care. The study identifies the barriers of adhering to the principles of compassionate leadership and explores the viewpoints of what the current challenges are within the organisation. Organisations must strive to create an appreciative, compassionate, and collaborative culture where staff can be their best selves. Future research has been recommended to further gain insight and better support staff with creating an environment where staff flourish, work effectively, and openly communicate.

Keywords: Compassionate leadership, compassion, healthcare, well-being.

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Introduction

Background and Context

Cancer is a disease where abnormal cells grow uncontrollably and may spread to other tissues or organs (World Health Organization, 2019). There is currently an estimation of 3 million people with cancer in the United Kingdom (UK) and this is predicted to rise due to improvements in diagnosis initiatives testing and an ageing and growing population who are more likely to develop cancer (Macmillan Cancer Support, 2022). The National Health Service (NHS) (2022) recognise there are over 200 different types of cancer. Survival rates vary between cancer type and diagnosis, and treatment depends upon the cancer's location, size and if it has spread to other organs (Cancer Research UK, n.d.).

Cancer rehabilitation aligns with the cancer pathway stages and is recommended for individuals from diagnosis to living with, and beyond cancer (Bloom, 2017). Welsh Government (2022) recognise rehabilitation is essential and making every contact count. Prehabilitation is the first stage, and is formally known as preventative measures (Bloom, 2017) and the main aim is to prepare people for treatment by optimising their nutritional, physical and psychological needs through person-centred interventions (Cancer Research UK, 2024). Prehabilitation can empower people to maximise their resilience to such treatment and enhance long-term health (Silver & Baima, 2013). Rehabilitation, which is formally recognised as restorative measures, aims to return individuals to their baseline level of function, and continues to support those living with and beyond cancer to limit function loss, support symptom management and reduce any complications (Bloom, 2017).

Allied Health Professions (AHPs) are a group of clinicians (table 1 below) who are important in the delivery of rehabilitation and supporting individuals with cancer (Bloom, 2017). The National Institute for Clinical Excellence (2004) guidance states that all patients will have their rehabilitation needs assessed throughout the cancer pathway, and this includes timely access to AHPs. The guidance highlights the need for staff to communicate compassionately and effectively, and treat patients and their families with dignity, respect, and kindness. Moreover, identifies that the future of the NHS demands investment in staff through education and development.

Table 1. List of AHPs.

Author	Year	Publisher	AHPs
Hindle and Charlesworth	2019	Allied Health Professions Federation (AHPF) and HSC Public Health Agency Northern Ireland, Public Health England, Scottish Government, Welsh Government and Welsh Therapies Advisory Committee.	Art Therapy Clinical Psychology Dietetics Drama Therapy Music Therapy Occupational Therapy Operating Department Practice Orthoptics Osteopathy Paramedic Practice Physiotherapy Podiatry Prosthetics and Orthotics Radiography (diagnostic and therapeutic) Speech and Language Therapy

The Importance of Compassionate Leadership

Compassionate leadership encompasses a focus on relationships, through listening carefully to understand, empathising with and supporting other people, enabling those to feel respected, valued, and cared for, so they can reach their best potential (Bailey & West, 2022). Compassionate leadership provides an evidence-based framework that can help ensure staff are empowered and engaged, which supports high levels of well-being, resulting in high quality, continually improving care (NHS England, 2021). The Welsh Government (2018) outlines plan for a whole system change. Table 2 below outlines key drivers that will strive leaders in the Health and Social care system to display compassionate and collective leadership by 2030.

Table 2. Documents Outlining Key Drivers of Compassionate Leadership.

Title	Author	Year	Publisher	Main Purpose
Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry.	Francis	2013	The Nuffield Trust	Public inquiry highlighted significant failures and a culture of protectionism and secrecy. Other organisations are likely to have at least some shadows, resulting in threats to quality and safety. Needs to be a relentless focus on keeping patients safe and protected from insufficient care. Requires strong leadership and employees to provide a compassionate, committed, and safer service.
A Healthier Wales: our Plan for Health and Social Care.	Welsh Government	2018	Welsh Government	Whole system approach to health and social care. Focuses on health and well-being and preventing illness. Dynamic leadership will be required to instigate change. To create working conditions for continuous improvement and innovation. To drive up the value and quality of services.
A Healthier Wales: Our Workforce Strategy for Health and Social Care.	Health Education and Improvement Wales and Social Care Wales	2020	Health Education and Improvement Wales (HEIW) and Social Care Wales (SCW)	10-year workforce strategy to deliver an inclusive, sustainable, engaged, responsive and flexible workforce. To distribute excellent health and social care services and cohesive leadership. Proposes that by 2030, leadership will be distributed. Shared vision that individuals will model and practise collective and compassionate leadership. Will provide a blueprint to assist staff deliver the vision. Well-being sits at the heart of the plans.

Martin et al. (2023) believes there are 3 overarching priorities that the NHS needs to adhere to for continued improvement and reduce the likelihood of further tragic events. These include learning, strong leadership, and listening with a particular emphasis on the psychological safety of patients and staff who can communicate their needs without the fear of criticism. According to the Department of Health and Social Care (2023), we can determine that improving support services and after-care for individuals with cancer and their families should be prioritised over the next decade, and this will be inclusive of the rehabilitation pathway.

Aim of the Research

This study aims to explore the perceptions of AHPs working in cancer rehabilitation to understand whether they are applying compassionate leadership to support with their service. The aim of the research is to create an environment where colleagues can flourish, openly communicate, and work to their best potential.

Objectives of the Research

- To explore AHPs understanding of compassionate leadership and if completing any specific training has impacted upon their practice.
- To understand the barriers or challenges AHPs have encountered in displaying the principles of compassionate leadership.

Literature Search

An initial literature search completed through Google Scholar and Scopus databases identified a limited number (n=0) of research articles. The key words used: compassionate leadership, compassion, allied health professions, cancer rehabilitation. The literature search was expanded to explore compassionate leadership within a healthcare context. To create a clear plan and a logical search strategy, a protocol was followed as seen below. Figure 1 below demonstrates the data bases used as they offered the greatest access to published works. The key words used: compassionate leadership, compassion, healthcare, retention.

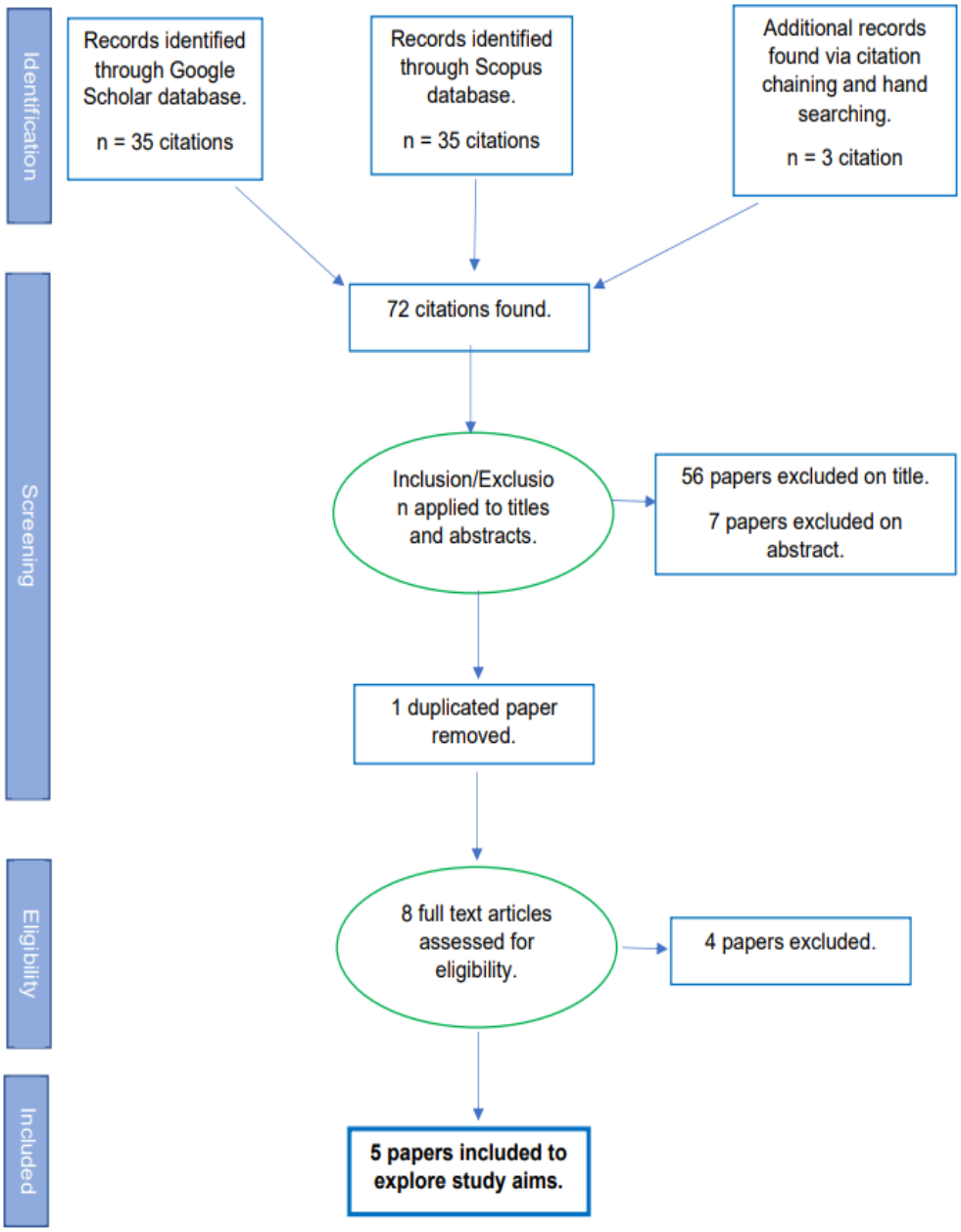


Figure 1. Flowchart of Literature Search adapted from Moher et al. (2009).

Table 3 below demonstrates the inclusion and exclusion criteria.

Table 3. Inclusion and Exclusion Criteria.

Inclusion	Exclusion
Paper within a healthcare context. Full research article. Written in English. No restrictions on the research design. Paper written in the last 10 years to allow a deep analysis.	Paper related to Paediatrics. Contains perceptions of staff not relevant for the aim of this research study.

Table 4 below provides an overview of the 5 papers critically appraised.

Table 4. Literature Matrix.

Citation, data base used and publication	Design and participants	Theme and how often term used within paper	Findings, limitations, and implications
Singh et al. (2018), The colours and contours of compassion: A systematic review of the perspectives of compassion among ethnically diverse patients and healthcare providers. Google scholar. PLOS ONE. Paper's citation: Google scholar n=61, Scopus N=21	Peer-reviewed research published between 1946-2017 on compassionate care in ethnically diverse populations – credible data. 2296 abstracts retrieved; 23 articles met inclusion criteria. Papers within a healthcare field and across several countries. Articles appraised using the Mixed Methods Appraisal Tool. 2 researchers retrieved the articles, with an additional member to settle disputes - enhance credibility. Used a systematic review, in accordance with a narrative synthesis approach. Interpretive synthesis of findings rather than a meta-analysis of data.	Compassion. Compassion n=146.	The facilitators, perspectives, and barriers of compassion. Compassion can be taught. Plays a significant role in the provision of cross-cultural care. Aims to relieve suffering of others and increases patient satisfaction. Western countries are becoming culturally and ethnically diverse. Ethnic groups experience and understand compassion differently. Apprehension to discussing cultural issues with therapists from different ethnicities. Some provide a prescriptive and stereotypical approach - contradicts person-centred care. Can embrace diversity, ensure equality, and develop a collective and inclusive team culture. Barriers to compassion-giving: Organisational culture, leaders' personal beliefs and values. Several studies did not identify the contrasts between ethnic groups. A limited number of studies examined compassion related outcomes among ethnically diverse patients living in their home country. Apposes conceptual ambiguity. The researchers provided a pre-defined and enculturated definition of compassion. English papers only = apposes risk of missing vital data such as those with ethnically diverse patients in their home country. Future study to explore compassion from the perspectives of individuals within diverse ethnic groups.
Evans (2022), So close to love: compassionate leadership in healthcare. Google scholar. British Journal of Healthcare Management	Iterative approach, 34 articles published between 2015-2020. Articles used in several countries, all within a healthcare field. Thematic analysis. No peer-review. Paper's citation in google scholar n=5, N-2 in Scopus.	Compassionate leadership. Compassionate leadership n=87.	Leadership and cultures of compassion are important for care quality improvements. Essential since COVD-19 pandemic due to added strains in burdened healthcare systems. A ubiquitous term - develops positive workplace cultures and practices = improved patient outcomes. A buffer to staff stress and drives improvement. Strong correlation between compassionate leadership and organisational culture. Broad agreement regarding the importance and the definition. Research lacks clarity and depth concerning the theoretical underpinnings. The power of using compassionate leadership to deliver real change is unclear.
Christiansen et al. (2015), Delivering compassionate care: The enablers and barriers. Scopus.	Purposive sampling approach. Participants registered at Northwest England University. Mixed methods - quantitative and qualitative data.	The enables and inhibitors of compassionate care. Compassionate care N=63.	Strong correlation between compassionate care coming from professional and personal values. Importance of small but significant actions to demonstrate compassionate care. Leaders acting as positive role members and have effective working relationships to aid compassionate practice. Emotionally intelligent leaders can build resilience among staff and promote compassionate

British Journal of Nursing.	Questionnaire explored participants' understanding of compassionate care. Piloted with 5 researchers. 9 closed + two open-ended questions to identify factors that enable or prevent delivering compassionate care.		relationships - create opportunities to process workplace challenges. Can be inhibited by a target-driven culture, time pressures, working long hours without a break, hunger, and fatigue. Can be more difficult to provide with patients and families who are challenging. Participants viewpoints may not necessarily reflect other healthcare staff.
Ramachandran et al. (2023), Whither compassionate leadership? A systematic review. Google scholar. PMC COVID-19 Collection. Google scholar. Paper's citation n=16.	Systematic literature review. Grounded theory. No peer-review. Articles from 2002-2021 - to reach data saturation & maximise rigor of study. Database search plus hand searching. Qualitative n=34, quantitative n=5, and mixed method studies n=2. Papers used within healthcare field, business/Management scholars and Organisational Science/ Studies.	Compassionate leadership. Compassionate leadership n=183.	Increase attention since COVID-19 pandemic. Compassion creates a sense of togetherness during crisis. Conceptualised at a general level, a complex and multifaceted phenomenon. Trustworthiness, reliability, and validity maximised due to systematic literature review. Identified 6 critical dimensions. Potential to have positive effects on the workforce, staff experience and leadership. Suggested as the solution to address the toxicity, suffering, and pain. Benefits - enhanced organisational performance and productivity. Studies emphasise importance of a collective leadership culture of collaboration and compassion. Highlights the necessity for education and training in particular compassionate leadership. In the nascent stage. Definition is ambiguous and fragmented and resonates with other constructs and approaches. Timeless concept, a lack of clarity, academic research is limited and fragmented.
Östergård et al. (2023), Health-care leaders' and professionals' experiences and perceptions of compassionate leadership: A mixed-methods systematic review. Google scholar. Emerald Publication.	Mixed-methods systematic review. Convergent integrated approach. No peer-review. Database search plus hand searching. 5 qualitative, 5 quantitative. Studies used across the world in medical and healthcare field. Thematic analysis. Data extraction and analysis was conducted by 1 researcher, posing risk of subjectivity in the analysis. Although discussed with other researchers to enhance credibility. Paper's citation: Google Scholar n=2 & downloaded n=1820, Scopus N=0.	Case for compassionate leadership in the workplace. Compassion n=47. Compassionate leadership n=76.	Raised awareness since COVID-19 pandemic. Identified 7 themes. Diverse and broad concept that staff describe in different ways. Strong belief upon empathy. Compliance will not bring authentic and sustainable culture change. Consider education element when organisations develop their effectiveness. Makes significant contribution to shaping organisational culture. Has similar behaviour abilities to other leadership styles, although has a diverse entirety and emphasises compassion. Has a critical impact on staff experience - possibly address burnout, staff turnover rates and the lack of patient safety, and enhance work environments and work well-being. Influenced by situational factors. Staff need to feel supported, safe communicating, and have confidence in their teams. Barriers to providing compassion: compassion-related stress, compassion fatigue, organisational culture, stress, values, burnout, a person's personality. A reduction in organisational compassion = poor experience and a less thriving workforce. Can be exhausting and staff should recognise their limits and seek support from self-help abilities. Methodological limitations - only 10 studies used - increases risk of bias. Vagueness of the concept may have influenced the literature search, data collection and analysis.

Literature Review

Ramachandran et al. (2023) completed a systematic literature review using grounded theory as a method to rigorously review the literature. The methodology used is a reliable source of evidence to guide clinical practice scientific as it's replicable, transparent and limits bias and subjectivity of the researchers (Urquhart, 2012). Ramachandran et al. (2023) found although compassionate leadership is a timeless concept, there appears to be a lack of clarity, and that academic research appears limited and fragmented, therefore opening a demand for further education. The following literature review aims to explore the research relating to compassionate leadership, and to explore if the leadership style supports with the delivery of services. The literature relevant to this study has been critically appraised, and themes were identified and recorded above in Table 4. All research papers obtained qualitative data to produce a more detailed understanding of phenomena, and a couple obtained quantitative data to add value to the findings.

Compassionate leadership started to receive considerable attention since the COVID-19 pandemic (Ramachandran et al., 2023; Östergård et al., 2023; Evans, 2022). Generally, compassionate leadership was presented in the literature as a complex and multifaceted phenomenon (Ramachandran et al., 2023; Östergård et al., 2023). Evans (2022) found developing and sustaining leadership and cultures of compassion are key for improvements in care quality in already burdened healthcare systems. Compassionate leadership is said to have a critical impact on staff experience (Ramachandran et al., 2023; Östergård et al., 2023), which in turn has a direct impact on the experience of the individuals at the centre of service provision. Singh et al. (2018) recognise Western countries are increasingly becoming culturally and ethnically diverse and the requirement for providing culturally competent care is vital. The study identifies the importance of understanding how different ethnic groups experience and understand compassion, what is deemed culturally acceptable behaviour and recognises the differences between Eastern and Western patients and the challenges this poses to providing compassion. Ramachandran et al. (2023) emphasise the importance of creating a collective leadership culture of collaboration and compassion, that highlights the necessity for education and training in leadership skills. Furthermore, Evans (2022) found broad agreement regarding the definition and the need for compassionate leadership. It could be concluded that compassionate leadership is a diverse and broad concept that staff can describe in different ways, and it directly and indirectly affects quality, and drives compassionate care.

In general, there was an agreement within the Google Scholar literature surrounding the benefits of compassionate leadership. Ramachandran et al. (2023) and Östergård et al. (2023) believe compassionate leadership makes significant contribution to shaping the culture of organisations, that can possibly address health-care professionals' burnout and staff turnover rates, and the lack of patient safety. Burnout can cause staff errors, work-related absences, and safety concerns (Yates & Samuel, 2019). Despite Ramachandran et al. (2023) revealing that compassionate leadership is in the nascent stage and that the definition of compassionate leadership is ambiguous and resonates with other leadership constructs and approaches, compassionate leadership has a broad and diverse entirety, that emphasises on compassion. Christiansen et al. (2015) highlight the importance of undertaking relatively small but significant actions which are seen as effectively demonstrating compassionate care. Although, such acts impose difficulty quantifying through measurements and metrics. The study's participants also highlight the importance of leaders acting as positive role members and having effective working relationships to aid compassionate practice.

Singh et al. (2018) believe compassion plays a considerable role in the provision of cross-cultural care. The study found apprehension to discussing cultural issues with therapists from a different ethnicity, although demonstrating compassion to understand the issues can overcome this barrier. The study emphasises compassion aims to relieve suffering of patients and is found to be important in overcoming cultural differences, promoting patient dignity, improving patient care, and alleviating distress at end-of-life within ethnically diverse patients. Results should however be analysed with caution as only English papers were used which potentially apposes risk of missing vital research in this area, particularly those with ethnically diverse patients in their home countries. Arguably, Östergård et al. (2023) places a strong belief upon empathy, and Singh et al. (2018) believe compassionate care is an integral part within service provision to provide a more inclusive, equality, understanding, and collective workforce. However, due to cultural differences, some healthcare staff may provide a stereotypical and overly prescriptive approach, which contradicts person-centred care. Further research needs to explore the role and impact compassion has in overcoming cultural communication barriers.

Ramachandran et al. (2023) highlight the importance of inclusive and collective leadership for compassionate cultures to offer a sense of shared purpose. The research paper identifies how collective leadership is an integral part of compassionate leadership, to enable staff to feel that they have leadership responsibility and contribute to a culture of compassion. Feedback needs to be constructive; this allows personal and professional growth and encourages positive elements of behaviours (Östergård et al., 2023). Compassionate leadership is a ubiquitous term in healthcare (Evans, 2022). Ramachandran et al. (2023) would argue compassion is expected to create a sense of togetherness during a crisis. While Singh et al. (2018) found a strong link between physicians demonstrating compassion with increased patient satisfaction. Evans (2022) believes compassionate leadership develops positive workplace cultures and practices. Arguably, it could be concluded a compassionate culture leads to improved outcomes for patients and acts as a buffer to staff stress and drives improvement, which is essential during times of crisis.

The relationship between organisational culture and compassionate leadership was evident within the literature. Östergård et al. (2023) argues compassionate leadership can enhance work environments and well-being, although, influenced by situational factors. The study emphasises that staff need to feel safe communicating, have confidence in their manager and their teams, and feel supported. Compassion fatigue and compassion-related stress can be a barrier to providing compassion, and other barriers could be stress, burnout, a person's personality, values, and organisational culture (Östergård et al., 2023). Whether these impact on patient care is unknown. A reduction in organisational compassion results in poor experience and a less thriving workforce, and compassionate leadership can be exhausting, and staff should recognise their limits and seek support from self-help abilities (Östergård et al., 2023). This is strengthened by Singh et al. (2018) who found the obstacle to compassion-giving is related to leaders' personal beliefs, values, and organisational culture.

The literature within Google Scholar and Scopus found a strong correlation between compassionate care coming from personal and professional values and beliefs (Christiansen et al., 2015; Singh et al., 2018), whilst Evans (2022) found a strong correlation between compassionate leadership and organisational culture. To help people cope with shame and guilt, organisations need to know how to manage with this. For example, an employer who breeches their values and organisational values, it is imperative that they show integrity and learn from their mistakes. Nevertheless, some would argue compliance to compassionate leadership would not bring authentic and sustainable culture change and organisations must consider the education element when developing their effectiveness (Östergård et al., 2023; Singh et al., 2018). Furthermore, Evans (2022) identified differences in practice, dependent on the hierarchical levels. It could be concluded that organisational performance relies on leaders working together to support the values and success of the organisation. Organisations are required to embed the behaviours of compassionate leadership and explore how they will be sustained to create long term cultural change. With leadership comes accountability, and this will be achieved through creating culture that promote inclusion, justice, and fairness, manageable and safe workloads, clear goals and performance management, and a focus on learning and continuous improvement.

Arguable, the literature found in Scopus states emotionally intelligent leaders can build resilience among staff and promote compassionate relationships, through creating opportunities for people to process the physical and emotional challenges they encounter at their workplace (Christiansen et al., 2015). However, they found compassionate care can be inhibited by time pressures, working long hours without a break, fatigue, hunger, and a target-driven culture. Nevertheless, Evans (2022) found current research lacks clarity and depth concerning the theoretical underpinnings, and the power of using compassionate leadership to deliver real change is unclear. The lack of clear theoretical underpinning of compassionate leadership may be problematic as it makes it difficult to critically challenge.

Conclusions can be made that compassionate leadership recognises people are vulnerable with others when the environment is secure. However, workforces could be more effective with assertiveness, allowing clarity and reduced stress levels due to less misinterpretation. It takes courage and energy to be assertive and workforces rely on role models to drive the change. Theoretically, the development of compassionate leadership has been drawn from other leadership frameworks, such as collective and transformational leadership. This would explain why there is a lack of consistency and clarity. Despite the absence of a clear theoretical framework, there was consistency within the literature in the enablers of compassionate leadership and that promoting fairness and transparency encourages diversity and inclusion within services.

The literature highlights compassionate leadership comes with challenges during time of crisis and requires courage, practical wisdom and high levels of self-awareness to be agile and adaptable. There were consistencies within the literature that compassionate leadership supports with high levels of well-being and engagement, and arguably supports with services. It therefore could be said the psychological impact of work conditions need to be managed to maximise the effectiveness of organisations. Although, the literature highlights the differences in practice, which is dependent on the hierarchical levels.

Need for Further Research

The literature review suggests compassionate leadership could play a substantial role in addressing the need for change, however there is a demand for further research. The research must take into consideration the complexity in which leadership occurs, amongst lessons from past failings. The limited amount of research within AHPs and compassionate leadership validates the need for this study. The research question was designed to express the gap in knowledge.

Research Question

Do AHPs working in cancer rehabilitation understand the concept of compassionate leadership?

Research Methodology and Design

Introduction and Purpose

The following chapter will use the Research Onion (Saunders et al., 2016) to demonstrate how the design answers the guiding research question. The study requires a contextually rich approach to present and uphold the chosen research methodology.

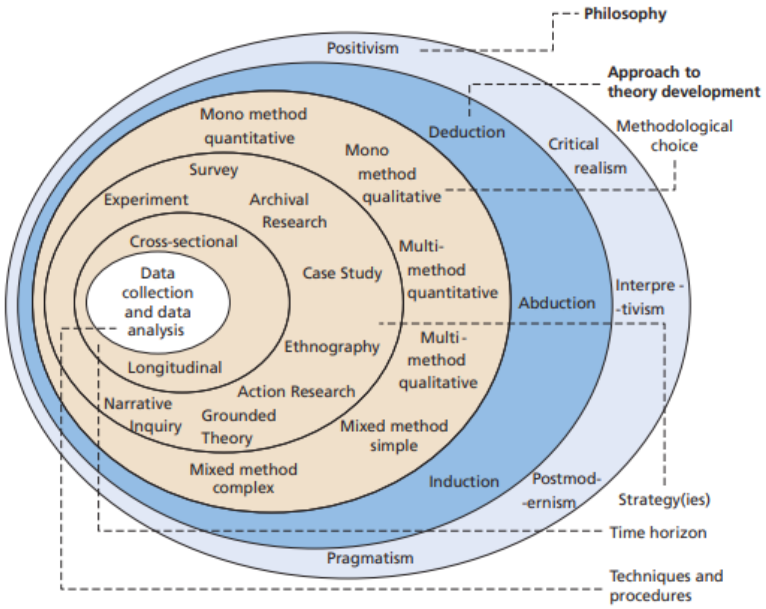


Figure 2. The Research Onion. (Source: extracted from (Saunders et al., 2016)).

Literature Review

A traditional literature search and literature review was undertaken to understand the current learning of academic researchers and to guide this study. This can be found in section 1.5 and section 2.

Methodological Choice

The methodology used fits within an interpretivist paradigm (Omodan, 2024) as the researcher understands this research will focus on participants thoughts and ideas around their experience of compassionate leadership in the workplace. Interpretivist paradigm will add richness to the insights gathered, although results are subjective (Omodan, 2024). Therefore, there is acknowledgment of the researcher's subjectivity and their interpretation of the data (Savin-Baden & Howell Major, 2022). A mixed methods approach

(Creswell & Creswell, 2022) was undertaken to understand the enablers and barriers of AHPs using compassionate leadership within their workplace. Qualitative research operates words as data (Braun & Clarke, 2013) and values inductive reasoning, subjectivity, and opinions (Merrian & Grenier, 2019). Whilst quantitative research values objectivity, it uses statistical data to measure variables (Scharrer & Ramasubramanian, 2021). However, generalisability and deductive reasoning can limit the richness of answers and therefore a mixed methods approach was undertaken to support the researcher to understand the participants views through obtaining qualitative and quantitative data.

Due to the gap in the literature, action research (McNiff, 2017) was considered the most appropriate methodology to immediately understand the perceptions of AHPs working in cancer rehabilitation on applying compassionate leadership to support their service. Action research is less focused on contributing to theoretical input, and more focussed on producing actionable input to inform community and individual based knowledge in a way that impacts further learning (Stringer, 2014). The researcher completed a cross-sectional study as the data was analysed from a sample at a singular point of time and it is easy to conduct and inexpensive, which may provide evidence to plan a future advanced study (Wang & Cheng, 2020). Due to time constraints, it was unrealistic for the researcher to consider longitudinal and conduct multiple surveys over many weeks to months.

Perceptual Questionnaire

The strategy completed was a survey and a questionnaire was developed (Appendix D) to meet the aims of the research discussed in section 1.3. The researcher used validated models of survey to add richness and robustness to the study and adapted questions based on those asked in West (2021), which can be found in question 8-10 of the questionnaire. However, the validity can be questioned as no pilot of the questionnaire was completed due to time constraints. The researcher provided the participants with a debrief form (Appendix E) that contained further information of support, and this was accessible prior to completing to survey.

Sampling

Due to the limited timeframe of the research project, it was not possible to complete full purposive sampling of recruitment through the NHS. Convenience sampling (Etikan et al., 2016) and snowball sampling (Eichhorn, 2022) was chosen (Table 5). Selection bias (Greenhalgh, 20214) could be challenged as it involves recruiting participants who are easily accessible within the Health Board.

Table 5. Questionnaire Method.

Participant Selection	AHPs who have provided rehabilitation to an individual with a high suspicion or confirmed diagnosis of cancer in the last 12 months.
Survey Distribution	Link was distributed via email to acute and community AHPs within Hywel Dda Health Board. All email address' were accessible via global email. A request to share with known others within Hywel Dda Health Board.
Survey Design	13 questions in total: 3 open ended questions, 8 closed questions, 2 questions to gather background information. Took approximately less than 10-minutes to complete.
Survey Format	Qualtrics.

Sample Size

The researcher aimed to obtain 30-40 completed surveys, as it remains necessary to have a range of participants to assist with analysis and answering the research question (Sargeant, 2012).

Data Analysis

Questionnaire analysis and generalisation can be found in Table 6 below. The researcher displayed the quantitative data through using graphical outputs to easily interpret the data and identify patterns. For the qualitative data, the researcher used inductive thematic analysis to interpret patterns and generate themes by coding raw data. This process has been described as a robust method for analysing data (Braun & Clark, 2022). Thematic analysis has a flexible approach and has theoretical freedom, therefore making it compatible with an interpretivist paradigm (Braun & Clark, 2022). However, there is a lack of concise

guidelines and if the data was to be analysed by another researcher, they may obtain different results, which weakens the dependability of the study (Roberts et al., 2019).

Table 6. Questionnaire Analysis.

Questionnaire Analysis	Analysed using Qualtrics to generative graphical outputs. Data was reviewed and coded according to the themes that emerged. Themes were selected based on the number of times they were mentioned.
Generalisation	Restricted to Hywel Dda University Health Board due to time constraints and unable to seek ethical approval via other NHS Trusts.

Ethical Considerations

Ethical approval was obtained in August 2024 through Swansea University Ethics (Appendix A). Participants had contact details for the researcher, the supervisor, and the ethical committee to ask any questions before completing the survey. The researcher was transparent that participants could only withdraw leading up to submitting the survey, and did not have the right to withdraw following submitting due to anonymity. Any identifiable information disclosed by the participants was not included to maintain confidentiality.

Findings

The survey had a total of 57 respondents, 56 consented and 1 declined. All respondents had access to the participant information sheet which included the criteria of who could participate (Appendix B). Not all respondents completed each question. The age range of 47 respondents are as follows (Figure 3):

Q1 - How old are you?	Count	Number of responses
21-29	3	3
30-39	18	18
40-49	16	16
50-59	8	8
60-69	2	2

Figure 3. Age Range of Respondents.

The age range of 21-69 is not surprising as it takes into consideration the AHP qualifying age and the retirement age within the NHS.

Views and Perceptions of Compassionate Leadership

Interestingly, 10 respondents are not aware of the term compassionate leadership. 37 respondents had awareness of the term, however only 9 respondents had received training on compassionate leadership. The findings highlight that despite the literature of Ramachandran et al. (2023) and Östergård et al. (2023) stating the requirement for education and training when organisations develop their effectiveness, the harsh reality is that many AHPs have limited opportunities to develop an understanding and enhance their learning around compassionate leadership.

When asked “Has the learning improved your practice?” 5 respondents selected ‘strongly agree’, 2 selected ‘Somewhat agree’ and 1 selected ‘Neither agree nor disagree’. In summary, there appears to be benefits towards staff completing compassionate leadership training, and this supports the findings of Östergård et al. (2023).

Respondents were asked;

"How would you describe compassionate leadership?"

There were 55 respondents (Appendix F), and the responses were thematically analysed.

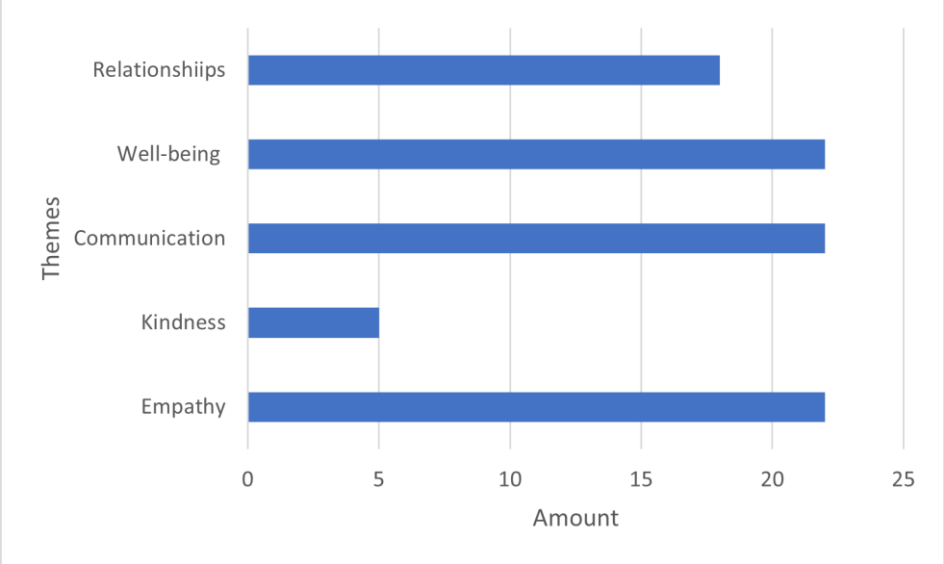


Figure 4. Perceptions of Compassionate Leadership.

Figure 4 demonstrates the respondents' perceptions of Compassionate Leadership and Table 7 below illustrates the key themes that emerged with supporting quotations.

Table 7. Themes Around the Compassionate Leadership Definition.

Theme	Comment	Quotation
Empathy	22 out of 55 respondents commented on empathy. Includes an empathetic manner towards staff and patients.	• "A person or position of authority who implements an empathetic and understanding manner." • "Supporting people in a way that shows empathy and understanding to all individuals." • "A manager that shows empathy to your colleagues and adapts to understanding their emotions as everyone is different. Ensuring you make your team feel valued, your kind, fair and treat everyone the same."
Kindness	5 out of 55 respondents commented on kindness. Includes staff acting with kindness.	• "Being kind and caring for each other." • "Being a supportive and empathic leader and acting with kindness and compassion." • "Providing and showing leadership using core skills of compassion, kindness, empathy for all others. Including those you might formally lead as well as others who may come into contact with you in your professional world."
Communication	22 out of 55 respondents commented on communication. Includes all means of communication.	• "Supporting others through listening/ understanding to reach potential." • "Being able to listen to someone. Showing empathy and understanding of a situation Supporting the individual in said situation Treating your team with respect, showing that you value them and care for them." • "Listening to the patient to better understand what their goals and concerns are. Supporting them through all the stages of admission and acre, being compassionate and empathetic to their condition."

Well-being	22 out of 55 respondents commented on well-being. Includes well-being of staff and patients.	• "Understanding needs of staff members, to support their well-being and be aware of signs of stress and burnout." • "Looking after and caring for staff and patients." • "Focusing on achieving business outcomes while considering the well-being of the whole team."
Relationships	18 out of 55 respondents commented on relationships. Includes relationships with staff and patients.	• "Focusing on the relationship between myself, staff, and patients. Practicing active listening skills, emphasising, being non-judgemental and supporting others to identify their needs and co-produce goals to achieve their potential and what is important to them." • "I think that with this form of leadership, the team members would feel like they're being heard and supported while also recognising they're human beings with mental/emotional needs. This would result in supporting or managing a team in a way that fosters autonomy, maximises people strengths and promotes professional growth..." • "A focus on relationships, ensuring staff feel valued, respected and supported."

Four main themes are evident in Table 7 and the respondents believe demonstrating compassionate leadership relies upon empathy, effective communication and relationships, and a focus on well-being. The findings are reassuring as Östergård et al. (2023) placed a deep belief upon empathy and findings support the HEIW and SCW (2020) vision, that well-being sits at the heart of the future. This data contributes towards answering the research question as it's produced 55 responses demonstrating AHPs perceptions and understanding surrounding the concept of compassionate leadership.

The researcher provided a definition of compassionate leadership (Figure 5), to which 44 respondents agreed with the definition, and 1 disagreed.

View data: Compassionate leadership encompasses a focus on relationships, through listening carefully to understand, empathise with and support other people, enabling those to feel respected, valued, and cared for, so they can reach their best potential (Bailey & West, 2022). Do you agree with this explanation?

Q7 - Compassionate leadership encompasses a focus on relationships, through listening carefully to understand, empathise with and support other people, enabling those to feel respected, valued, and cared for, so they can reach their best potential (Bailey & West, 2022). Do you agree with this explanation?	Count	Number of responses
Yes	44	44
No	1	1

Figure 5. Respondents' Reaction to a Compassionate Leadership Definition.

The researcher unfortunately did not have a free textbox on this question and was unable to understand why 1 respondent did not agree with the definition. Nevertheless, it is reassuring that 44 respondents agreed, despite many respondents not receiving training on compassionate leadership.

The following question (Figure 6) delved for a deeper understanding of respondents' confidence levels in displaying the principles of compassionate leadership.

View data: How confident are you in understanding and displaying the principles of compassionate leadership: attending, understanding, empathising, and helping.

Q8 - How confident are you in understanding and displaying the principles of compassionate leadership: attending, understanding, empathising, and helping.	Count	Number of responses
Strongly agree	20	20
Somewhat agree	23	23
Neither agree nor disagree	2	2

Figure 6. Respondents' Confidence Levels in Displaying the Compassionate Leadership Principles.

Interestingly, majority of the 45 respondents 'strongly agreed' and 'somewhat agreed', with only 2 respondents selecting 'neither agree nor disagree'. The findings provide reassurance that despite all respondents not receiving training, AHPs are acting accordingly to their professional and personal values, which supports the findings of Christiansen et al. (2015).

The survey collected data on how confident respondents feel displaying the principles of compassionate leadership within their workplace. Out of 45 respondents, 8 respondents always feel confident and 28 respondents most of the time feel confident. However, 6 respondents feel confident about half the time, 2 respondents sometimes feel confident, and 1 respondent never feels confident displaying the compassionate leadership principles. The findings illustrate the need for all staff to receive education around the concept, which is supported by the literature (Östergård et al., 2023; Ramachandran et al., 2023; Singh et al., 2018).

Respondents were asked;

"Do you feel that there are any barriers or challenges which may stop you from displaying these principles?"

56 responses (Appendix G) were thematically analysed, and the predominant themes are detailed in Figure 7.

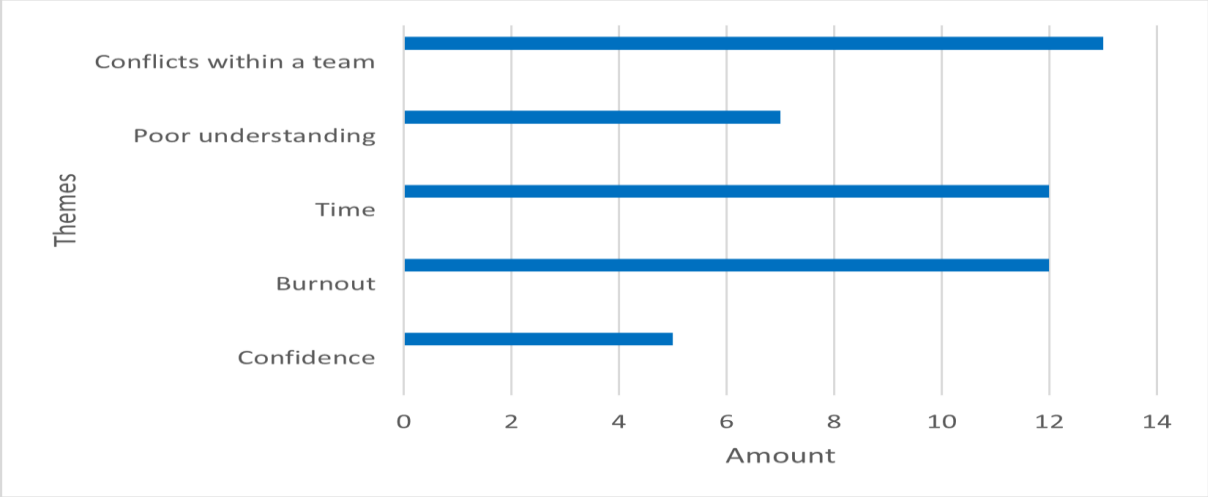


Figure 7. Key Themes Describing the Barriers Which May Stop AHPs Display the Principles of Compassionate Leadership.

The 55 responses have highlighted the harsh reality of working within healthcare. Respondents have given honest feedback and there is a pressing need for organisational change. The four main themes emerged are conflicts within a team, time, burnout, and a poor understanding. Table 8 illustrates quotations for each five themes.

Table 8. Key Themes Describing the Barriers to Compliance With Compassionate Leadership.

Theme	Comment	Quotation
Confidence	5 out of 56 respondents lack confidence to display the principles.	• "Confidence is a massive barrier for me." • "Some environments it can be difficult to communicate opinions." • "Team dynamics. Feeling we may be judged in the team. Feeling your voice is not heard."
Burnout	12 out of 56 respondents felt burnout is a barrier to displaying the principles.	• "Have previously experienced stress / burnout which has impacted relationships or the way I have communicated with others." • "Mentally exhausted and feel I am fighting fires most of the time at work." • "Personality clashes, frustration at systems, exhaustion. Pressures in personal life."
Time	12 out of 56 respondents felt that there is a lack of time, resulting in compassionate leadership not being prioritised.	• "Time, demands." • "Time, short staffing, unrealistic expectations from staff." • "Time and proximity to the team members, sometimes teams call doesn't do it. Excessive paperwork."
Poor understanding	7 out of 56 respondents felt staff's lack of understanding is a barrier. Education is needed for all staff to have the same baseline knowledge.	• "Others knowledge / perception of compassion." • "Would be good to receive training on compassionate leadership." • "People who don't have the same leadership style or have an understanding."
Conflicts within a team	13 out of 56 respondents felt this conflict within a team is a barrier to displaying the principles of compassionate leadership.	• "Personality clashes, frustration at systems, exhaustion. Pressures in personal life." • "Sometimes it may be difficult if there are conflicts within the team." • "Challenging staff and may not demonstrate compassionate leadership themselves."

The findings in Table 8 can be related to existing literature. Yates and Samuel (2019) believe burnout can cause staff to make errors, posing safety concerns and work-related absences. Christiansen et al. (2015) found that compassionate leadership is inhibited by a lack of time, fatigue and working long hours without adequate breaks. Moreover, Christiansen et al. (2015) found compassionate leadership can be difficult to provide with individuals who are challenging. In support of this, Östergård et al. (2023) findings illustrate that compassionate leadership can address these inhibitors and can possibly address burnout and enhance work well-being. However, Östergård et al. (2023) recognise that staff must have confidence in their teams and staff need to feel supported. Conclusions can be made that despite if there was a shift towards a culture of compassionate leadership, there may be other pressing factors which need addressing within the organisation. The literature must be considered as Evans (2022) strongly believes the power of using compassionate leadership to deliver real change, is unclear, whilst Östergård et al. (2023) believes compliance to compassionate leadership will not bring sustainable and authentic culture change.

Respondents were asked;

"What do you think needs to improve to allow staff to confidently display or exhibit the principles of compassion in their day-to-day work?". There were 56 responses to this question (Appendix H) and several themes emerged. Figure 8 shows those emerged most frequently.

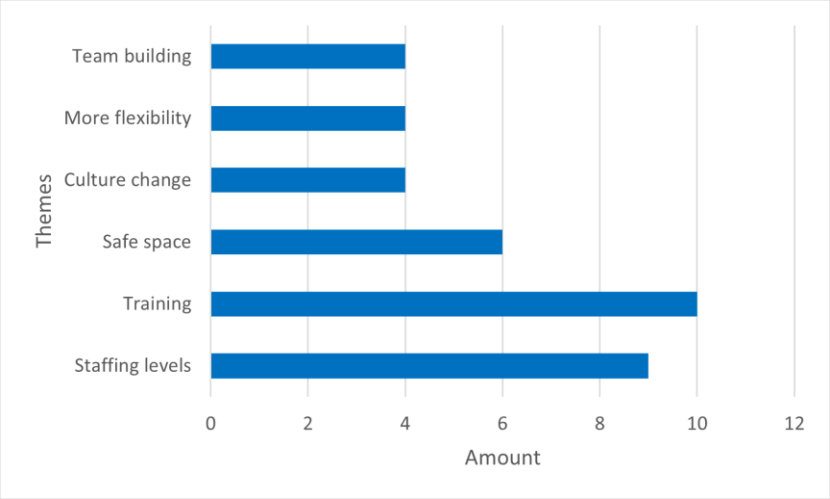


Figure 8. AHPs Perceptions on Improvements to Exhibit Compassionate Leadership.

The top three themes that emerged as seen in Figure 8 were staffing levels, training, and providing a safe space for staff.

9 respondents described 'staffing levels' as a key challenge, one respondent stated:

> "Increase of staffing numbers to decrease stress and pressure".

10 respondents mentioned 'training' and one stated:

"Staff need training on compassionate leadership."

Interestingly, 6 respondents commented on creating 'safe spaces' as a need for change and one stated:

> "Listening to everyone's voice and understanding, everyone is an individual and will require different levels of compassion due to pressures within their workforce but also at home. Creating a safe place where individuals are able to voice their concerns and feelings and not worry about come back or isolation. Just allowing other members that support is there and there is an 'open door' at any time, from members to leaders."

The findings illustrate that despite there being a common understanding of the concept of compassionate leadership, there appears to be significant barriers which are inhibiting AHPs working in cancer rehabilitation to apply the principles within their workplace. At present the researcher is led to believe that the organisation has improvements that can be made to better support the service.

Relationships Between Staff and Management

The researcher delved deeper to explore the dynamics between staff and management and asked the respondents to rate the following statements (Figure 9):

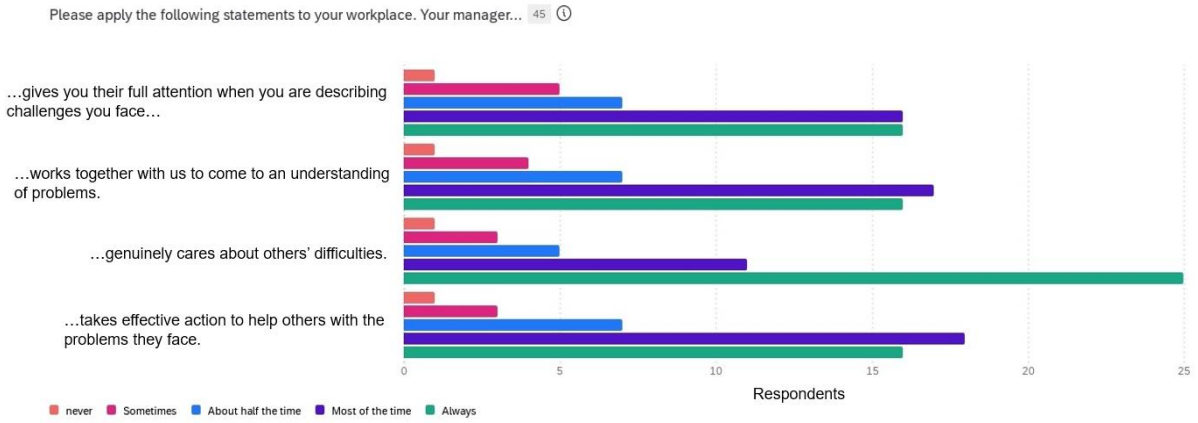


Figure 9. Relations Between Staff Members and the Management Team.

35 responses were analysed, and Table 9 below shows the four themes that were populated from Figure 9.

Table 9. Themes From the Manager Statements and Staffs' Opinions.

Theme	Results	Comment
Lack of undivided attention	32 respondents felt that their manager 'always' or 'most of the time' gives their full attention when they are describing challenges they face. 12 respondents felt that this only happens 'about half the time' or 'sometimes'. 1 felt that this 'never' happens.	Lack of compassionate leadership seen from management.
Lack of coproduction	33 respondents felt that their manager 'most of the time' or 'always' work together to come to an understanding of problems. 11 respondents felt that this only happens 'about half the time' or 'sometimes'. 1 felt that this 'never' happens.	Not fully adhering to the principles of compassionate leadership.
Well-being of staff	36 respondents felt their manager 'most of the time' or 'always' genuinely cares about others' difficulties. 8 respondents felt that this only happens 'about half the time' or 'sometimes'. 1 felt that this 'never' happens.	Reoccurring theme.
Management engagement	34 respondents felt their manager 'most of the time' or 'always' takes effective action to help others with their problems. 10 respondents felt that this only happens 'about half the time' or 'sometimes'. 1 felt that this 'never' happens.	Supervision may be with senior staff and not management.

Upon examining Table 9, on average 32-36 out of 45 respondents rated highly of their manager and selected 'most of the time' or 'always' for each of the four statements. Despite this, there is still a third of staff who have a negative opinion towards management. The major issue identified by the respondents could be concluded as a lack of compassionate leadership shown by management. Management should be leading by example and there is a pressing need for education within the organisation to develop their effectiveness (Singh et al., 2018; Östergård et al., 2023; Ramachandran et al., 2023). Evans (2022) found that compassionate leadership results in improved patient outcomes and develops positivity within the workplace. This is supported by Christiansen et al. (2015) who believe leaders that act as positive role models, have effective working relationships that aid compassionate practice. Moreover, Christiansen et al. (2015) believe leaders that are emotionally intelligent, can foster staff resilience and promote relationships that are compassionate. The well-being of others is a reoccurring theme across the findings, and the evidence-base suggests that compassionate leadership can truly enhance organisational productivity and performance (Ramachandran et al., 2023). Although, the studies emphasis the need of working in collaboration, and unfortunately a theme highlighted above was a lack of coproduction within the workplace.

The Psychological Safety of Staff

Respondents were asked to complete a measure of strain or burnout. The below statement (Figure 10) was provided to respondents to help with their understanding of why these questions were being asked.

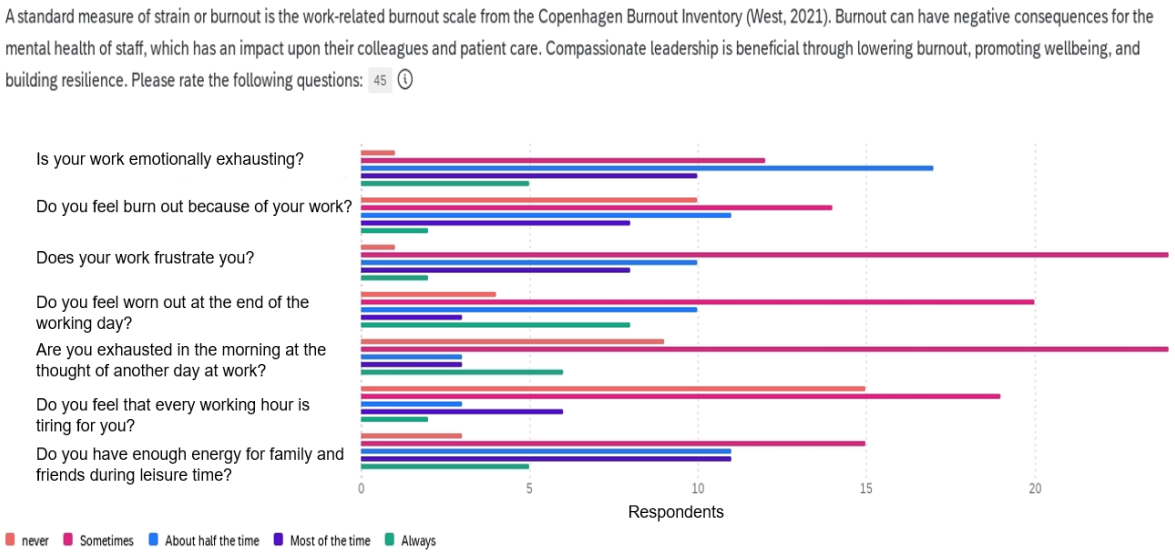


Figure 10. Work-related Burnout Scale.

The findings in Figure 10 are alarming. The researcher analysed the responses further and seven themes emerged which can be seen in Table 10 below.

Table 10. Themes From the Completed Work-related Burnout Scale.

Theme	Results	Comment
Emotionally exhausted	15 respondents felt that their work is 'always' or 'most of the time' emotionally exhausting. 29 respondents felt that this happens 'about half the time' or 'sometimes'. 1 felt that this 'never' happens.	Staff well-being is of concern.
Well-being of staff	10 respondents 'most of the time' or 'always' feel burnt out because of their work. 25 respondents feel that this only happens 'about half the time' or 'sometimes'. 10 felt that this 'never' happens.	Staff are over-worked and unable to cope with their workload. Well-being of others is a consistent theme.
Frustration	10 respondents 'most of the time' or 'always' feel their work frustrates them. 34 respondents feel that this only happens 'about half the time' or 'sometimes'. 1 'never' feels that this happens.	Lack of support and resources in the workplace.
Fatigue	11 respondents feel 'most of the time' or 'always' worn out at the end of a working day. 30 respondents feel that this only happens 'about half the time' or 'sometimes'. 4 felt that this 'never' happens.	Staff are stretch to capacity.
Reluctancy to start work	9 respondents feel 'most of the time' or 'always' exhausted in the morning at the thought of another day at work. 27 respondents feel that this only happens 'about half the time' or 'sometimes'. 9 feel that this 'never' happens.	Psychological safety of staff is a concern.
Exhaustion at work	8 respondents feel 'most of the time' or 'always' that every working hour is tiring. 22 respondents feel that this only happens 'about half the time' or 'sometimes'. 15 feel that this 'never' happens.	Heightened pressure and strain.
Reduced social battery	16 respondents feel 'most of the time' or 'always' they have enough energy for friends and family outside of working hours. 26 respondents feel that this only happens 'about half the time' or 'sometimes'. 3 felt that this 'never' happens.	Poor balance of occupations.

In summary, Table 10 portrays that AHPs are finding the pressures of working in healthcare challenging. It's interesting to note how many respondents feel that their work is emotionally exhausting each day. The findings reflect how much healthcare requires compassionate leadership to better support staff, and ultimately the findings suggest that perhaps AHPs have a limited understanding around the concept. The evidence-base suggests that compassionate leadership can possibly address burnout and enhance work well-being and work environments (Östergård et al., 2023). Themes have evolved that staff have reluctancy to start work, feel burnt out and frustrated with their day-to-day work. The psychological safety of staff is of great concern and the lack of support which is found in the workplace. It is believed that compassionate leadership may be the solution to address the pain, suffering and toxicity found in the workplace (Ramachandran et al., 2023). Staffs' well-being must be made a priority, and the findings above illustrate how action for change is required and the purpose of this study is to create an environment where staff can flourish, work to their best potential, and openly communicate. However, Christiansen et al. (2015) and Östergård et al. (2023) argue compassionate leadership can be inhibited by fatigue, and fatigue is a common theme within the findings which may impose a challenge to overcome.

Perceptions on Leadership Within the Organisation

Respondents were asked to rate the following statements (Figure 11) surrounding their organisation.

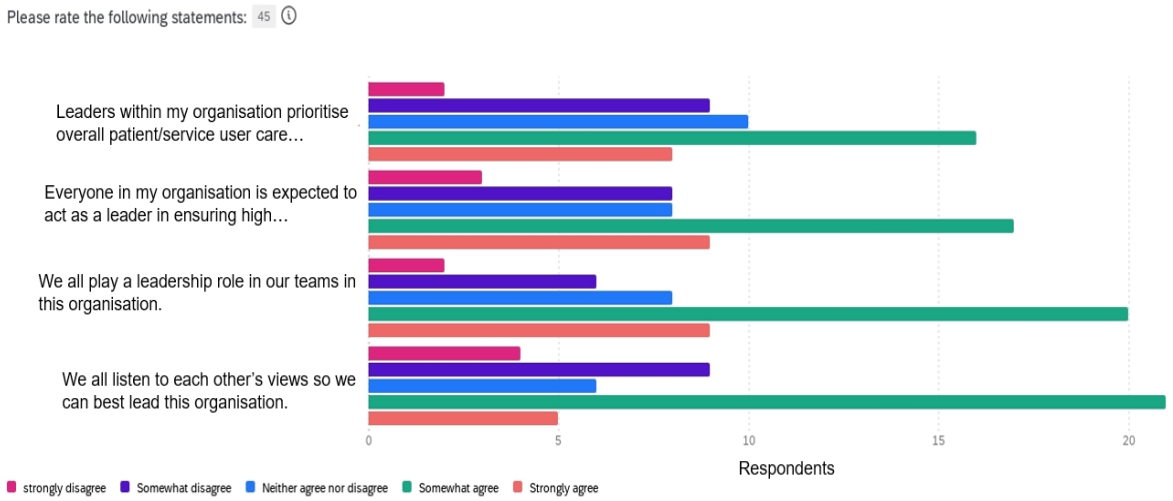


Figure 11. Perceptions of Leadership Within the Organisation.

Figure 11 demonstrates 45 responses for each 4 statements. The responses were examined further, and four themes emerged which can be seen in Table 11 below.

Table 11. Themes From AHPs Perceptions of Leadership Within the Organisation.

Theme	Results	Comment
Patient care	24 respondents 'strongly agree' and 'somewhat agree' that leaders within the organisation prioritise overall patient care. 19 respondents 'neither agree nor disagree' and 'somewhat disagree'. 2 'strongly disagree'.	Health Board values need re-instating within the workplace.
Competence	16 respondents 'strongly agree' and 'somewhat agree' that all staff are expected to act as a leader. 16 respondents 'neither agree nor disagree' and 'somewhat disagree'. 3 'strongly disagree'.	Staff need to revisit roles and responsibilities, and Health Board values.
Collective leadership	29 respondents 'strongly agree' and 'somewhat agree' that all staff play a leadership role within their teams. 14 respondents 'neither agree nor disagree' and 'somewhat disagree'. 2 'strongly disagree'.	Better communication within teams may support with this.
Well-being of staff	26 respondents 'strongly agree' and 'somewhat agree' that all staff listen to each other's views so they can best lead the organisation. 15 respondents 'neither agree nor disagree' and 'somewhat disagree'. 4 'strongly disagree'.	Reoccurring theme.

As seen in Table 11, Four themes emerged, and the well-being of staff has been a recurring theme of debate across all areas of questioning. 29 respondents 'strongly agree' and 'somewhat agree' that all staff play a leadership role. This suggests that overall, there is collective leadership found within teams. Although, 2 respondents 'strongly disagree' and 14 'neither agree nor disagree'. It could be said that better communication amongst staff may support with this concern. Ultimately, improved leadership would support with all four emerging themes, and the evidence-base suggests that compassionate leadership has similar behaviour abilities to other leadership styles, although the leadership style emphasises compassion

(Östergård et al., 2023). Singh et al. (2018) would argue compassion can be taught, and Östergård et al. (2023) strongly believes compassionate leadership would support the work well-being of staff, which has been the main finding throughout this study. Within the themes of patient care and competence, there are concerning numbers of staff who believe leaders aren't prioritising patient care, and that not all staff are expected to act as a leader. In summary, to aid patient care and ensure competence within the area of practice, all staff and leaders must revisit the roles and responsibilities of their position and revisit the Health Board values. Although, it could be said that respondents' viewpoints may not necessarily reflect other staffs' opinions, as other research has suggested in their findings (Christiansen et al., 2015).

Discussion

The following section will answer the guiding research question and discover the contribution of this study to the current academic knowledge in this area.

The objectives for this study can be seen in section 1.4. The researcher completed primary research, which provides a substantial amount of validity to the study. The study identified that 37 respondents had awareness of the concept of compassionate leadership, however only 9 respondents had completed specific training around the concept, and this was found to benefit their practice. The researcher provided respondents with a definition of compassionate leadership written by West (2021). 1 respondent disagreed with the statement, and the survey could have been strengthened if there was a free textbox to ask for their views of why they disagreed with the definition. The study has found significant challenges and barriers that AHPs encounter in the workplace (Appendix G), and unfortunately this impacts staff in displaying the principles of compassionate leadership. The compassionate leadership training was found to support staffs' practice, therefore it could be argued that if many individuals are struggling within the workplace, why is compassionate leadership training not a mandatory requirement for staff to complete within the Health Board. If all staff were driven by compassion, healthcare would be in a stronger position to tackle burdened systems. The literature suggests that there is a pressing desire for education within organisations to develop their effectiveness (Singh et al., 2018; Östergård et al., 2023; Ramachandran et al., 2023), and the study has similarly found that there needs to be a development of a compassionate leadership course for all staff members to complete. Evans (2022) believes that compassionate leadership could play a substantial role in addressing the necessity for change in the NHS. It could be said that by creating a more compassionate workforce, it will adhere to a more sustainable, productive, and positive NHS.

The study found that a third of respondents had negative opinions towards management within their workplace. The study has found that the relationships between staff and management needs addressing, and assumptions can be made that this could be due to a lack of compassionate leadership within the workplace. However, further clarity is required to understand how much involvement staff have with management within their workplace. To compare with the literature, Evans (2022) argues that compassionate leadership results in positivity within the workplace and therefore increasing the knowledge and understanding of the concept, may be a solution to a less toxic and a more thriving workforce. This is supported by Ramachandran et al. (2023), who found compassionate leadership can enhance the productivity and performance of organisations.

In support of the HEIW and SCW (2020) vision, the well-being of others was a common theme across the findings. The literature suggests compassionate leadership can support with the well-being of staff (Östergård et al., 2023; Ramachandran et al., 2023), and compassionate leadership could be concluded as being able to support the psychological safety of staff and patients. However, the study found that there may be other factors that may inhibit organisational change, and to address the challenges found within the workplace, this may be outside the remit of embedding compassionate leadership. The study has suggested staff must revisit their roles and responsibilities of their position and familiarise with the values of the Health Board.

The number of respondents changed on each question within the survey. On reflection, interviews would have produced more depth of knowledge, and each question would have been answered to the best of their ability. However, the researcher recognises interviews are time consuming due to the transcript requirements and the researcher would have needed to pilot the interview questions with a sample of participants, and this process would have exceeded the researcher's timeframe. The researcher closed the survey on the 20th of August 2024 and began analysing the results. However, the researcher noticed

another respondent had submitted their answers the following day, and therefore the researcher had to repopulate the graphs. The researcher understands that this may be a negative of using Qualtrics software and this must be taken into consideration for future research.

Limitations of the Study

The researcher completed action research, and therefore the study lacks clarity and depth concerning the theoretical underpinnings. The number of respondents was limited to 57 due to time constraints. The researcher recognises this is a limitation of the research as the respondents' viewpoints may not necessarily display other AHPs perceptions, and this is a similar limitation with another academic research paper (Christiansen et al., 2015). The survey was not piloted due to time constraints, and the researcher was unable to clarify and tweak questions accordingly to reduce any potential ambiguity. The survey was only open for a two-week timeframe, and this gave respondents a limited time to complete. On reflection, the researcher would have preferred to allow a longer period, however this was out of the researchers control due to delays in obtaining ethical approval. This limitation could further be a detriment for any future research opportunities and therefore allowing adequate time for ethical approval is essential.

The study found respondents had the tendency to leave blank spaces on open-ended questions within the survey. It would have been beneficial for the researcher to complete semi-structured interviews and allow for a greater number of participants to complete the survey. With semi-structured interviews, participants are more likely to answer all questions asked. If time constraints were not an issue, the researcher would have obtained NHS ethics, and an alternative sampling method could have been used.

It is the researchers understanding that this is the first study to explore AHPs perceptions working within cancer rehabilitation and their understanding around the concept of compassionate leadership. The researcher focused on perceptions of AHPs working within Hywel Dda Health Board, and it would have been interesting to study perceptions of AHPs across Wales and England and the data could have been compared to identify any differences. Obtaining an English dimension to the study would have provided extra depth to the results and findings.

Conclusion

A simple answer to the research question is that extra education is perceived as essential to further drive forward a culture of compassionate leadership within the workplace. In summary, the study adds to the existing literature within a healthcare context and has provided a baseline understanding of a small cohort of the perceptions of AHPs working in cancer rehabilitation towards compassionate leadership within the workplace. However, further clarity is required on the perceptions around the concept of compassionate leadership and how organisations can best support the well-being of staff and patients.

Conclusions and Recommendations

Organisations must strive to create a collaborative, compassionate, and appreciative culture where all staff can be their best selves at work. The aim of the study was to explore the perceptions of AHPs working within cancer rehabilitation and to gain an understanding of whether staff are applying compassionate leadership within their workplace. The researcher has identified that the principles of compassionate leadership will support staff with creating an environment where individuals can flourish, work to their best potential, and openly communicate. The study was carried out using a mixed methods approach, underpinned by an interpretivist paradigm. Data was examined and thematic analysis was completed to analyse the data. Through thorough analyse, themes were identified which align with the objectives of this study. Existing research has been used to critically analyse the findings, and respondents' quotations have been included to provide a deeper understanding of their perspectives. The study believes that an education element is needed to support the psychological safety of staff and compassionate leadership training must be offered to all staff members as a mandatory basis.

Reflections

- The researcher underestimated how difficult obtaining ethical approval would be, which delayed data collection.
- The researcher used unfamiliar software and learning needs were identified with inputting and analysing the data.

- Despite closing the survey earlier than anticipated, the results were not compromised. Gaining completed responses was easier than expected. The researcher aimed for 30-40 participants, and the survey had a total of 57 respondents.
- The researcher underestimated the time needed to complete the report.

Future Research

The study had a total of 57 respondents and the findings are inconclusive. There is clear evidence for future research and the study will offer new opportunities for academic research.

- Research to be published on a more national level to explore what the challenges are amongst other NHS organisations.
- Complete a longitudinal study to provide greater depth and understanding within this field.

Conclusion

The limitations of this study have been addressed, and recommendations have been made for further study. For leadership to be distributed, there needs to be support for staff to assist with the delivery of the vision. The education element must be considered and more investment into staff training is needed to achieve the 2030 target set by HEIW and SCW (2020). There are significant workforce challenges at present, and the study has found significant concerns associated with the psychological safety of staff, and adopting change may be difficult. Therefore, all staff need training to help support a change in culture, which will in turn, have a positive impact on patient care.

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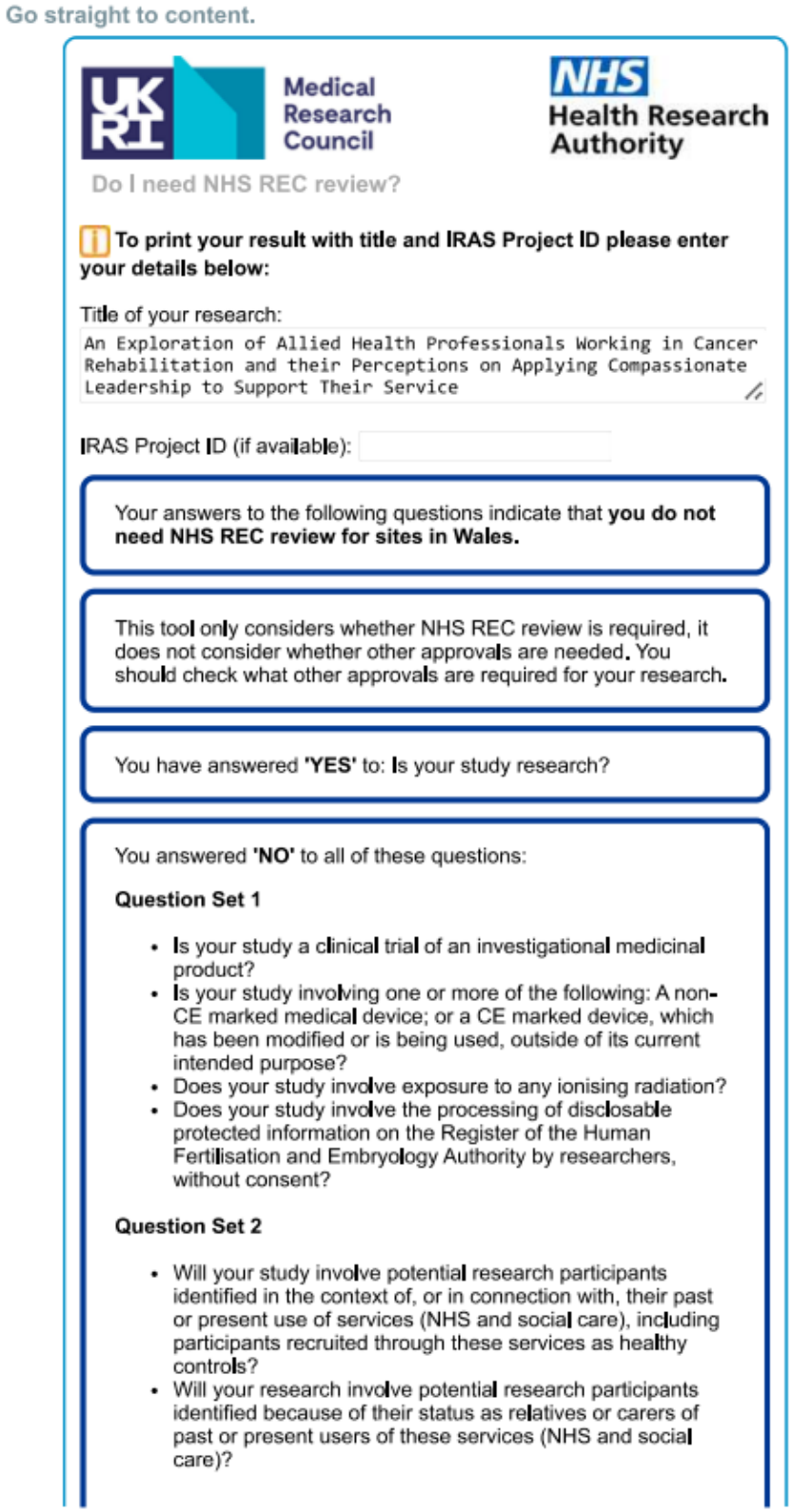
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Appendix A: Ethical Approval



Go straight to content.

Medical Research Council

NHS Health Research Authority

Do I need NHS REC review?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

An Exploration of Allied Health Professionals Working in Cancer Rehabilitation and their Perceptions on Applying Compassionate Leadership to Support Their Service

IRAS Project ID (if available):

Your answers to the following questions indicate that **you do not need NHS REC review for sites in Wales.**

This tool only considers whether NHS REC review is required, it does not consider whether other approvals are needed. You should check what other approvals are required for your research.

You have answered **'YES'** to: Is your study research?

You answered **'NO'** to all of these questions:

Question Set 1

- Is your study a clinical trial of an investigational medicinal product?
- Is your study involving one or more of the following: A non-CE marked medical device; or a CE marked device, which has been modified or is being used, outside of its current intended purpose?
- Does your study involve exposure to any ionising radiation?
- Does your study involve the processing of disclosable protected information on the Register of the Human Fertilisation and Embryology Authority by researchers, without consent?

Question Set 2

- Will your study involve potential research participants identified in the context of, or in connection with, their past or present use of services (NHS and social care), including participants recruited through these services as healthy controls?
- Will your research involve potential research participants identified because of their status as relatives or carers of past or present users of these services (NHS and social care)?

- Will your research involve prospective collection of tissue (i.e. any material consisting of or including human cells) from any past or present users of these services (NHS and social care), including participants recruited as healthy controls?
- Will your research involve prospective collection of information from any past or present users of these services (NHS and social care)?
- Will your research involve the use of previously collected tissue and/or information from which individual past or present users of these services (NHS and adult care), are likely to be identified by the researchers, either directly from that tissue or information, or from its combination with other tissue or information in, or likely to come into, their possession?
- Will your study involve patients (or tissue or information relating to patients) receiving treatment in an independent establishment in Wales or for the purposes of an independent establishment in Wales?

Question Set 3

- Will your research involve the storage of relevant material from the living or the deceased on premises in England, Wales or Northern Ireland without a storage licence from the Human Tissue Authority (HTA)?
- Will your research involve storage or use of relevant material from the living, collected on or after 1st September 2006, and the research is not within the terms of consent for research from the donors?
- Will your research involve the analysis of human DNA in cellular material (relevant material), collected on or after 1st September 2006, and this analysis is not within the terms of consent for research from the donor? And/or: Will your research involve the analysis of human DNA from materials that do not contain cells (for example: serum or processed bodily fluids such as plasma and semen) and this analysis is not within the terms of consent for research from the donor?

Question Set 4

- Will your research involve at any stage procedures (including use of identifiable tissue samples or personal information) involving adults who lack capacity to consent for themselves, including participants retained in study following the loss of capacity?
- Is your research health-related and involving offenders?
- Does your research involve xenotransplantation?
- Is your research a social care project funded by the Department of Health and Social Care (England)?
- Will the research involve processing confidential information of patients or service users outside of the care team without consent? And/ or: Does your research have Section 251 Support or will you be making an application to the Confidentiality Advisory Committee (CAG) for Section 251 Support?

If your research extends beyond **Wales** find out if you need NHS REC review by selecting the 'OTHER UK COUNTRIES' button below.

OTHER UK COUNTRIES

Swansea University
Prifysgol Abertawe

Approval Date: 08/08/2024

Research Ethics Approval Number: 5 2024 9824 9967

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	An Exploration of Allied Health Professions Working in Cancer Rehabilitation and their Perceptions on Applying Compassionate Leadership to Support Their Service
Applicant name	MISS HANNAH FYFIELD
Submitted by	MISS HANNAH FYFIELD /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/11888

The Health and Social Care ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Health and Social Care Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 08/08/2024

Rhif Cymeradwyo Moeseg Ymchwil:

Diolch am gwblhau cais moeseg ymchwil am gymeradwyaeth foesegol ac am gyflwyno'r ddogfennaeth ofynnol drwy'r platfform ar-lein.

Teitl y Prosiect	An Exploration of Allied Health Professions Working in Cancer Rehabilitation and their Perceptions on Applying Compassionate Leadership to Support Their Service
Enw'r Ymgeisydd	MISS HANNAH FYFIELD

Cyflwynwyd gan	MISS HANNAH FYFIELD /
Dolen i'r ffurflen gais lawn	https://swansea.forms.ethicalreviewmanager.com/Project/Index/11888

Mae'r pwyllgor moeseg Health and Social Care wedi cymeradwyo'r cais moeseg ymchwil, yn amodol ar yr amodau a amlinellir isod:

Amodau cymeradwyo

1. Mae'r gymeradwyaeth yn seiliedig ar yr wybodaeth a roddir yn y cais, a gwneir y gwaith yn unol â hyn. Yr ymgeisydd sy'n gyfrifol am sicrhau bod yr holl reoliadau, polisïau a deddfau mewnol ac allanol perthnasol yn cael eu dilyn.

- Gall y prosiect hwn gael ei adolygu gan y pwyllgor o bryd i'w gilydd. Gellir atal neu ddirymu'r gymeradwyaeth ar unrhyw adeg os bydd yr amodau'n cael eu torri.
- Caiff unrhyw addasiadau sylweddol i'r cais a gymeradwywyd eu cyflwyno i'r pwyllgor moeseg cyn i'r fath newidiadau gael eu rhoi ar waith.

Amodau penodol ynghylch y cais hwn:

Barnwyd bod y cais yn risg Low i'r Brifysgol.

Dim amodau ychwanegol.

Datganiad o gydymffurfiaeth

Penodir y pwyllgor yn unol â'r trefniadau llywodraethu ar gyfer pwyllgorau moeseg ymchwil. Mae'n cydymffurfio â chanllawiau Ymchwil ac Arloesi yn y DU (UKRI) a'r concordat i gefnogi uniondeb ymchwil.

Cadeirydd Ymchwil a Moeseg, Health and Social Care

Prifysgol Abertawe.

Os oes gennych ymholiadau ynghylch yr hysbysiad hwn, yna mae croeso i chi gysylltu â gweinyddwr moeseg ymchwil eich cyfadran.

- Ar gyfer Gwyddoniaeth a Pheirianneg, e-bostiwch FSE-Ethics@abertawe.ac.uk

- Ar gyfer Meddygaeth, Iechyd a Gwyddor Bywyd, e-bostiwch FMHLS-Ethics@abertawe.ac.uk
- Ar gyfer y Dyniaethau a'r Gwyddorau Cymdeithasol, e-bostiwch FHSS-Ethics@abertawe.ac.uk

Appendix B: Participant Information Sheet

PARTICIPANT INFORMATION SHEET

An exploration of Allied Health Professions Working in Cancer Rehabilitation and their Perceptions on Applying Compassionate Leadership to Support Their Service

You are being invited to take part in some research. Before you decide to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?

This project collects the perceptions of allied health professions (AHPs) working in cancer rehabilitation to understand whether they are applying compassionate leadership to support with their service. This information can support the development of using compassionate leadership as a key driver to support with the wellbeing of others. It is said that delivering healthcare with kindness and compassion, makes a difference. The purpose of the study is to create an environment where colleagues can flourish, openly communicate, and work to their best potential.

To participate in this study, you must:

- Be an AHP working in the UK.
- Be an AHP who has provided rehabilitation to an individual with a high suspicion or confirmed diagnosis of cancer in the last 12 months.

Your participation in this study will include completing 1 questionnaire that will take less than 10 minutes to complete. Participation in the questionnaire is entirely voluntary and anonymous and responses will be treated with the utmost confidentiality. The information collected from you will not be possible to remove after you have submitted the questionnaire as we won't know which data belongs to you. The information gathered from the questionnaire will be analysed both quantitatively and qualitatively. The data collected will be used solely for academic purposes and submission of the research project will be September 2024. A copy of the published research can be provided upon request, see contact details below.

Who is carrying out the research?

Hannah Fyfield, a Clinical Lead Occupational Therapist who is a Swansea University student completing a PG Certification in Advanced Management (Applied Innovation).

What happens if I agree to take part?

For the questionnaire we ask that you complete all questions please and your answers will be anonymous. Within the questionnaire we ask you to rate and describe your understanding of compassionate leadership. We will gather your views surrounding the benefits, challenges, and barriers with applying compassionate leadership principles at your workplace. We will gather your opinions on using compassionate leadership to support the delivery of your service and the standards of care provided. Additionally, we will ask for some background information including your age range, sex, and any additional courses you've completed.

Are there any risks associated with taking part?

There are no risks associated with participation.

Data Protection and Confidentiality

Your data will be processed in accordance with the Data Protection Act 2018 and the UK General Data Protection Regulation (UK GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected computer file on a personal laptop that only I have access to. Your consent information will be kept with your responses. The consent is through a tick box on the online survey.

Please note that the data is being collected online, once the data has been submitted online you will be unable to withdraw your information.

What will happen to the information I provide?

An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable.*

Is participation voluntary and what if I wish to later withdraw?

Your participation is entirely voluntary – you do not have to participate if you do not want to. If you decide to participate, the information collected from you will not be possible to remove after you have submitted the questionnaire as we won't know which data belongs to you.

Data Protection Privacy Notice

The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data and can be contacted at the Vice Chancellors Office.

Your personal data will be processed for the purposes outlined in this information sheet. Standard ethical procedures will involve you providing your consent to participate in this study by completing a consent form which is an online tick box.

The legal basis that we will rely on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the Swansea University Research Ethics Committee.

The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

How long will your information be held?

Data will be preserved and accessible **for a minimum of 10 years after completion of the research**. Records from studies with major health, clinical, social, environmental or heritage importance, novel intervention, or studies which are on-going or controversial should be retained for at least 20 years after completion of the study. It may be appropriate to keep such study data permanently within the university, a national collection, or as required by the funder's data policy.

What are your rights?

You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer:-

University Compliance Officer (FOI/DP)

Vice-Chancellor's Office

Swansea University

Singleton Park

Swansea

SA2 8PP

Email: dataprotection@swansea.ac.uk

How to make a complaint

If you are unhappy with the way in which your personal data has been processed, you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied, then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -

Information Commissioner's Office,

Wycliffe House,

Water Lane,

Wilmslow,

Cheshire,

SK9 5AF

www.ico.org.uk

What if I have other questions?

If you have further questions about this study, please do not hesitate to contact us:

Hannah Fyfield

Clinical Lead Occupational Therapist

Email: 2269989@swansea.ac.uk

Dr Roderick Thomas

School of Management

Swansea University

Email: Roderick.A.Thomas@swansea.ac.uk

Appendix C: Consent Form

Participant Consent Form

Project title: An exploration of Allied Health Professions Working in Cancer Rehabilitation and their Perceptions on Applying Compassionate Leadership to Support Their Service

Name and Contact details of the principal researcher: Hannah Fyfield, 2269989@swansea.ac.uk

Name and Contact details of the supervisor: Roderick Thomas, Roderick.A.Thomas@swansea.ac.uk

1. I (the participant) confirm that I have read and understand the information sheet for the above study which is attached to this form.

2. I understand that my participation is voluntary. I understand that the information I provide is anonymous and once the questionnaire is submitted, I cannot withdraw my response.

3. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.

4. I understand that I am free to ask any questions at any time before and during the study.

5. I have been informed that the information I provide will be safeguarded.

6. I am happy for the information I provide to be used (anonymously) in academic papers and other formal research outputs.

7. I have been provided with a copy of the Participant Information Sheet.

8. I agree to the researchers processing my personal data in accordance with the aims of the study described in the Participant Information Sheet. I am aware that the questionnaire is anonymous.

If you agree with all statements listed above, click YES.

If you disagree with any of the statements above, click NO and you will be taken to the end of this survey.

This study is being conducted by Swansea University

Thank you for your participation in this study. Your help is very much appreciated.

Appendix D: Survey

1. How old are you?

<20

21-29

30-39

40-49

50-59

60-69

70+

2. Are you aware of the term 'compassionate leadership'?

Yes

No

3. How would you describe compassionate leadership?

Free text box

4. Have you completed any courses on compassionate leadership?

Yes

No

5. If answered yes, has this learning improved your practice?

Strongly Disagree, somewhat Disagree, neither agree nor disagree, Somewhat Agree, Strongly Agree

6. Compassionate leadership encompasses a focus on relationships, through listening carefully to understand, empathise with and support other people, enabling those to feel respected, valued, and cared for, so they can reach their best potential (Bailey & West, 2022).

Do you agree with this explanation?

Yes

No

7. How confident are you in understanding and displaying the principles of compassionate leadership?

Strongly Disagree, somewhat Disagree, neither agree nor disagree, somewhat Agree, Strongly Agree

8. Please apply the following statements to your workplace.

My manager…

…gives you their full attention when you are describing challenges you face.

Response rate:

Never, Sometimes, about half the time, most of the time, always

…works together with us to come to an understanding of problems.

Never, Sometimes, about half the time, most of the time, always

…genuinely cares about others' difficulties.

Never, Sometimes, about half the time, most of the time, always

…takes effective action to help others with the problems they face.

Never, Sometimes, about half the time, most of the time, always

9. A standard measure of strain or burnout is the work-related burnout scale from the Copenhagen Burnout Inventory (West, 2021).

Burnout can have negative consequences for the mental health of staff, which has an impact upon their colleagues and patient care. Compassionate leadership is beneficial through lowering burnout, promoting wellbeing, and building resilience.

Please rate the following questions:

Never, Sometimes, about half the time, most of the time, always

- Is your work emotionally exhausting?
- Do you feel burn out because of your work?
- Does your work frustrate you?
- Do you feel worn out at the end of the working day?
- Are you exhausted in the morning at the thought of another day at work?
- Do you feel that every working hour is tiring for you?
- Do you have enough energy for family and friends during leisure time?

10. Please rate the following statements:

Strongly Disagree, somewhat Disagree, neither agree nor disagree, Somewhat Agree, Strongly Agree

- Leaders within my organisation prioritise overall patient/service user care, not just their own work area.
- Everyone in my organisation is expected to act as a leader in ensuring high-quality care.
- We all play a leadership role in our teams in this organisation.
- We all listen to each other's views so we can best lead this organisation.

11. How confident do you feel displaying the principles of compassionate leadership in your workplace?

Never, sometimes, about half the time, most of the time, always

12. Do you feel that there are any barriers or challenges which may stop you from displaying these principles?

Free text box

13. What do you think needs to improve to allow staff to confidently display or exhibit the principles of compassion in their day-to-day work?

Free text box

Next page

If you are interested in learning more about compassionate leadership, please see:

https://nhswalesleadershipportal.heiw.wales/compassionate-leadership-hub

Email: heiw.gwella@wales.nhs.uk

References

Bailey, S., & West, M. (2022). What Is Compassionate leadership? The King's Fund. https://www.kingsfund.org.uk/insight-and-analysis/long-reads/what-is-compassionate-leadership NHS England. (2021).

West, M. A. (2021). Compassionate leadership: sustaining wisdom, humanity and presence in health and social care. The Swirling Leaf Press.

We thank you for your time spent taking this survey.

Your response has been recorded.

Appendix E: Debrief Form

Debriefing

An exploration of Allied Health Professions Working in Cancer Rehabilitation and their Perceptions on Applying Compassionate Leadership to Support Their Service Health Study

Over the past decade, there has been an increased interest and focus on the wellbeing of others. We know that staff are at an increased risk of developing exhaustion, and that they may be more at risk of developing burnout.

With the results of this survey, we hope to determine whether Allied Health Professions are at an increased risk of developing problems related to burnout and whether these are linked to any lack of compassionate leadership.

What can I do if I feel upset after completing the survey?

If you feel affected by some of issues addressed in the survey, then help is available.

If you need information on what support is available or wish to speak to someone about your wellbeing, please contact:

Psychological Wellbeing Service (Hywel Dda UHB – Generic Account)

wellbeing.hdd@wales.nhs.uk

01437 772527

Out of hours GP: 111

Samaritans:

https://www.samaritans.org/

T: 116 123

E: jo@samaritans.org

We thank you for participating in this research and hope that this information has helped to answer any questions that you might have had. If you would like to discuss any aspect of your participation further, please contact us on:

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Appendix F: Respondents' Views of Compassionate Leadership

1. A person or position of authority who implements an empathetic and understanding manner.
2. Higher bands being aware of their employees in a holistic way
3. Listening, calm, empathetic, supportive leadership. Positive impact on staff.
4. Supporting others through listening/ understanding to reach potential.
5. Inspire and influence people
6. Being a supportive and empathic leader and acting with kindness and compassion.
7. Leading by example when forming relationships and actively demonstrating compassion and understanding.
8. Blank entry
9. Blank entry
10. Understanding needs of staff members, to support their wellbeing and be aware of signs of stress and brunout.
11. Providing and showing leadership using core skills of compassion, kindness, empathy for all others. Including those you might formally lead as well as others who may come into contact with you in your professional world.
12. I think that with this form of leadership, the team members would feel like they're being heard and supported while also recognising they're human beings with mental/emotional needs. This would result in supporting or managing a team in a way that fosters autonomy, maximises people strengths and promotes professional growth in a learning style that works for each individual staff member.
13. Supporting people in a way that shows empathy and understanding to all individuals.
14. Blank entry
15. Blank entry
16. A focus on relationships, ensuring staff feel valued, respected and supported.
17. Compassionate Leadership is ensuring that staff from all backgrounds of society are treated equally which in effect will improve their wellbeing due to there being an empathetic approach to the individuals circumstances.
18. A manager that shows empathy to your colleagues and adapts to understanding their emotions as everyone is different. Ensuring you make your team feel valued, your kind, fair and treat everyone the same.
19. Delivering support with person specific needs in mind
20. Listening to others and having an understanding of what is going on for them (both professionally and personally). Being able to provide support and advice / guidance and empathy. Demonstating skills that encourage others to seek your support / trust. Making time for others informa/adhoc and formal so that there is always the opportunity and dpace to check in / share.
21. Understanding, empathising with supporting, enabling those to feel valued and respected
22. i
23. The ability to listen, empathise, valuing and respecting all allowing co production between individuals, teams and patients.
24. when you are in a role of looking out for a group of people when taking on a task or role that requires extra care an thought towards members of the team
25. Blank entry
26. Looking after and caring for staff and patients
27. Understanding and focusing on empathy and supporting other people
28. People are treated with kindness, people listen to others with fascination.
29. Being able to listen to someone. Showing empathy and understanding of a situation Supporting the individual in said situation Treating your team with respect, showing that you value them and care for them.
30. Listening to the patient to better understand what their goals and concerns are. Supporting them through all the stages of admission and acre, being compassionate and empathetic to their condition.

31. Focusing on achieving business outcomes while considering the well-being of the whole team.
32. Compassionate leadership is based upon 4 principles or 'actions' - listening, understanding, empathising and supporting. I feel that these actions embody the more 'human' elements of the workforce, and seeing the person behind the job role or number.
33. Blank entry
34. Build good relationship that involves focus, initiative, compassion and empathy ensuring members feel valued and appreciated to ensure they reach their best potential.
35. Where managers value you as a person, not just as a robot who does the work.
36. Using empathy and compassion to listen and work with your team/ area or lead on a project. Considerate of others as individuals and their needs. Considering the whole team.
37. Being kind and caring for each other.
38. A leader that listens carefully to individual's to understand, support and are empathetic to their concerns and support them to allow them to feel valued and respected. which ultimately builds a stronger team where they feel respected, valued and are cared for to enable them to reach their full potential and carry out their best work and work together as a team. Without this the opposite happens and bonds break within the team and which can ultimately lead to disengaged members and below standard work.
39. listening and supporting others so everyone feels valued and encouraged to reach their full potential at work.
40. Someone who is able to listen, be compassionate and empathise with others.
41. I presume its to lead people compassionately
42. To be aware of how other people and yourself are feeling in work and be mindful of this when communicating with people you lead. Checking in with how people are feeling.
43. Leadership that focuses on the relationships: being curious and compassionate, finding out what motivates staff and working with them rather than dictating to them.
44. Utilising the 4 key principles of attending, empathising, understanding and helping to get the most from others.
45. Leadership with a focus on relationship with staff: - Active listening - Empathy - Committed to providing support - Lead by example - Engage with people to find solutions
46. Focusing on the relationship between myself, staff and patients. Practicing active listening skills, emphasising, being non judgemental and supporting others to identify their needs and co produce goals to achieve their potential and what is important to them.
47. Leadership within a team that is understanding, promotes open, and honest communication, with a caring and personal approach.
48. Not sure
49. Leading with compassion, understanding and patience
50. Blank entry
51. Showing compassion with every contact with a person accessing health care or with other staff/stakeholders. It would be essential to offer this approach re communication and decision making at every level of health, therefore ensuring leadership opportunities for all workforce.
52. Not aware
53. It is when you focus on listening to, understanding, empathising and supporting someone in the hope they feel more valued and respected.
54. Blank entry
55. Supporting individuals within a team towards their care to patients and their wellbeing within work. Also to empathise and be respectful to what they tell me about their personal life or work issues.

Appendix G: Respondents' Views of the Barriers to Applying the Principles of Compassionate Leadership

1. No - I don't feel there should be space for barriers within this area. Even when times are stressful, these qualities should be at the core of what we do and how we behave.
2. Mentally exhausted and feel I am flighting fires most of the time at work
3. People who don't have the same leadership style or have an understanding.
4. Time, demands
5. Blank entry
6. Time, short staffing, unrealistic expectations from staff
7. compassionate fatigue.
8. Blank entry
9. Blank entry
10. Time and proximity to the team members, sometimes teams call doesnt do it. Excessive paperwork.
11. Blank entry
12. Personality clashes, frustration at systems, exhaustion. Pressures in personal life.
13. The whole team needs to adopt/deliver compassionate leadership skills in order for it to work, otherwise there may be frustrated staff who will seek out support from other team members who are in a senior position which creates a higher emotional/mental load for those staff who are delivering compassionate leadership. It also impacts on workload for the other team members.
14. Sometimes it may be difficult if there are conflicts within the team
15. Blank entry
16. Blank entry
17. Others knowledge / perception of compassion
18. Confidence is a massive barrier for me
19. Being over worked could result in not showing your team the compassionate leadership they require as you may not have enough time the prioritise their needs
20. Funding for my role
21. At time there are individuals who become frustrated when comapssionate leadership and the qualities / skills are demonstrated. Usually because they are not compassionate leaders themselves! Therefore, I have concealed the support and compassion shown to others. I'd never not provide it but just not always let others know that I have been approached for support.
22. N/a
23. u
24. Challenging staff and may not demonstrate compassionate leadership themselves.
25. lack of staffing means there is sometimes lone working and therefore less people to lead over. Being exhausted from working in an environment understaffed and over pressured leaves less energy to display the principles to the highest standard
26. Blank entry
27. No
28. Some environments it can be difficult to communicate opinions
29. Challenging members within the team.
30. Lack of time Lack of resources Pressures of caseload/admin
31. Yes, time restraints
32. Bands of individuals
33. I feel that is a somewhat misunderstanding of compassionate leadership within Teams, with the older generations seeing this as a 'fluffy' topic. In order to ensure a culture change across organisations, there needs to be an awareness and recognition of compassionate leadership. Despite compassionate leadership being recognised as an enabler to allowing individuals to do their best work, there is a

culture within the NHS that we need to break. Staff are feeling emotionally, physically and mentally exhausted, and being expected to do more with less resource. Compassionate leadership and its principles allow the human elements to become more visible, enabling employees to show vulnerabilities and weakness. Failing to see the person behind roles within the NHS will only contribute to ongoing distress and burnout which is currently being faced within all sectors of the health and social care profession.

34. Blank entry
35. Would be good to receive training on compassionate leadership
36. Time pressures. Remote working, making it harder to check-in with colleagues/challenging to build relationships.
37. Team dynamics. Feeling we may be judged in the team. Feeling your voice is not heard.
38. Challenging staff members who don't display the principles of compassionate leadership.
39. yes
40. Time constraints - not enough staff to cover the wide remit of the team, the amount of referrals which are complex, the amount of paperwork involved.
41. Some days may be more pressured than others due to difficult behaviour from others. This may then affect your own mood/frustrations while trying to stay calm and in control.
42. time constraints
43. Have previously experienced stress / burnout which has impacted relationships or the way I have communicated with others.
44. Blank entry
45. Others understanding of compassionate leadership in the organisation. I feel the organisation still very much has a culture of blame and the majority of senior leaders across all professions do not truly demonstrate compassion in their leadership.
46. Poor staffing levels and high caseload pressures combined with staff needing high levels of support makes it challenging to do the bare minimum sometimes. I worry that I don't have time to be kind and manage the basic requirements of my job. Burnout from feeling unable to fulfil my role properly and to a level I am proud of adds to feelings of burnout from poor pay, high pressures from caseload, public and senior management.
47. Waiting lists Staff attitude and unwillingness to change Travel within the health board Inappropriate accommodation for staff to work from Difficulties with car parking facilities Manual handling risks
48. lack of time, short staffed, lack of space to be able to have private conversations, ,y own fatigue.
49. Frustration with the workplace politics
50. No
51. Blank entry
52. Financial burden on health board appears to result in a more hierarchical/didactic approach to moving health forward. This will stifle innovation and increase anxiety/fear in some which may result in loss of staffing, or lack of enjoyment in the role they work in. It is essential to be reminded of the health boards own values and our personal values to drive successful compassionate leadership and improved healthcare for all.
53. No
54. Personal burnout.
55. Blank entry
56. Resources available within the trust, having efficient space for wellbeing, time within working hours to have time for wellbeing and speak effectively to staff- time constraints. Pressures within workplace and other teams.

Appendix H: Respondents' Views on What Needs to Improve for Compliance Towards Compassionate Leadership

1. Increase of staffing numbers to decrease stress and pressure
2. Appreciate there is not enough staff to meet the workload and therefore no time to do anything apart from fight fires.
3. Generally I think we all display these principles but there can be factors which can impact a persons ability to exibit these principles such as extra work pressures e.g staffing etc. I think training for staff and management will go a long way.
4. Realistic capacity
5. Blank entry
6. Training, increase in the trust valuing their staff overall.
7. Service leads to lead by example, promotion of it on posters around office, acts of kindness.
8. Blank entry
9. Blank entry
10. Strong role modeling from above in all teams/ areas. Increased awareness and training.
11. Blank entry
12. Sometimes compassion can be seen as being 'too soft' not strong enough; being taken advantage of, waste of time in a busy environment. Culture needs to change on how it is viewed
13. I think we need to recognise different staff's level of working and how they respond to having support. Some people like more informal support and will seek out support from management when needed, whereas others benefit from daily structured check ins. In the end it's about management adapting to the team's needs, staff can be considerate of the management's style of working, but I think that it works better if the management are flexible in responding the team's needs. It helps if there is less hierarchy among the Bands so that a Band 6 for example can support in compassionate leadership along with the Band 7/8 in daily practice.
14. More clear definition of roles and understanding each others roles
15. Blank entry
16. Blank entry
17. Education and reiteration of principles on a regular basis Senior leaders within organisation require training
18. Improving own Self Confidence and not being afraid to have an opinion
19. Build on team relationships so colleagues can speak more openly and comfortably
20. Longer term planning
21. We should be encouraged to display the principles and not fear what others may say or their frustrations. I encourage staff to take the time to be compasisonate leaders and provide support to one another - taking care of one another is as important as looking after the patients and their families/carers.
22. N/a
23. u
24. More open conversations
25. more staff. Less pressure on meeting the same demands with less staff. More well-being activities. More Annual leave or mental health leave as working in oncology can catch you at the most random times that you can't plan for. More time to give to other members of staff to help them through their struggles and be compassionate
26. Blank entry
27. Better senior leaders with more transparency
28. Anonymous feedback/suggestions, and employers setting objectives for staff, leading by example
29. Staff need training on compassionate leadership.
30. More staff - this would greatly reduce the time pressures that we currently face Resources - rooms where we can support each other in a private space, easily accessible/timely guidance
31. Have more joy in their work and be better appreciated as a member of staff.

32. Listen to everyone in the team
33. As above, there needs to be a culture change to allow people the freedom to speak openly and honestly; including to colleagues and line management. With leaders continuing to see compassionate leadership as 'fluffy' or 'soft', there will be a stigma associated with managers and departments who rightly embody these principles to get the most out of their teams. It's disappointing (and not surprising) to see that the NHS continues to be led by people who fail to see that being a good person will improve outcomes for patients and the overall workforce. Baffling.
34. Blank entry
35. Training and practice
36. unsure
37. Work on team dynamics. More training in the area. More understanding.
38. Training on compassionate leadership.
39. listening to everyone's voice and understanding, everyone is an individual and will require different levels of compassion due to pressures within their workforce but also at home. Creating a safe place where individuals are able to voice their concerns and feelings and not worry about come back or isolation. Just allowing other members that support is there and there is an 'open door' at anytime, from members to leaders
40. More staff to cover the wide remit of the team, the amount of referrals which are complex, the amount of paperwork involved.
41. Team work/building. If there is a strong team then each person can help each other work to their strengths building each others confidence, and in turn other team members become more confident in how to exercise compassion.
42. Having allocated time
43. Training Supervision
44. Wider culture of compassionate leadership is needed. this can start with senior leaders in the organisation demonstrating and 'giving permission' for service leads to practice this.
45. - Improved staffing (with appropriate skill mix - replacing registered staff with unregister support staff makes the work much more challenging) - Improved work-life balance (i.e. a meaningful pay rise so that free time can be enjoyed)
46. Staff to understand they have to adapt new working ways to address the changing climate within the NHS. Management to listen to staff and their problems with inappropriate accommodation and the difficulty to park within locations. To address manual handling risks to reduce the risk of injury to staff.
47. team building exercises/activities encouraged on a departmental level. Better staffing to allow more time for staff to display and exhibit the principles of compassion.
48. Transparency in the workplace
49. Think they need to be putting compassionate people in these roles
50. Blank entry
51. Blank entry
52. Strong confirmation of the this approach from CEO and other directors so it is filtered down to every level. A commitment to communicating this ethos the health board.
53. Training
54. Lesser work load.
55. Blank entry
56. Giving staff time to process events in work by providing effecivent space to have 'break' with no disturbances. Staff learning that their wellbeing is as important than work pressures.

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About the Author

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A GP's view on cluster-based pharmacist-led post hospital discharge medication reconciliation

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Abstract:

This study evaluates the perceptions of GPs from the Cardiff Southwest cluster on the implementation of the cluster-based pharmacist-led post-hospital discharge medication reconciliation (CB-PL-PHDMR) model. The model was introduced to improve patient safety, reduce medication-related errors, and address the inefficiencies of current discharge processes, particularly the quality of discharge advice letters (DALs). Using a mixed-methods approach that involved a combination of quantitative and qualitative data from GP surveys, the study aimed to assess the impact of the new model on various aspects, including GP workload, patient safety, service efficiency, and communication between primary and secondary care. Findings show that the new model has been overwhelmingly positively received by GPs, with significant improvements in workload reduction, service efficiency, and patient safety. Key benefits include better collaboration between healthcare professionals, reduced errors in discharge medication, and overall satisfaction with the service. GPs also identified the model's potential scalability, though they raised concerns about potential barriers, such as financial constraints and workforce shortages. The study concludes that the CB-PL-PHDMR model provides substantial value and recommends its adoption across other clusters, with ongoing refinement based on feedback and evaluation.

Keywords: Medication reconciliation, Post-hospital discharge, Pharmacist-led intervention, General practitioners (GPs), Patient safety, Discharge advice letters (DALs), Primary care, Secondary care communication, Cluster-based healthcare, Mixed-methods evaluation, Service efficiency, Healthcare collaboration

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INTRODUCTION

The Cardiff Southwest GP cluster consists of nine GP practices, covering a patient population of 66,700, introduced an innovative cluster-based pharmacist-led post-hospital discharge medication reconciliation (CB-PL-PHDMR) model. The benefits of this model had previously been described in my Bevan Exemplar (BE) project report titled "Improving Patient Safety and Reducing Medicine Waste Through Cluster-Based Pharmacist-Led Post-Hospital Discharge Medication Reconciliation" (Wong, I. 2024). The new model aims to address the challenges and inefficiencies in the current post-hospital discharge medication reconciliation process, to enhance patient safety and reduce medicine waste. As the primary users of the service, GPs are in a key position to review the model's effectiveness.

This study employs a mixed-methods approach, combining quantitative and qualitative data collected via an online questionnaire, focusing on GPs' experiences and views to provide a comprehensive analysis. The participants in this study are GPs who have interacted with the cluster-based pharmacist-led PHDMR model.

The study explores GPs' views on the issues encountered in primary care related to the current post-hospital discharge process, particularly focusing on the transfer of care from secondary to primary care and the quality, reliability, and safety of the discharge advice letters. Additionally, this study also examines the perspectives of GPs on how the new model impacts various aspects of post-hospital discharge care in terms of improving patient safety, reducing GP workload, and enhancing overall service efficiency.

The report is structured into four sections:

1. Identification of Project Requirements: Describes the project's nature, tasks, and relevance to the organization.
2. Main Analysis: Presents the study's findings, supported by data, critical discussions, and illustrated with tables and figures.
3. Conclusion: Summarizes the key findings of the study.
4. Key Recommendations: Outlines the main outcomes, emphasizing innovation, transformation, and value, and how they address the client's needs.

IDENTIFICATION OF PROJECT REQUIREMENTS

The core focus of this project is the implementation and evaluation of a CB-PL-PHDMR model, particularly in addressing the significant issues associated with Discharge Advice Letters (DALs). These letters often contain critical information regarding a patient's medication regimen post-hospital discharge, but their accuracy and clarity are frequently compromised. Issues with DALs, such as incomplete, conflicting, and unclear information, have been identified as major contributors to increased patient harm, a higher risk of hospital readmission, and an augmented workload for healthcare professionals, particularly General Practitioners (GPs).

The challenges span the primary and secondary care interface, exacerbating the problem of effective communication and coordination between different levels of care. As a result, patient safety is often compromised, with errors in medication management leading to adverse drug events (ADEs) and potential rehospitalizations. A systematic review by Meyer-Massetti et al. (2018) highlighted the prevalence of medication discrepancies during transitions of care, pointing to the lack of a streamlined process as a key factor contributing to inequity in patient care. Without a consistent, reliable system for managing medication reconciliation post-discharge, the variability in care quality across different settings remains a significant concern.

The discrepancies and errors in DALs present a challenge at the interface between primary and secondary care. The lack of a streamlined process for managing these transitions contributes to inequities in patient care and compromises patient safety. According to González‐López et al. (2021), medication errors detected in primary healthcare settings after hospital discharge are a significant concern, with implications for both patient safety and the efficiency of care delivery. Similarly, Alqenae et al. (2020) highlighted the prevalence of medication-related harm following hospital discharge, emphasizing the need for improved processes and collaboration between healthcare sectors to mitigate these risks.

The following conceptual framework was developed using the information gathered from the BE project.

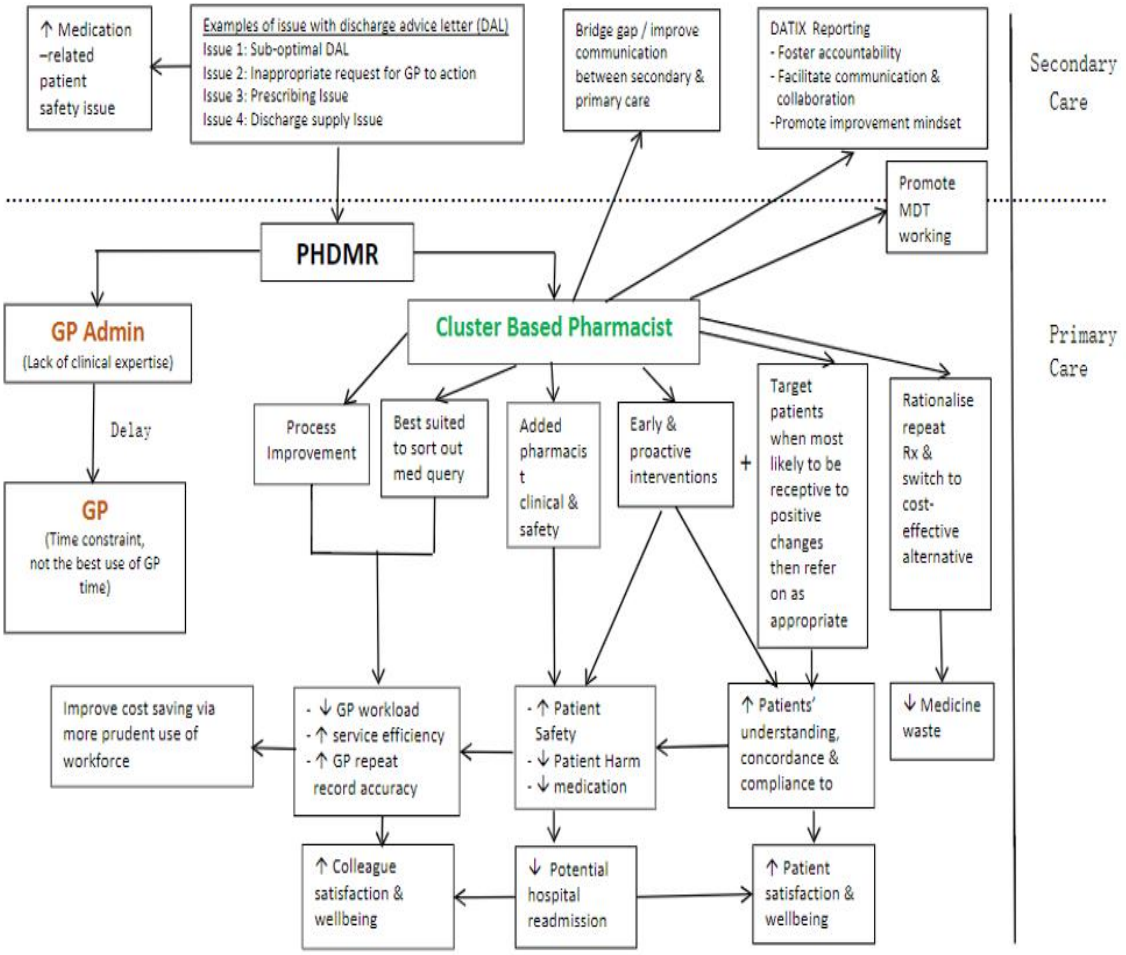


Figure 1: Conceptual Framework.

The task at the heart of this study is to examine GP's view on the effectiveness of the newly implemented CB-PL-PHDMR model in addressing the issues related to the current post-hospital discharge process. The questionnaire (see Appendix 1) was designed with aims to gather insights from GPs about the current challenges, particularly focusing on the quality, safety, and reliability of DALs and the impact of IT systems on primary care. It is also focused on evaluating the impact of this model on key factors such as GP workload, patient safety, service efficiency, and the overall satisfaction and well-being of both healthcare providers and patients.

The following domains were addressed in the questionnaire:

- **Issues in primary care:** This section explores the problems GPs face with the current discharge process. Understanding these issues is critical to identifying the areas where the CB-PL-PHDMR model can provide significant improvements.
- **Impact of the CB-PL-PHDMR model:** This domain assesses how the new model affects patient safety, GP workload, medication-related errors, service efficiency, and overall patient and colleague satisfaction. It directly evaluates the GPs' view on the model's effectiveness in meeting its goals.
- **Comparison with previous model:** GPs are asked to compare the new model with prior processes, focusing on improvements in process efficiency, identification and resolution of medication errors, and proactive patient interventions. This helps validate the added value of the new approach.
- **Scalability and adoption:** Questions on the potential spread of the new model to other clusters assess its perceived scalability and the factors that could drive or hinder its wider adoption.

- **Personal and practice Benefits:** This domain explores the personal impact of the model on GPs and how the model benefits their practice. Understanding these benefits helps highlight the direct positive impact on GPs, reinforcing the model's value beyond patient outcomes.
- **Suggestions for improvement:** GPs are invited to provide feedback on how the service could be enhanced in the next 3 to 5 years. This domain captures innovative ideas, identifies areas requiring adjustment, and highlights potential barriers to success. It supports ongoing service refinement by incorporating frontline feedback.

The questionnaire was administered using the Qualtrics tool, allowing for structured data collection from GPs. This online platform which included both closed and open-ended questions enabled the survey to capture data efficiently, providing a comprehensive view of GPs' experiences.

The data analysis conducted via Qualtrics helped to systematically evaluate the effectiveness of the model, revealing insights into the challenges faced in the current discharge process and the potential benefits of the new approach. The combination of quantitative and qualitative data provided a holistic understanding of the model's impact, informing targeted recommendations for enhancing patient safety, reducing GP workload, and improving service efficiency.

In terms of quantitative data analysis, responses were analysed using descriptive and inferential statistics, primarily through Likert scale ratings that quantified GPs' opinions on key aspects such as workload reduction, patient safety enhancement, and service efficiency improvements. Statistical analysis helped identify patterns and measure the overall impact of the new model.

For qualitative data analysis, open-ended responses were analysed using thematic analysis to extract key themes, insights, and sentiments expressed by GPs. This approach provided context to the quantitative findings, highlighting specific areas of concern or benefit that may not be fully captured through closed-ended questions.

Involving GPs in the evaluation process is crucial as it builds the service collaboratively with those who directly use it. Their insights not only validate the effectiveness of the model but also contribute to refining and optimizing the service, ensuring it meets the needs of both healthcare providers and patients effectively.

By evaluating personal and professional benefits and collecting suggestions for improvement, the organisation can ensure that the service remains user-centric and continues to support GPs in delivering high-quality care. This approach fosters a culture of continuous improvement, which is critical to maintaining high standards of care and adapting to the evolving needs of the healthcare environment. The findings from this study will also be crucial in guiding future improvements and ensuring that the CB-PL-PHDMR model delivers its intended benefits, driving the model's success and encouraging broader adoption across other GP clusters.

MAIN ANALYSIS

Main findings

The questionnaires were sent out to 45 GPs and received 34 responses. They were the GPs from Cardiff Southwest cluster who had used the CB-PL-PHDMR service provided by the integrated care hub.

Question 2: Please share your views on issues encountered in primary care with regards to the current post hospital discharge process

Table 1: GP's view on issues encountered in primary care with regards to the current post hospital discharge process.

Sub-questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Handover of care has deteriorated since COVID-19.	0%	18%	32%	38%	12%
2. Discharge advice letters containing missing information is increasing.	0%	9%	21%	44%	26%
3. Discharge advice letters containing conflicting information is increasing.	0%	21%	35%	32%	12%
4. Discharge advice letters containing unclear information is rising.	0%	12%	15%	56%	17%
5. Patients are increasingly exposed to medication related safety issues as a result of incomplete discharge advice letters.	0%	9%	20%	50%	21%
6. IT systems between secondary and primary care cause a lot of errors and rework of data in primary care.	0%	12%	24%	26%	38%
7. We are seeing an increase in missing discharge advice letters.	0%	11%	15%	50%	24%
8. We are seeing an increase in late discharge advice letters	0%	9%	15%	47%	29%
9. Inappropriate requests from secondary care for GP to action is increasing.	3%	6%	9%	35%	47%
10. Discharge advice letter with prescribing errors / issues is increasing.	0%	11%	56%	24%	9%
11. Incidents where patients were not provided with the right medication post hospital discharge is increasing.	0%	10%	50%	30%	10%
12. Incidents where patients were not given the right advice post hospital discharge are increasing.	0%	15%	45%	31%	9%
13. I fear there will be a major post discharge medication related safety incident in the next year.	0%	9%	35%	44%	12%

Table 1 shows that 50% of respondents believe that care handovers have worsened since COVID-19, reflecting broader pandemic-related challenges. There is increasing concern over missing (74%) and late (76%) Discharge Advice Letters (DALs). Additionally, 71% noted DALs with missing information, 44% with conflicting information, and 73% with unclear details. 40% reported incidents of patients not receiving correct advice or medications. 71% agreed that patients are at greater medication risk post-discharge, and 56% fear a major medication error in the next year. IT inefficiencies (64%) and inappropriate secondary care requests (82%) indicate a need for better primary-secondary care coordination.

Question 3: In your experience, the implementation of the new model of cluster-based pharmacist-led post hospital discharge medication reconciliation (PHDMR) has helped to:

Table 2: GP's view on how the new model had helped them to achieve various key outcomes.

Sub-questions	Strongly Disagree	Disagree	I don't know	Agree	Strongly Agree
1.reduce GP/primary care workload	0%	0%	0%	38%	62%
2.enhance patient safety	0%	0%	0%	35%	65%
3.reduce actual harm to patients	0%	0%	12%	29%	59%
4.reduce potential readmission to hospital	0%	7%	14%	47%	32%
5.improve service efficiency	0%	0%	0%	38%	62%
6.reduce medication-related errors/issues	0%	0%	0%	35%	65%
7.improve accuracy of GP repeat prescription record	0%	0%	3%	36%	61%
8.improve cost savings through reduced medicines wastage	0%	0%	23%	38%	38%
9.improve cost savings through more prudent use of workforce	0%	0%	16%	42%	42%
10.improve patients' understanding, concordance and compliance to medication	0%	0%	9%	41%	53%
11.improve patient satisfaction/wellbeing	0%	0%	12%	38%	50%
12.promote MDT working	0%	0%	6%	41%	53%
13.improve colleague satisfaction/wellbeing	0%	0%	3%	50%	47%
14.bridge the gap / improve communication between secondary and primary care	0%	0%	6%	41%	53%

As described in table 2, 100% of respondents agreed or strongly agreed that CB-PL-PHDMR has helped reduce the workload of GP/primary care, improves service efficiency, reduces medication-related errors and enhances patient safety.

More than 90% of respondents agreed or strongly agreed that CB-PL-PHDMR improves the accuracy of GP repeat prescriptions (97%), patients' understanding and compliance with medication (94%), and colleague satisfaction and wellbeing (97%). The study also showed that 94% of respondents agreed or strongly agreed that the model promotes multidisciplinary team (MDT) working and helps bridge the communication gap between secondary and primary care.

Majority of respondents agreed or strongly agreed that the PHDMR reduces actual harm to patients (88%), and potential hospital readmission (79%), in addition to improving patient satisfaction and wellbeing (88%)

This finding underscores the GP's belief on the PHDMR's role in actively preventing harm, highlighting its importance in safeguarding patient health post-discharge. It not only improves patient outcomes but also alleviates the burden on hospital resources, enhancing overall healthcare efficiency. They also believed that the reflection on the positive patient experience with the CB-PL-PHDMR are crucial for patient-centred care.

More than 75% of respondents agreed or strongly agreed that CB-PL-PHDMR improves cost savings through better workforce utilization (84%) and reducing medicines wastage (76%).

Question 4: Please share your views on the effects of cluster-based pharmacist-led PHDMR (compared to the previous model).

Table 3: GP's view on effects of new model compared to previous model.

Sub-questions	Much worse	The same	Much Better
1.Process improvement (eg. reduced delays, lack of clinical expertise among surgery admin staff, time constraints faced by GP)	0%	0%	100%
2.Identification & resolution of prescribing errors/queries & discharge medication supply issues.	3%	0%	97%
3.GP administrative workload	0%	6%	94%
4.Redirection of patients to pharmacists to resolve medication issues	3%	12%	85%
5.Early and proactive interventions (contacting the patient vs reacting to patient-detected issues)	0%	6%	94%
6.Early and proactive intervention to improve health and well-being of patients	0%	12%	88%
7.Wasted time and effort	0%	15%	85%
8.Medicine waste	0%	18%	82%
9.Accountability and collaboration by using DATIX.	0%	32%	68%
10.Culture of continuous improvement	0%	12%	88%

In comparison to the previous model, 100% of respondents felt that the new model was much better in showing process improvements, such as reduced delays and addressing time constraints among GP and surgery admin staff. 97% of respondents noted much better resolution of prescribing errors and discharge medication supply issues and 94% agreed that the new model is much better in reducing GP administrative workload. 82% reported significant improvement in reducing medicine waste.

85% viewed the new model is much better in the redirection of patients to pharmacists for medication issues, while 12% felt it was the same. 94% of respondents agreed the new model was much better in providing early and proactive interventions to contact patients before issues arise. 88% of respondents felt proactive intervention improved patient health and wellbeing.

88% felt there was a much better culture of continuous improvement with the new model. 68% found accountability and collaboration improvements through DATIX to be much better.

Despite the overwhelmingly positive feedback, one respondent reported that the identification and resolution of prescribing errors and discharge medication supply issues had become "Much Worse." This single negative response may point to isolated cases of poor implementation, increased errors, or specific instances where the intended improvements have backfired. Sub-question 4 also received a small number of "Much Worse" responses, suggesting that in some instances, redirecting patients to pharmacists did not work as intended.

Question 5: Please share your views on the potential spread and scale of the cluster-based pharmacist-led PHDMR model.

Table 4: GP's view on potential spread and scale of the new model.

Sub-question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The new model could have benefits for other clusters and GP practices.	0%	0%	0%	15%	85%

100% of respondents agreed or strongly agreed that the new model could have benefits for other clusters and GP practices. This finding suggests strong confidence in the model's scalability and potential for broader application, indicating that stakeholders believe it can provide significant benefits beyond its current scope. The absence of any negative or neutral feedback highlights a clear consensus on the model's effectiveness and potential value in similar settings.

Question 6: In your own words, what would be the main 'selling point' to encourage uptake of the new model by another cluster?

Table 5. Key themes of main selling points.

Themes	Number of comments
Reduction in GP workload	14
Improved patient safety	12
Improved healthcare processes	7
Enhanced multidisciplinary team (MDT) collaboration	6
Positive impact on GP satisfaction	5
Patient-centric benefits	5
Economic benefits	4

The main selling points of the new CB-PL-PHDMR model, according to GPs' feedback, are summarised to the following themes as presented in table 5.

As shown in table 5, there were 14 comments on reduction in GP workload, which reflects the model's ability to streamline medication reconciliation and reducing GPs' administrative burden. Highlighted in 12 comments, the model improves patient safety through detailed scrutiny of discharge letters and medication changes, minimizing errors and ensuring safer medication management.

Improved healthcare processes, cited by 7 GPs, this theme includes benefits such as process standardization and effective follow-ups, resulting in more reliable and consistent patient care. 6 GPs reported enhanced MDT collaboration as the model encourages a team-based approach, where pharmacists play a key role in medication reconciliation, allowing GPs to focus on clinical care, utilizing the strengths of different healthcare professionals to ensure appropriate use of resources.

Other main selling points were also mentioned such as positive impact on GP satisfaction (5 comments on better job satisfaction and lower stress level), patient-centric benefits (5 comments on improved patient communication, understanding, and satisfaction) and economic benefits (4 comments on cost saving due to reduce readmission, more prudent way of working).

Question 7: What would be the barriers that would hinder uptake of the new model by another cluster?

The data collected in response to the question of barriers highlights several key challenges that might impede the implementation of the CB-PL-PHDMR model in other clusters. These barriers can be broadly categorized into financial concerns, workforce issues, and resistance to change or innovation. The primary barriers to the uptake of the new pharmacist-led medication reconciliation model by other clusters, as identified by respondents, can be grouped into the following categories:

1. Funding and Financial Concerns: Several participants raised concerns about funding, citing it as a potential barrier to the implementation of the model. Financial uncertainty, staffing costs, and sustainability of funding sources were mentioned frequently.
2. Staffing and Workforce Issues: Many respondents pointed to a shortage of staff and the challenge of recruiting trained pharmacists as significant hurdles. There were concerns over the time commitment required by pharmacists, whether this could be integrated into their existing duties or the need to reallocate pharmacists from other work (such as GMS).
3. Time Constraints and Resources: The amount of cluster pharmacy time required to conduct thorough reconciliation was also highlighted as a potential barrier. Limited time and resources within the pharmacy teams were seen as factors that could hinder implementation.
4. Uncertainty about the Service and Its Benefits: Some respondents expressed uncertainty regarding the service itself and its potential benefits. This included scepticism about how the model would work in practice and whether it would bring measurable improvements.
5. Resistance to Change and Innovation: Resistance to adopting new processes or innovations was another frequently mentioned barrier. Some respondents noted that GPs and healthcare teams might be reluctant to change their established workflows.
6. Concerns about GP Workload: There were concerns that GPs might view the new model as adding to their workload, especially if certain tasks (such as actioning hospital requests) are not streamlined appropriately. There is also fear of increased workload for GPs due to uncertainty around how responsibilities would be shifted.
7. Attitudes Toward Non-Medical Staff: The attitude of patients and staff toward non-medical personnel, such as pharmacists, was raised as a potential barrier. Some respondents felt that patients might not fully trust or accept care from non-medical professionals in the same way they do from doctors.
8. Lack of Understanding or Awareness: Some respondents indicated that a lack of understanding or awareness of the benefits of the cluster-based pharmacist-led PHDMR model could be a barrier. Ensuring clear communication of the value the model adds to patient safety and workflow efficiency is essential to overcome these doubts.

Questions 8: In your own words, how has the service benefitted your practice to date? | Question 9: In your own words, how have you personally benefitted from the new service?

Table 6: Key themes on how the new service had benefited the GP personally and their practice to date.

Themes	Number of comments
Reduction in doctors' workload and administrative burden	28
Improved patient safety	11
Enhanced medication reconciliation	13
Improved patient care	11

As shown in the table 6 above, a significant number of responses highlighted that the service is timesaving, helps reduce administrative tasks and the overall workload for GPs. The service was frequently praised for improving medication reconciliation processes, ensuring that patient medication records are accurate and up to date. Respondents also consistently noted that the service enhances patient safety by reducing errors and ensuring that prescriptions are issued timely and correctly.

There were mentions of overall improved efficiency in patient care, indicating that the service contributes positively to the workflow, allowing GPs to spend more time on direct patient care and focus on clinical duties. GP also valued pharmacist expertise input and the collaborative effort which led to quicker and more effective patient management.

These themes highlight the primary benefits of the service as perceived by the respondents, focusing on safety, workload reduction, and improved efficiency in healthcare settings.

Question 10: Do you have any suggestions on ways to improve the service in the next 3 to 5 years?

The responses to question 6 highlight several key themes:

- Enhanced Communication and Follow-up: Suggestions include better pre-discharge communication to reduce patient queries and follow-up calls to review medication changes.
- Improved Clinical Coding and Documentation: Emphasis on better coding of medication changes and thorough documentation of discharge advice letters in clinical records.
- Reducing Inappropriate Requests and Workload on GPs: Recommendations for systems to minimize inappropriate secondary care requests and for pharmacists to handle more tasks independently.

These themes reflect a focus on enhancing communication, refining administrative processes, reducing inappropriate workloads, to improve the service's effectiveness in the coming years.

Discussions

Issues in the current Post Hospital Discharge process

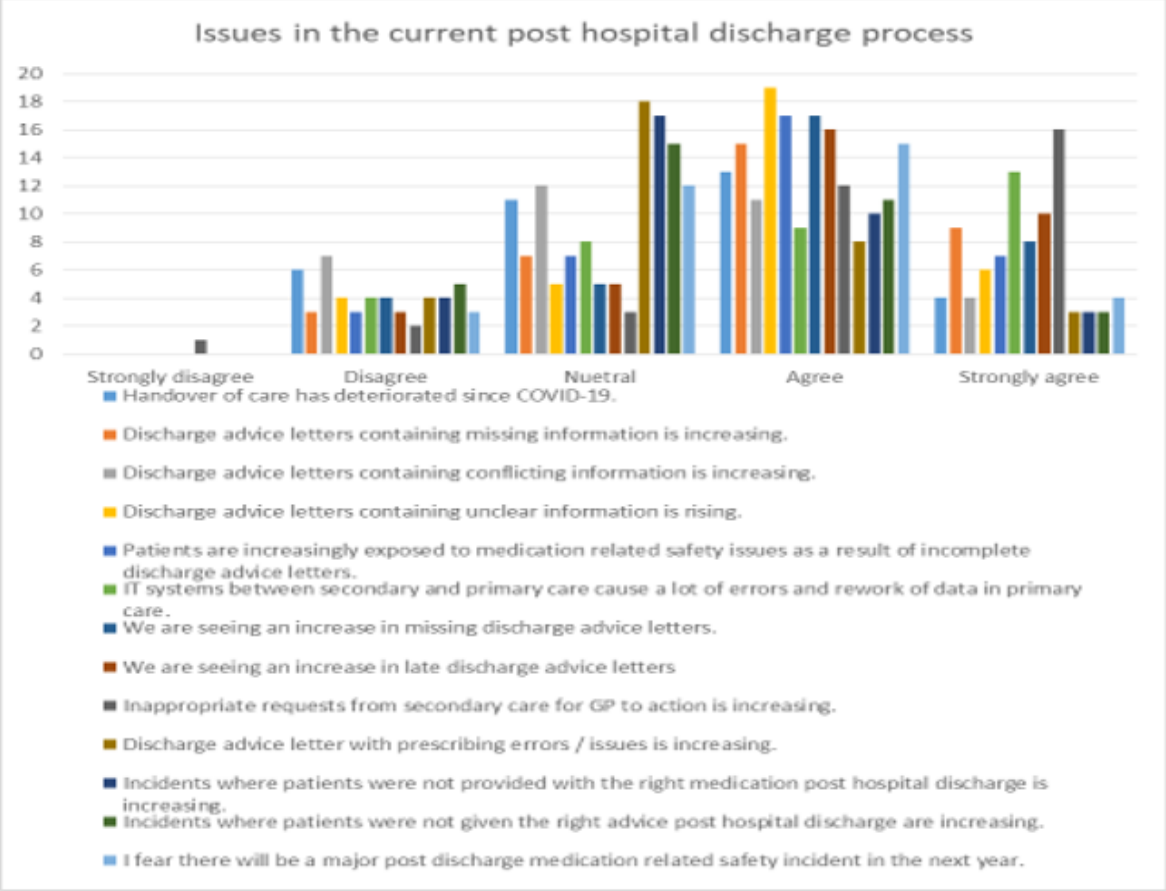


Figure 2: Responses distribution for all sub-questions in question 2.

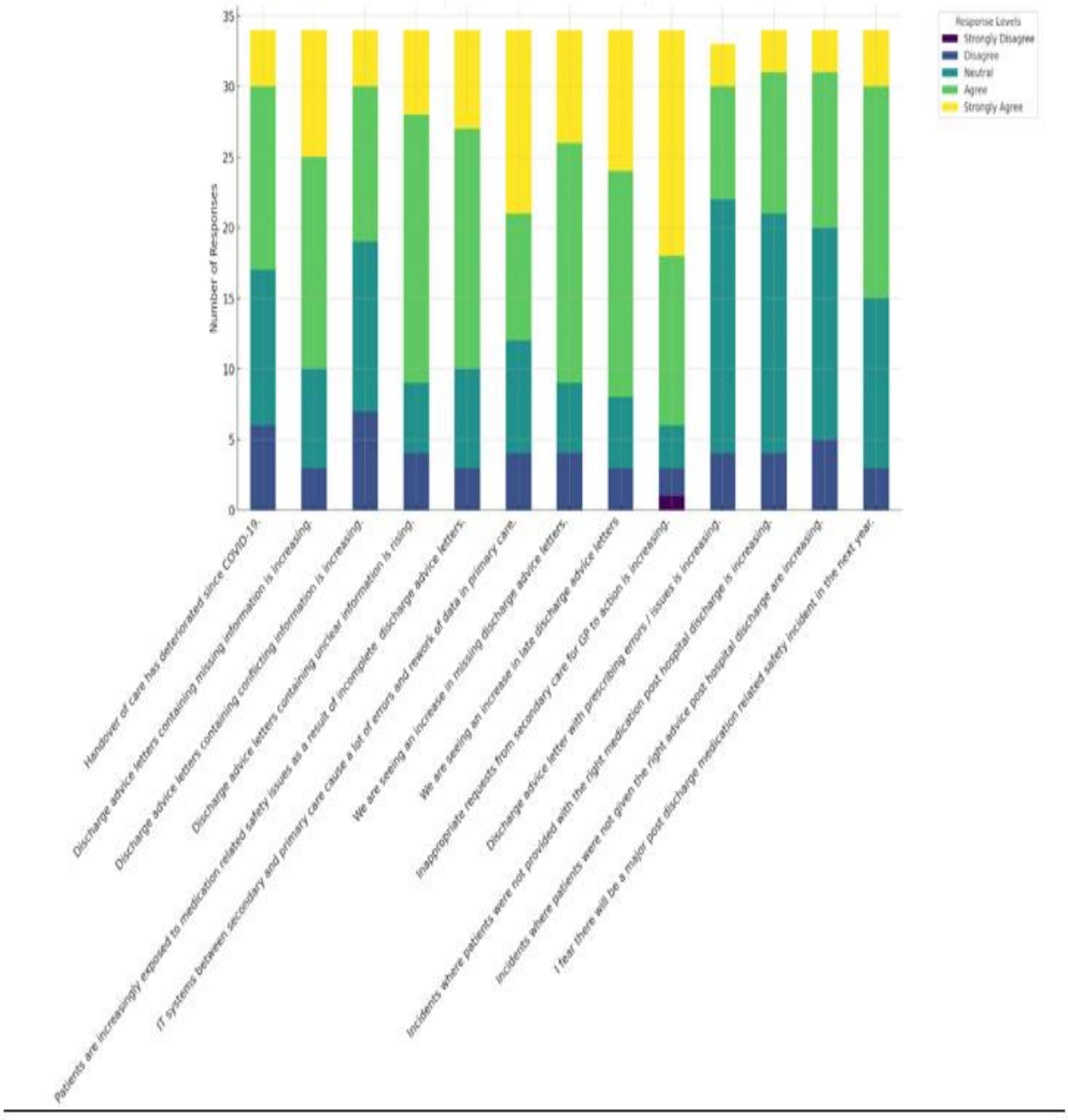


Figure 3: Responses distribution for all sub-questions in question 2 in stacked bar chart format.

The bar chart (table 7) and stacked bar chart (table 8) provided earlier visually represents the response distribution for all survey questions, clearly highlighting the percentages of agreement and disagreement among respondents. This visual evidence supports the critical discussion and provides a clear summary of the main areas of concern identified in the survey.

GPs play a pivotal role in the continuity of care for patients transitioning from hospital to home. According to Ziaeian et al. (2012), GPs are often tasked with interpreting and clarifying details of medication changes, which can be challenging if the discharge information is ambiguous or incomplete.

There is consensus among GPs about the increase in missing and late DALs and their poor quality. This correlates to the findings of my BE project showing 1 in 14 DALs had issues, primarily due to sub-optimal information. These deficiencies in DALs can compromise patient care and safety. Missing, conflicting, or

unclear information may lead to confusion and poor communication, increasing the risk of medication errors and adverse events post-discharge. Studies indicate up to 23% of discharge summaries contain inaccuracies or omissions, impacting patient outcomes (Hernandez et al., 2018; Kripalani et al., 2007).

GPs expressed high concern about the increasing risk of medication-related safety issues post-discharge, fearing a major incident within the next year. Research shows that 15% of hospital readmissions are due to medication errors post-discharge (Kripalani et al., 2007). This aligns with the BE project findings, where medication supply and prescribing errors were among the top issues in DALs. Ensuring accurate and complete medication reconciliation during discharge is crucial to reducing these risks.

Surprisingly, over 50% of GPs were neutral or disagreed that incidents related to incorrect medication and advice post-discharge are increasing. This may be due to the previous process where PHDMR was managed by surgery administration and focused only on updating repeat medication records, without proactively contacting patients to discuss changes, leaving potential issues unaddressed.

Despite the disruptions caused by COVID-19, including increased workloads and staff shortages (World Health Organization, 2020), half of the GPs were neutral or disagreed that care handovers had deteriorated. Similarly, many GPs did not see an increase in prescribing errors in discharge letters, suggesting these issues may have been persistent even before the pandemic.

Healthcare IT system interoperability remains a major challenge, as highlighted by the strong consensus on the impact of IT discrepancies causing errors and additional work. Bates et al. (2018) found that nearly 70% of errors in care transitions are due to poor electronic health records integration. Incompatible IT systems hinder communication between primary and secondary care, resulting in data errors and delays. The BE project highlighted that missing DALs often remain in draft form on the Welsh Clinical Portal, inaccessible to most GPs, and must be finalized and uploaded to the CAV portal to be viewed.

Inappropriate requests from secondary care for GP action as highlighted in the BE project, such as prescribing hospital-only medications or following up on secondary care tests, indicate a role/responsibility misalignment. While most GPs agreed, this was also the only issue to receive a 'strongly disagree' response, highlighting a potential need for additional training. GPs may benefit from increased awareness of resources like the All-Wales Communication Standards (Welsh Government 2018) and Cardiff and Vale Drug Formulary (CVUHB 2024). Clear role delineation is essential to avoid inappropriate referrals and ensure effective patient follow-up care (Smith et al., 2019).

Implementation and Benefits of the CB-PL-PHDMR

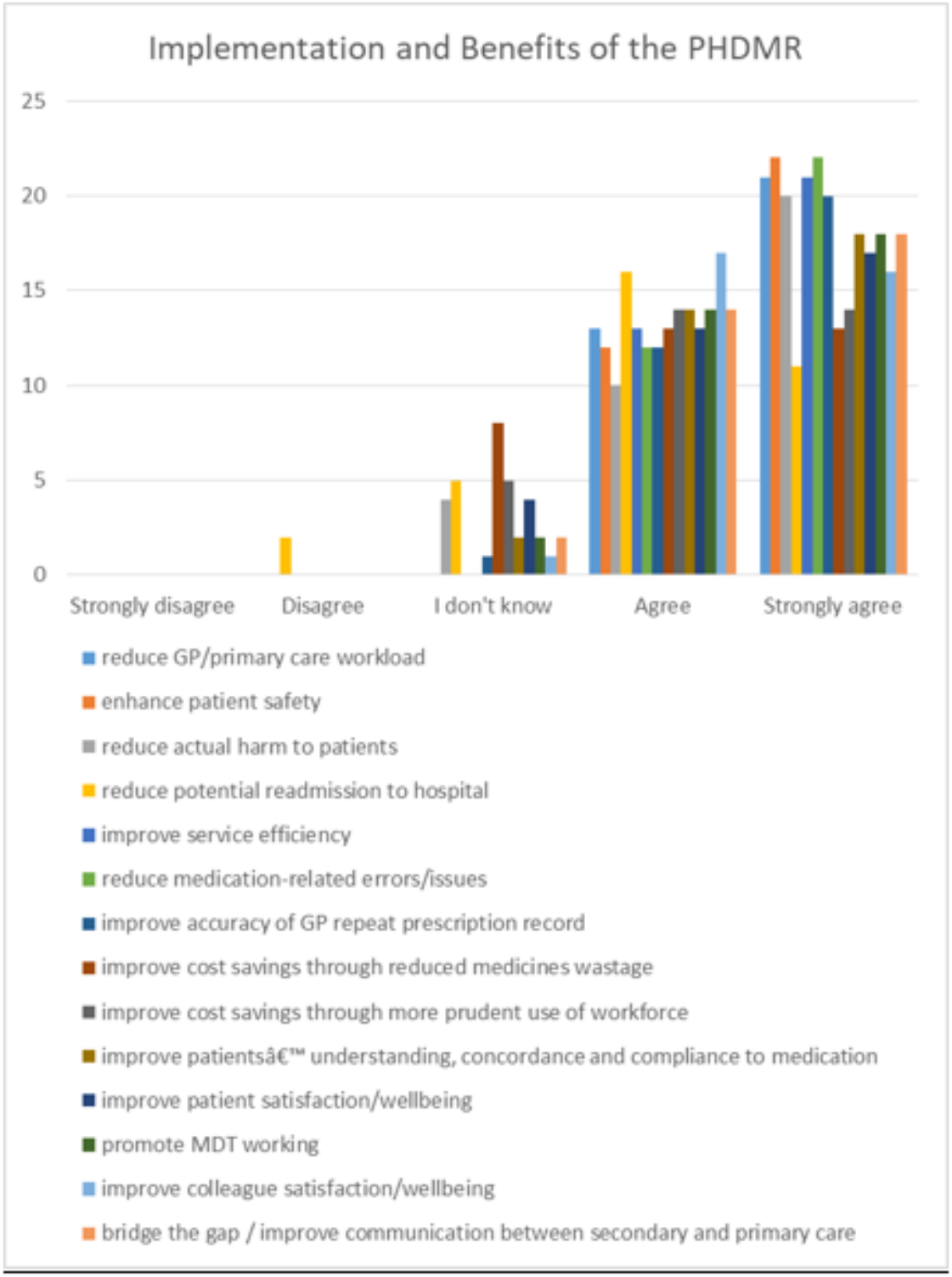


Figure 4: Responses distribution for all sub-questions in question 3.

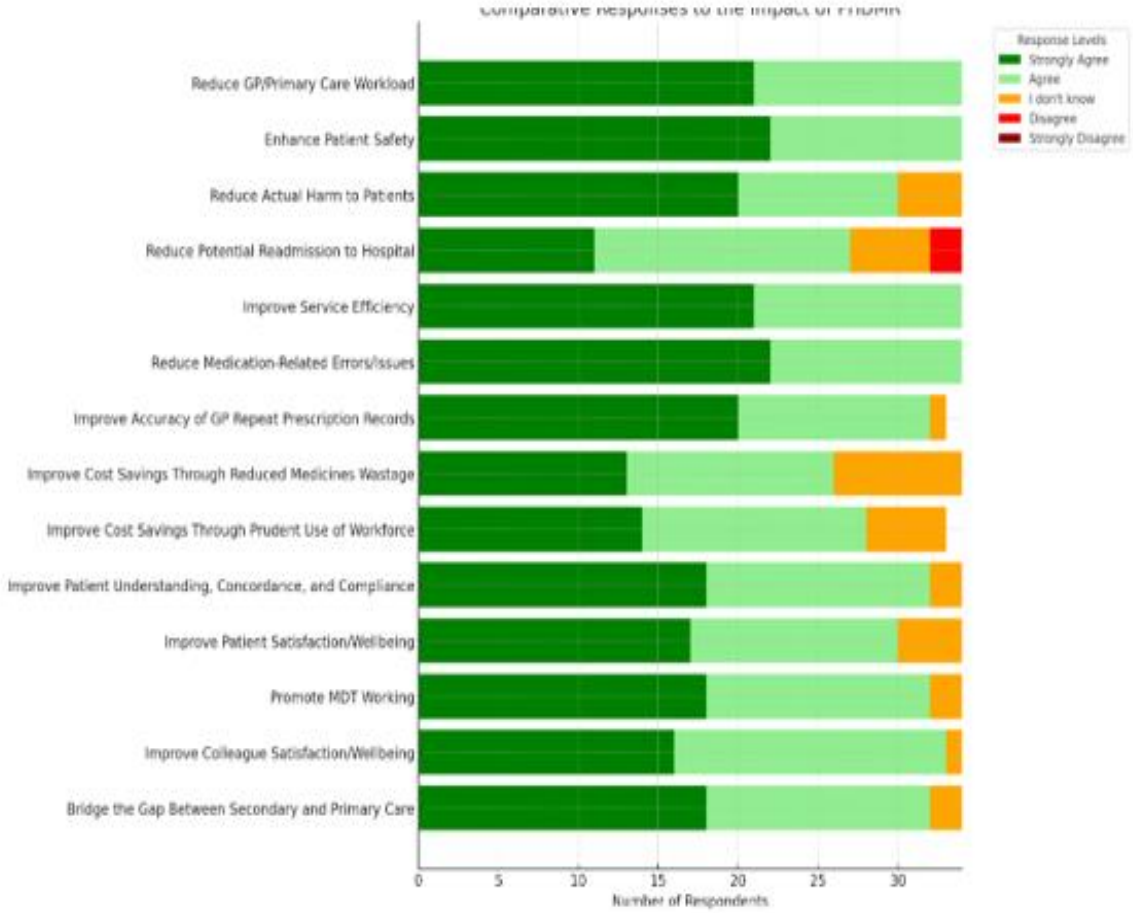


Figure 5: Responses distribution for all sub-questions in question 3 in stacked bar chart format.

These visualizations (table 9 & 10) highlight the overwhelming agreement and positive perception of the CB-PL-PHDMR model while also showing areas where uncertainty or disagreement exists, providing a comprehensive view of how respondents feel about each aspect of the model's impact.

The unanimous agreement indicates a significant impact of CB-PL-PHDMR on alleviating the pressures faced by GPs. This suggests that it is seen as an effective tool for streamlining processes and improving patient outcomes. Many respondents also acknowledge the potential for cost savings through reduced medicines wastage and more prudent use of workforce resources. This is supported by studies indicating that medication reconciliation can prevent unnecessary medication use and decrease unnecessary healthcare utilization (Mueller et al., 2012). The promotion of MDT working and better communication between primary and secondary care foster a more collaborative and integrated approach to patient care. Improved efficiency reflects streamlined processes and better use of resources, which are essential for enhancing patient care delivery in a resource-constrained healthcare environment.

There is a strong consensus that CB-PL-PHDMR contributes to reducing medication-related errors and improving the accuracy of GP repeat prescription records. This aligns with evidence showing that pharmacist-led medication reconciliation processes can significantly lower the risk of adverse drug events (Schnipper et al., 2009) and reduce medication errors from 57% to 33% (Robbins J. 2018), The respondents strongly believe that CB-PL-PHDMR improves patient understanding, concordance, and compliance with their medication, which enhances overall patient satisfaction and well-being.

A notable proportion of respondents expressed uncertainty “I don’t know” regarding certain benefits such as reducing actual harm to patients, decreasing potential hospital readmissions, and achieving cost savings through reduced medicine wastage and more efficient use of the workforce. This correlates to the systematic review by Sun and McNab (2018), which found the impact on readmission rates, emergency

department attendance, and primary care workload not consistently significant. This highlights the need for further research to establish evidence in these areas and for educational initiatives to disseminate findings on the impact of CB-PL-PHDMR.

Although medication reconciliation during transitions of care is critical in preventing harm, however, evidence on its effectiveness varies. A systematic review by Kwan et al. (2013) found mixed results regarding the reduction of clinically significant medication discrepancies, suggesting that more robust studies are needed to confirm its impact on patient harm reduction. While some studies, like those by Coleman et al. (2006), have shown that structured discharge processes and follow-up can reduce hospital readmissions, the direct impact of CB-PL-PHDMR on readmission rates remains unclear. More targeted research is necessary to delineate these effects.

Reducing wastage not only saves costs but also reflects more responsible and sustainable healthcare practices. Research by Mueller et al. (2012) suggests that while medication reconciliation can reduce wastage and optimize resource utilization, there is limited data quantifying these savings on a larger scale. Further research is needed to demonstrate the cost-effectiveness of CB-PL-PHDMR more conclusively.

Comparative Analysis with Previous Models

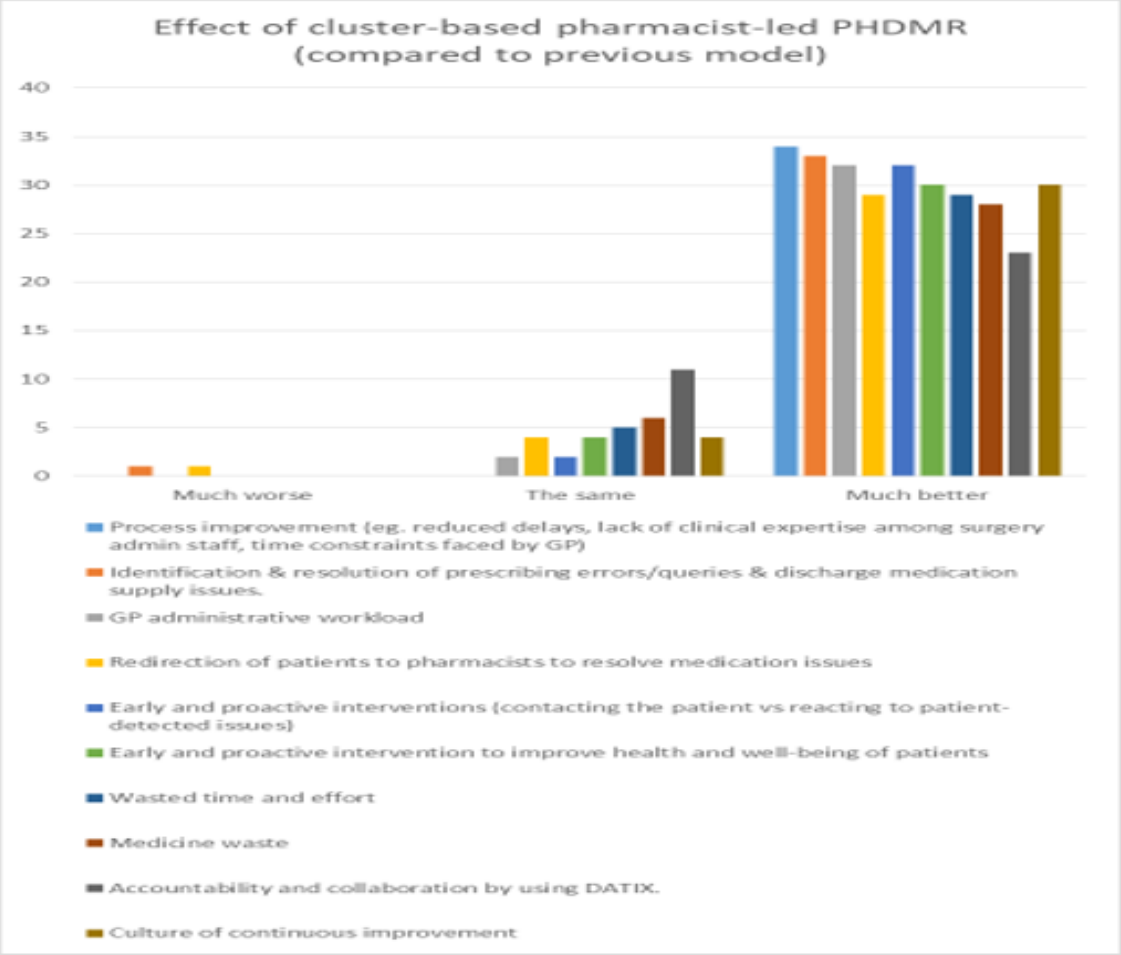


Figure 6: Responses distribution for all sub-questions in question 4.

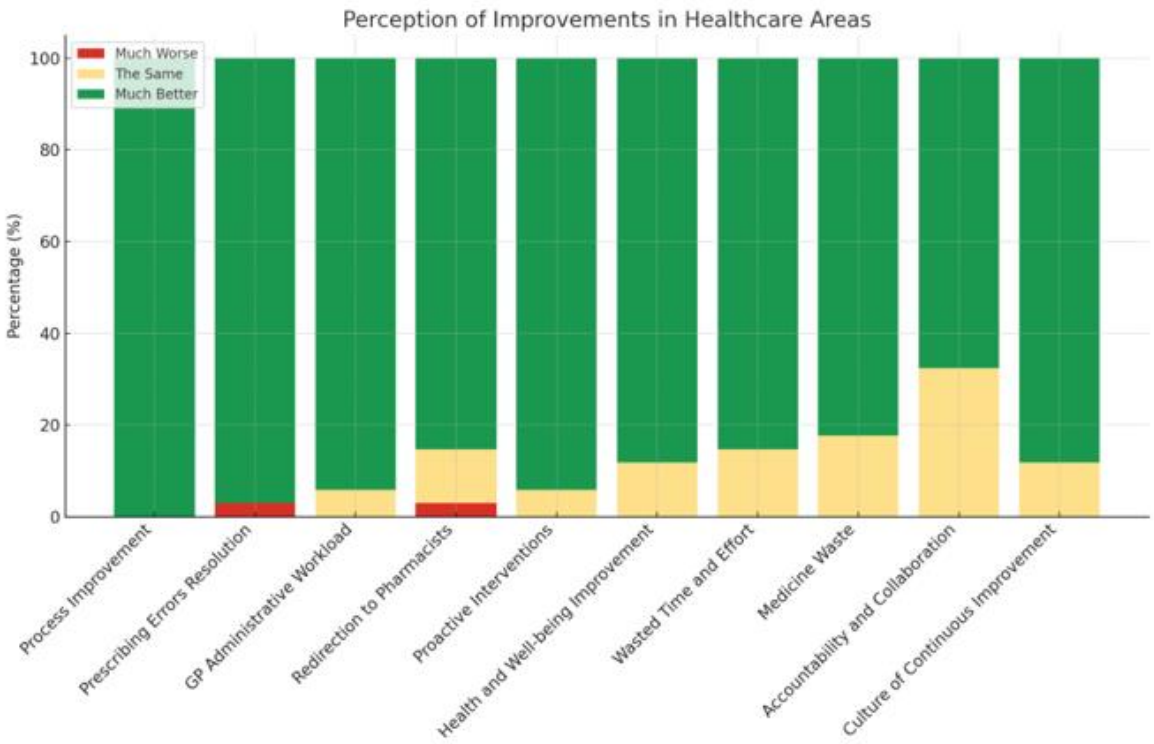


Figure 7: Responses distribution for all sub-questions in question 4 in stacked bar chart format.

Table 11 & 12 visualize the perception of improvements across various healthcare areas, showing the distribution of responses, they help highlight the overall positive reception of the improvements, with the majority of categories showing significant "Much Better" responses, especially in process improvement and proactive interventions.

Research has consistently shown that process improvement methodologies can significantly reduce delays and inefficiencies in healthcare settings. Mazzocato et al. (2010) highlighted that process improvement interventions not only streamline operations but also enhance the quality of care delivered, aligning with our study's findings where 100% of respondents noted improvements in this area compared to the previous model. According to my BE project, it had shown that CB-PL-PHDMR had reduce turnover time from 7-28 days to same day plus added safety check by pharmacist, indication reduced delays and better clinical expertise.

Cheong et al. (2019) highlight that GPs are often the first contact after discharge, but complex medication regimens, especially for the elderly, increase challenges. Administrative burdens contribute to GP burnout (Sinsky et al., 2016). Our study found 94% of GPs noted reduced administrative workload, as shown in my BE project, saving 501 GP hours and £113,368 by redirecting medication management to pharmacists. This aligns with prudent healthcare principles, advocating for efficient resource use while maintaining care quality (Prudent Healthcare, 2016).

According to Smith et al. (2014), pharmacist-led interventions have been associated with better medication adherence and fewer prescribing errors. However, our study found that 12% of respondents felt this practice remained the same, which aligns with concerns raised in the literature about the variability of pharmacists' roles and their integration into patient care pathways.

Prescribing errors pose a serious risk to patient safety. Lewis et al. (2009) found pharmacist-led interventions effective in reducing these errors. The BE project showed the CB-PL-PHDMR model mitigated 828 safety issues and avoided 188 potential readmissions. Our study's finding that 97% of respondents saw improvements aligns with these results, indicating that focused error identification enhances patient outcomes. Mekonnen et al. (2016) reported that pharmacist-led reconciliation programs improve medication safety, while Phatak et al. (2016) demonstrated cost savings through reduced medication errors and hospital readmissions.

Proactive care models, including early interventions and follow-ups, improve health outcomes and reduce emergency visits. Balaban et al. (2008) found that early discharge planning lowered readmission rates and boosted patient satisfaction. Our findings align, with 94% of respondents noting benefits from early engagement. The CB-PL-PHDMR model ensures clear communication of medication changes, preventing confusion and outdated prescriptions. Gillespie et al. (2009) showed that pharmacist-led medication reviews reduce medication-related problems and costs. Effective reconciliation minimizes adverse events, cutting the need for follow-ups, tests, and additional prescriptions, thus optimizing healthcare resources.

Medication waste is a major issue, with significant financial losses due to unused drugs. Trueman et al. (2010) found that targeted interventions can reduce waste. Medication reconciliation identifies and eliminates duplicate or unnecessary medications post-discharge, preventing waste. The BE project showed that CB-PL-PHDMR reduced waste by rationalizing repeat prescriptions and switching to cost-effective alternatives.

DATIX and similar incident reporting systems are critical tools for fostering accountability and improving patient safety through error reporting and resolution. Studies such as those by Donaldson et al. (2000) emphasize the importance of cultivating a culture of openness and learning from errors.

Developing a culture of continuous improvement is essential for sustaining healthcare quality. Zivian 2023 emphasizes that continuous quality improvement practices should be embedded within healthcare institutions to encourage ongoing learning and adaptation. The high percentage of positive responses in our study (88%) suggests that such a culture is taking root, though reinforcing this through leadership and policy support remains critical.

Interestingly, although a majority of respondents agreed that the new model is at least the same or much better compared to the previous model, there were 2 outliers in the findings. These "Much Worse" responses, though few, highlight that there are areas where the implemented strategies might not be uniformly effective, potentially revealing weaknesses that need to be addressed to ensure consistent positive outcomes.

Potential for Wider Adoption

Our study indicates a high level of confidence among respondents regarding the scalability of the CB-PL-PHDMR model. The 100% positive responses highlight a strong belief in the model's effectiveness and its potential to be adopted on a larger scale. The new model offers a structured and standardized approach to medication reconciliation, which can be replicated across different clusters with individualised modification according to need. The key selling points mentioned in section 4.1.5 can be used to promote the model’s benefits and encourage update of the new model by other clusters.

Despite its benefits, several barriers as described by GPs could hinder the adoption of the CB-PL-PHDMR model by other clusters. Studies have shown that financial and workforce challenges are common barriers to the implementation of new healthcare models (Greenhalgh et al., 2017). Addressing these issues through strategic planning and resource allocation is essential for the successful scaling of the new model.

Additionally, attitudes toward non-medical staff, such as pharmacists, may pose an obstacle, as some patients and staff may be reluctant to trust care from non-medical professionals. Furthermore, a lack of understanding or awareness of the model’s benefits could also prevent wider adoption. Educating both patients and providers about the benefits of the CB-PL-PHDMR model will enhance understanding and support for its implementation. This can include informational materials, workshops, and online resources. Evidence from Coulter et al. (2015) shows that patient education improves adherence and satisfaction, while provider education enhances the quality of care.

Collaborative models involving pharmacists in medication reconciliation are gaining popularity. GPs support these models as they help distribute workload and provide specialized expertise. Our study found that GPs value the new model, describing it as a “great service” and a significant improvement over previous process.

GPs report that the new model reduces errors and workload by addressing missing or unclear discharge letters, quickly identifying errors, and improving communication with secondary care. This support is a “massive help,” minimizing the need to chase clarifications. McNab et al. (2017) emphasize that collaboration with pharmacists increases GPs' confidence in medication lists. This is further supported by

Yahya et al. (2022) and Michaelsen et al. (2015) who highlighted the crucial role of primary care pharmacist in reducing medication errors and enhancing patient safety.

In our study, GPs emphasize their desire for the service to continue, noting its essential role in improving patient care and supporting GP workloads. Statements like “Please keep it going!” and “Thanks for implementing it; I couldn’t go back” underline the model’s perceived value and impact.

However, it is important to consider that the responses may be influenced by concerns that negative feedback could jeopardize the continuation of the service, potentially skewing the results.

Suggestions to improve

The responses to question 10 mentioned in section 4.1.8 underscore key areas for improvement in the CB-PL-PHDMR model, with a clear focus on enhancing communication, refining administrative processes, and reducing inappropriate GP workloads.

Studies suggest that communication breakdowns during care transitions are a leading cause of medication errors and readmissions (Kripalani et al., 2007). Enhanced communication could reduce the need for patients to seek clarifications post-discharge, which in turn would improve patient satisfaction and safety. Effective communication strategies, such as integrating pharmacists into the discharge process, may also reduce the burden on GPs who are often responsible for handling patient queries that could have been resolved earlier.

Accurate coding is essential for maintaining proper medication records, and discrepancies can lead to errors in repeat prescriptions or inappropriate follow-up treatments. Improving documentation is key to avoiding gaps in communication between primary and secondary care, which can compromise patient safety and increase GP workloads. Studies such as those by Bates et al. (2018) highlight that proper documentation is critical in ensuring continuity of care and preventing errors.

Reducing inappropriate requests from secondary care to GPs requires targeted interventions aimed at improving communication, role clarity. Developing and implementing clear protocols that outline what types of requests should be handled by GPs and what should remain within secondary care will reduce confusion. Reinforcing existing standards, such as the All-Wales Communication Standards, will ensure that inappropriate requests are minimized by adhering to agreed-upon processes. Designating a liaison professional, such as a pharmacist, to act as a point of contact between primary and secondary care can streamline communication (Smith et al., 2019).

Enabling pharmacists to take on more tasks independently reflect the need for a better delineation of roles. This can be supported through clear protocols that specify which tasks pharmacists can handle independently, and which require GP intervention. This approach reduces overlap and minimizes the likelihood of tasks being unnecessarily escalated to GPs. Furthermore, empowering pharmacists in this way promotes a more collaborative, multidisciplinary approach, where each team member contributes their specialized knowledge to improve patient care (Yahya et al. 2022)

CONCLUSION

Our study highlights GPs' perspectives on the CB-PL-PHDMR model. The findings indicate that GPs overwhelmingly support the model, recognizing its significant potential to enhance patient safety and improve overall service efficiency. The unanimous agreement suggests strong confidence in the model’s scalability and its applicability to other GP practices and clusters.

Key benefits identified by GPs include improved accuracy in medication management, enhanced patient care through proactive interventions and a significant reduction in GP workload. Additionally, the collaborative nature of the model fosters stronger communication and teamwork between primary and secondary care providers, further enhancing the quality of care. The study also identified several major selling points for the model’s broader adoption. These factors contribute to better patient outcomes and cost savings, making the model attractive for wider implementation.

However, the study also identifies potential barriers to broader adoption. Resistance to change, financial and resources concerns were highlighted as significant challenges. Furthermore, some GPs expressed uncertainty about the model’s impact on certain outcomes, indicating a need for further research and education to build confidence in its effectiveness.

To overcome these challenges, it is essential to secure stable funding, invest in training, and promote the model's benefits through clear communication and evidence-based advocacy. By involving GPs in the evaluation process and building the service collaboratively, the model promotes a culture of continuous improvement and accountability within the healthcare team.

The current study's focus on evaluating the CB-PL-PHDMR model from the perspective of GPs is therefore both timely and relevant, providing valuable insights into how such models can be optimized to better support primary care providers. Continuous evaluation and refinement, based on feedback from primary care providers will ensure that the models are tailored to meet the specific needs of primary care providers, thereby enhancing their effectiveness and sustainability.

KEY RECOMMENDATIONS

The CB-PL-PHDMR model has demonstrated its potential to enhance patient safety, reduce GP workload, and improve healthcare efficiency. The majority of GPs expressed agreement or strong agreement regarding the model's benefits, highlighting its perceived value and positive impact. These findings are supported by both quantitative data and qualitative feedback from GPs, reflecting their confidence in the model and enthusiasm for the changes it has brought about. However, as research by McNab et al. (2018) points out, the impact on readmission rates and primary care workload is not always consistent, indicating the need for more comprehensive research.

Based on our study's results, the following key recommendations focus on the innovation, transformation, and value of the model, with emphasis on its potential for wider adoption and the barriers that need to be addressed.

Further research to provide evidence-based outcomes

Our study suggests perceived benefits in reducing patient harm and hospital readmissions, but more robust research is needed to quantify these outcomes. Schnipper et al. (2009) found that pharmacist-led interventions significantly reduce adverse drug events (ADEs), supporting the need for targeted studies to confirm these findings in the CB-PL-PHDMR context. Such research should focus on tracking ADEs and readmission rates to provide concrete evidence of the model's impact.

Conducting a detailed cost-benefit analysis will also be crucial. Studies like Gillespie et al. (2009) show that pharmacist-led medication reconciliation can yield cost savings by reducing hospitalizations and ADEs. Quantifying the economic benefits of the CB-PL-PHDMR model will strengthen the case for broader implementation.

Additionally, expanding the participant base to include GPs from various clusters and diverse settings will provide a comprehensive understanding of the model's impact, helping to identify variations in effectiveness across different populations and healthcare contexts

Including patient perspectives will provide a more holistic view of the model's impact. Understanding patient satisfaction and experiences can highlight areas for improvement and inform patient-centred care practices. Cheong et al. (2019) emphasize the importance of patient feedback in evaluating healthcare interventions.

Spread and Scale

Implementing standardized protocols and comprehensive training programs for pharmacists and GPs is essential. This approach will ensure consistency in implementation, reducing variability and maintaining high standards of care. As noted by Dudas et al. (2010), standardized training significantly improves the quality of medication reconciliation processes

Sharing success stories and lessons learnt can build momentum for broader adoption. Positive outcomes and testimonials from GPs, such as those documented in the current study, can serve as foundation for advocacy and powerful motivators for further implementation efforts.

Engaging key stakeholders, including healthcare organizations, policymakers, and patient advocacy groups, is essential for securing support and funding. Demonstrating alignment with broader healthcare goals, such as improving patient outcomes and reducing healthcare costs, will strengthen the case for adoption. Studies by Rogers (2003) show that early stakeholder engagement is critical for the successful diffusion of innovations.

Addressing Barriers to Adoption

Long-term funding is essential to support the implementation and sustainability of the model. Engaging with health boards and government agencies to secure funding, supported by evidence of cost savings and improved patient outcomes, will ensure financial viability. Greenhalgh et al. (2017) emphasize that sustained funding is a key factor in the successful adoption of healthcare innovations.

Implementing effective change management strategies will help overcome resistance from GPs and other healthcare providers. This includes clear communication of the model's benefits, involving stakeholders in the planning process, and providing comprehensive training and support. This will help to foster a sense of ownership and commitment to the project's objectives. Kotter's (1996) change management model highlights the importance of creating a vision and engaging stakeholders to drive successful change.

It is crucial to address time constraints and resource issues. Study by Grissinger (2014) shows that resource allocation is critical for the effective implementation of new healthcare models. Clearly defining the roles and responsibilities of GPs, pharmacists, and other healthcare providers within the CB-PL-PHDMR model will reduce confusion and improve efficiency. Evidence from Ziaeian et al. (2012) supports the need for clear role delineation to ensure effective collaboration and reduce the risk of errors.

Continuous Improvement

Incorporating feedback from GPs and other stakeholders will ensure that the model evolves to meet the changing needs of healthcare providers and patients. Establish formal feedback mechanisms, such as surveys and focus groups, to collect insights from GPs, pharmacists, and patients and encourage collaboration. Analysing this feedback will help identify areas for improvement and inform ongoing refinements to the model. Batalden and Davidoff (2007) emphasize that systematic feedback mechanisms are crucial for sustaining quality improvement in healthcare.

It is important to promote a culture of continuous improvement. Embedding quality improvement practices within the CB-PL-PHDMR model will foster a culture of learning and adaptation. Regular reviews of processes, outcome measurements, and adjustments based on new evidence or feedback will ensure that the model remains responsive to the needs of its users. Berwick (2003) highlights the importance of creating a culture of continuous improvement in healthcare organizations. Expediting the medication-related issue found to wider stakeholders can also ensure collaborative efforts to address challenges and improve patient safety. Liaising with HEIW and health boards can help to raise awareness and promote best practices

Conclusion

The cluster-based pharmacist-led PHDMR model has demonstrated significant potential to improve patient safety, reduce GP workload, and enhance healthcare efficiency. By focusing on further research, strategic spread and scale, addressing barriers to adoption, and fostering continuous improvement, the model can be successfully expanded to benefit more GP clusters. It is vital that the model remains responsive to the needs of its users and continue to deliver high-quality care. These recommendations provide a roadmap for maximizing the model's impact, ensuring its sustainability, and enhancing the quality of post-hospital discharge care across the healthcare system.

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APPENDIX 1

I Wong Study: Cluster-based pharmacist-led post hospital discharge medication reconciliation (PHDMR)

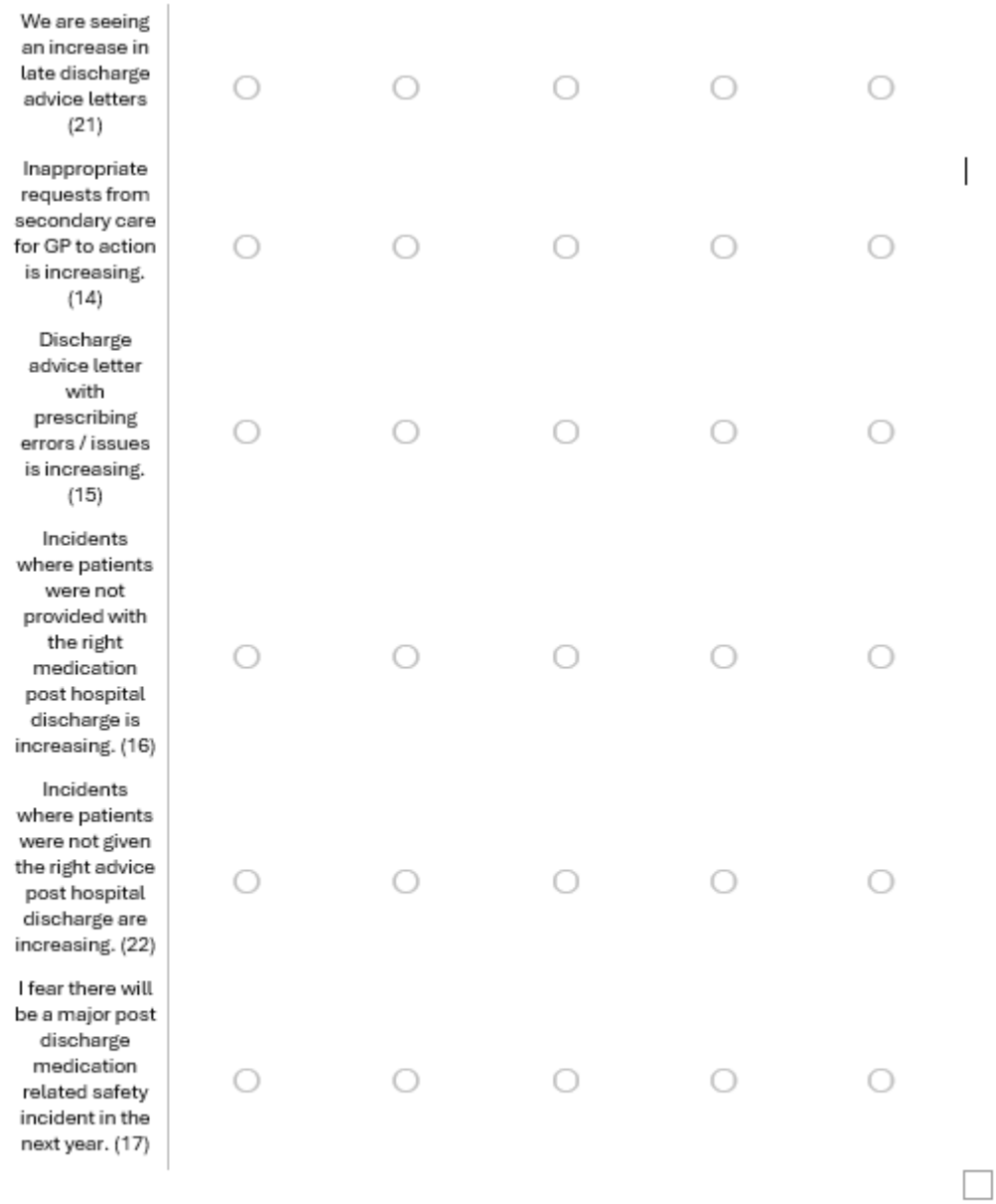
Start of Block: Default Question Block

Q1 I consent to complete this questionnaire.

- Yes (1)
- No - Thank you for your help. You may now close this window. (2)

Q2 Please share your views on issues encountered in primary care with regards to the current post hospital discharge process.

	Strongly Disagree (1)	Disagree (6)	Neutral (2)	Agree (3)	Strongly Agree (4)
Handover of care has deteriorated since COVID-19. (1)	○	○	○	○	○
Discharge advice letters containing missing information is increasing. (10)	○	○	○	○	○
Discharge advice letters containing conflicting information is increasing. (19)	○	○	○	○	○
Discharge advice letters containing unclear information is rising. (20)	○	○	○	○	○
Patients are increasingly exposed to medication related safety issues as a result of incomplete discharge advice letters. (11)	○	○	○	○	○
IT systems between secondary and primary care cause a lot of errors and rework of data in primary care. (12)	○	○	○	○	○
We are seeing an increase in missing discharge advice letters. (13)	○	○	○	○	○


We are seeing an increase in late discharge advice letters (21)
Inappropriate requests from secondary care for GP to action is increasing. (14)
Discharge advice letter with prescribing errors / issues is increasing. (15)
Incidents where patients were not provided with the right medication post hospital discharge is increasing. (16)
Incidents where patients were not given the right advice post hospital discharge are increasing. (22)
I fear there will be a major post discharge medication related safety incident in the next year. (17)

Q3 In your experience, the implementation of the new model of cluster-based pharmacist-led post hospital discharge medication reconciliation (PHDMR) has helped to:

	Strongly Disagree (1)	Disagree (2)	I don't know (3)	Agree (4)	Strongly Agree (5)
reduce GP/primary care workload (1)	○	○	○	○	○
enhance patient safety (10)	○	○	○	○	○
reduce actual harm to patients (22)	○	○	○	○	○
reduce potential readmission to hospital (11)	○	○	○	○	○
improve service efficiency (12)	○	○	○	○	○
reduce medication-related errors/issues (13)	○	○	○	○	○
improve accuracy of GP repeat prescription record (14)	○	○	○	○	○
improve cost savings through reduced medicines wastage (15)	○	○	○	○	○
improve cost savings through more prudent use of workforce (16)	○	○	○	○	○
improve patients' understanding, concordance and compliance to medication (17)	○	○	○	○	○
improve patient satisfaction/wellbeing (18)	○	○	○	○	○
promote MDT working (19)	○	○	○	○	○
improve colleague satisfaction/wellbeing (20)	○	○	○	○	○
bridge the gap / improve communication between secondary and primary care (21)	○	○	○	○	○

Q4 Please share your views on the effects of cluster-based pharmacist-led PHDMR (compared to the previous model).

	Much worse (1)	The same (6)	Much Better (7)
Process improvement (eg, reduced delays, lack of clinical expertise among surgery admin staff, time constraints faced by GP) (1)	○	○	○
Identification & resolution of prescribing errors/queries & discharge medication supply issues. (12)	○	○	○
GP administrative workload (13)	○	○	○
Redirection of patients to pharmacists to resolve medication issues (14)	○	○	○
Early and proactive interventions (contacting the patient vs reacting to patient-detected issues) (15)	○	○	○
Early and proactive intervention to improve health and well-being of patients (16)	○	○	○
Wasted time and effort (17)	○	○	○
Medicine waste (19)	○	○	○
Accountability and collaboration by using DATIX. (18)	○	○	○
Culture of continuous improvement (21)	○	○	○

Q5 Please share your views on the potential spread and scale of the cluster-based pharmacist-led PHDMR model.

	Strongly Disagree (1)	Disagree (6)	Neutral (7)	Agree (8)	Strongly Agree (9)
The new model could have benefits for other clusters and GP practices. (13)	○	○	○	○	○

Q6 In your own words, what would be the main 'selling point' to encourage uptake of the new model by another cluster?

_____

Q7 What would be the barriers that would hinder uptake of the new model by another cluster?

_____

Q8 In your own words, how has the service benefitted your practice to date?

_____

Q9 In your own words, how have you personally benefitted from the new service? _____

Q10 Do you have any suggestions on ways to improve the service in the next 3 to 5 years?

○ Yes (please comment below) (1) _____

○ No (2)

Q11 We would welcome any additional comments or feedback on the service or generally please. _____

Barriers and Opportunities for staff engagement & job satisfaction in an Emergency Department - A Report

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Abstract:

The NHS is facing a healthcare staffing crisis; staff turnover is at its highest rate with Emergency Medicine the most affected specialty. Emergency departments are unique environments to work in and have demands unlike other areas in healthcare. Job satisfaction and job engagement have been studied all over the world in healthcare to try and highlight the factors that play a role in this area. It has been a concept in management studies for many years, the theory being that if employees have high job satisfaction and engagement then productivity increases, staff turnover rates reduce, and a reciprocal relationship is formed. Particularly in healthcare it has been shown to improve patient experience. This paper aims to look at specific areas of job satisfaction and engagement in one Emergency Department in Wales. Using a questionnaire-based survey all members of the Emergency Department staff were asked to complete 43 questions about working within their Emergency Department, Organization and their intention to quit.

The results showed that staff felt the equipment within the department was inadequate, staff did not receive the recognition of doing a good job and were underappreciated. 41% of staff were satisfied with their job. Staff felt the team within the ED were the best aspect of their work.

Emergency medicine is a unique environment and needs a unique outlook on job satisfaction and employee engagement. The Royal College of Emergency Medicine has produced recommendations on improving staff wellbeing and retention, which fits with the themes highlighted in this paper.

Keywords: Job satisfaction, employee engagement, healthcare workers, emergency medicine, emergency department.

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Introduction

Work provides the opportunity for growth, financial resources and can enhance health and well-being, and people tend to spend a large amount of their time at work. Job satisfaction and employee engagement have been at the forefront of management research and practice for several decades due to the belief that job satisfaction leads to increased productivity and a reciprocal relationship between the employee and organization (Saks 2019, Bsoul-Kopowska et al 2023). Important factors affecting employee satisfaction include stress, work standards and fair treatment of all employees (Bsoul-Kopowska 2023). Yet, the reports of employee disengagement are at an all-time high across the world (Erdogan et al 2020).

Emergency Medicine in the UK

In the United Kingdom, the National Health Service (NHS) is facing a healthcare staffing crisis with Emergency Medicine being one of the most affected specialties (RCEM 2020).

Emergency Departments (ED) are unique places to work and have considerable demands for those employed to work there, that aren't faced by other healthcare workers. Urgent and Emergency Care demand in the UK has increased year on year. There has been an incremental rise in ED attendances, along with a reduction in patient flow to inpatient beds. This has resulted in crowding within the Emergency Department. It has been shown in several studies that crowding is dangerous and is associated with increased mortality and increased length of hospital stay. For every 72 patients waiting 8-12 hours in the Emergency Department there is 1 excess death. (RCEM Explains). Crowding, in turn impairs hospital efficiency and contributes to burnout, moral injury and the loss of emergency care professionals (RCEM acute insight series 2021). A survey performed by the BMA found that 81% of emergency medicine doctors had experienced moral distress prior to the COVID pandemic compared with a cross-specialty average of 59.6% (RCEM insights 2021).

The Royal College of Emergency Medicine (RCEM) undertook a 'Retain, Recruit, Recover' report to look at what could be done to help staff and improve their well-being at work. This report only involved doctors and advanced clinical practitioners but overwhelmingly found that fixing operational issues that link to crowding e.g. increasing staffed bed numbers, improving flow, would lead to better standard of care for the patients and contribute to retaining current employees. (RCEM insight 2021).

In Wales, the four-hour target, which is looked at as a marker of performance, is the lowest across the UK. The target is 95% of all patients are seen, treated and discharged/admitted to bed within 4 hours. Wales has fallen as low as 55% (Wales Emergency Medicine Workforce 2023). The four-hour target has not been met by major ED's in Wales since 2010.

A recent study by Daniels et al (2023), which took data from Emergency Departments all over the UK, identified four main themes related to workplace concerns: culture of blame and negativity, untenable working environments, compromised leadership and striving for support. The paper concluded that if these four areas were tackled, staff retention would improve. The Daniels' paper highlighted that most NHS retention policies are generic and are not specific to the clinical context where they are going to be implemented. Health Education and Improvement Wales published a nurse retention plan in 2023 which looked to address the key themes taken from the Royal College of Nursing Survey 2022. The publication provides those identified needs and the responsibility of implementation but doesn't incorporate the different areas staff work in, and those challenges faced in that environment.

Following the Daniels et al study, recommendations for the retention and workforce wellbeing in Emergency Care were produced (Daniels et al 2023). The group identified four changes that needed to occur to aid staff retention which is described on the figure above the page.

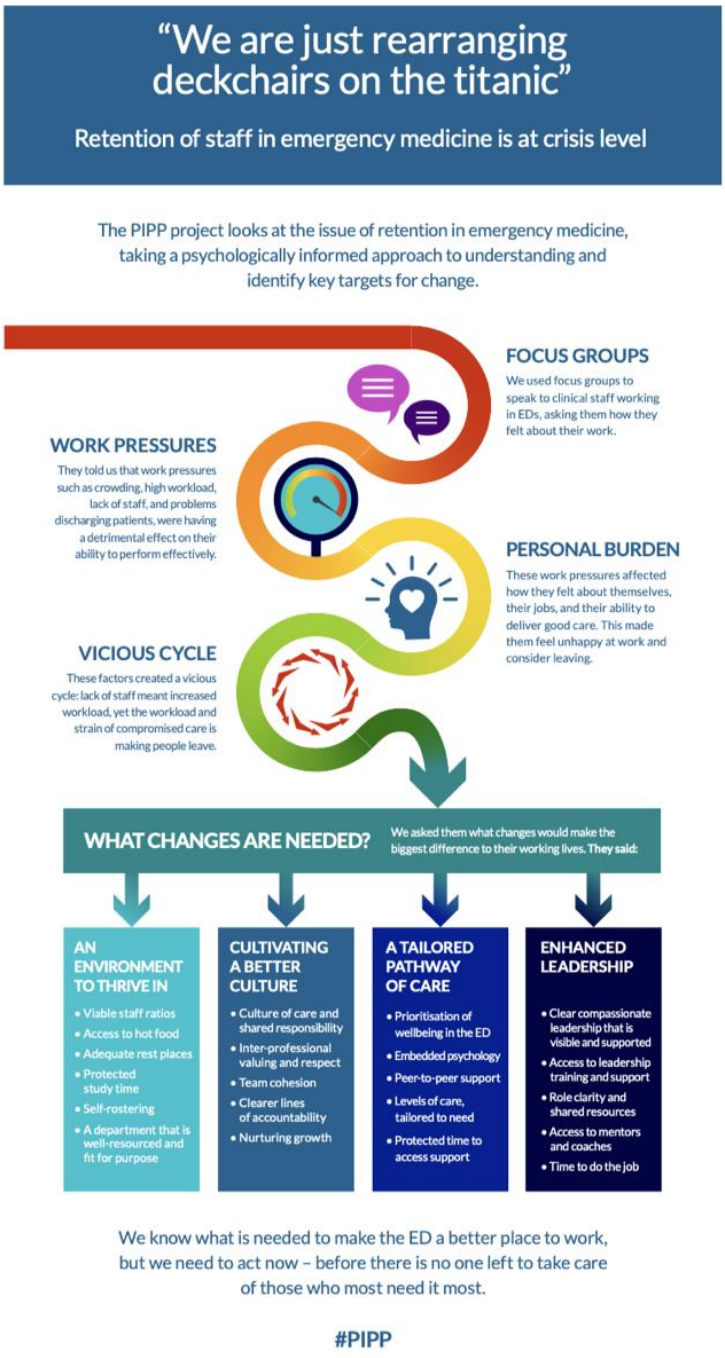


Figure 1. PiPP Study Animation Daniels et al 2023.

What is Employee Engagement and Job satisfaction? Why does it matter?

Healthcare organizations have an interest in regularly reviewing employee engagement and job satisfaction. Employee satisfaction affects patient satisfaction alongside quality, productivity, effectiveness and healthcare costs (Karaferis et al 2022). It needs to be noted that job satisfaction and employee engagement are not the same thing and there are two different entities, one of which can affect the other.

Job satisfaction has been widely researched since the 1940's. It is most often defined as a 'person's positive attitude and feelings towards the work environment and their job duties (Staples et al 1998). It is usually identified with the quality of work. To assess it you need to consider a wide range of factors such as employees' career and individual status, health and well-being at work, personal growth, work-life

relationships, physical and mental efforts and inter-personal relationships in the work environment (Czerw et al 2010). In essence, job satisfaction is dependent on what the person puts into their work and what they receive in return.

Job satisfaction is a consequence of employee engagement. Saks (2006, 2019) looked at the antecedents and consequences of employee engagement and created a model based on social exchange theory. This was updated and validated in 2019 and shown in figure 2 below.

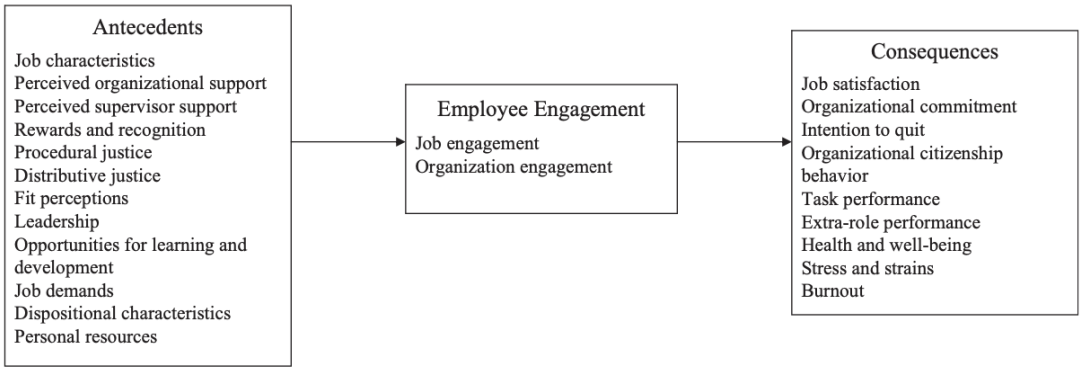


Figure 2. Saks (2006) model of the antecedents and consequences of employee engagement.

From the model above, job satisfaction is one consequence of employee engagement. Employee engagement is defined as 'the emotional and intellectual commitment to the organization' (Saks 2006). Marlsch et al (2001) characterized engagement by energy, involvement and efficiency, the direct opposite of burnout. Meaningfulness, safety and availability are the three psychological conditions associated with engagement or disengagement at work (Kahn 1990, May 2004). Engagement results in employees who are more attached to their organization and a lower tendency to leave (Saks 2006). Saks also found that employees who perceive higher organizational support are more likely to reciprocate with greater levels of engagement in their job and their organization. Therefore, job engagement and the antecedents of these described by Saks in his model are important questions to ask with regards to job satisfaction.

Burnout

Burnout is a complex entity that is multifactorial - personal, professional and organizational issues all play a part in its development. Burnout has been identified as a significant problem amongst healthcare workers, particularly those working in Emergency Departments (Moscue 2023). Burnout and job satisfaction are two critical factors that influence the well-being and productivity of those working in an organization. Research has shown that job satisfaction can serve as a protective factor against burnout (Chiara et al 2019).

It is important to emphasise the difference between burnout and moral injury. Dean et al (2019) describe the root of burnout is the broken individual who lacks resilience versus moral injury where the root of the problem is in the broken system, that has prioritised profit (or budget) over healing. Difficult ethical situations where they are faced with unnecessary patient suffering and a feeling of not doing enough leading to stress of conscience and are unable to deal with the moral problems that are as a result of the restrictions and boundaries set by managers and superiors (Glasberg et al 2008; Pavlish et al 2011).

Job Satisfaction Research

Job satisfaction research shows that large amounts of dissatisfaction results in increased sickness rates, higher staff turnover rates, reduced loyalty to the organization and reduced quality of work (Bsoul-Kopowska 2023). Research in this area has mostly looked at extrinsic factors affecting job satisfaction such as salary, promotion opportunities, career development, the value of tasks, job security, stress, work standards, fair treatment to all employees and interpersonal relations. It is important to note that there are likely to be constant changes to these, along with changes in importance of societal values, therefore, investigation of job satisfaction needs to be a dynamic and ongoing process (Karaferis 2022). Low job satisfaction in nurses has shown that there are also higher depression rates (Gokcen 2013).

There have been several studies on job satisfaction in healthcare across the world both prior to, during and following the COVID 19 pandemic. What is noted from all of these (whenever they take place around the pandemic) is employee satisfaction affects patient satisfaction. There is a positive correlation between the increase in job satisfaction and quality of care (Karaferis 2022). In the study by Karaferis 2022, which took place during COVID-19, they concluded that job satisfaction is a complex multi-dimensional concept, but more than ever health systems need satisfied employees that can cope with very difficult conditions, refine healthcare services and up surging the level of patient satisfaction. Satisfied human resources are the most valuable asset for high productivity, commitment, efficiency and high-quality care in a healthcare organization. (Karaferis 2022).

Literature review

In order to develop a questionnaire that studied job satisfaction, job engagement and its antecedents within healthcare workers, a literature review was undertaken.

The database Scopus was searched using the following search criteria:

[Job AND satisfaction] OR [Staff AND engagement) **93322 articles**

AND

[Healthcare AND workers] **1452 articles**

AND

[Emergency AND Department] **44 articles**

2 of the 44 articles were not available in English.

7 articles were identified from screening the titles

3 articles were relevant after the abstracts were read.

Scopus was chosen as it is a 'trusted, source-neutral abstract and citation database curated by independent subject matter experts who are recognized leaders in their fields'.

References of the 3 articles were searched to see if there was a yield of any further relevant papers. A Google scholar search was then performed for information relevant to Emergency Medicine in the UK and Wales which produced policy and recommendation papers from UK Government, Welsh Government and The Royal College of Emergency Medicine.

In total 15 research papers were read to understand current research into the area being studied and used to develop a questionnaire on job satisfaction and job engagement that had been validated externally. Despite the breadth of management research around job satisfaction and employee engagement, there is only a limited number of studies looking at job satisfaction in healthcare. Of these there were even fewer looking at Emergency Medicine or working within an emergency department.

The studies outlined below are those which specifically concentrate on researching job satisfaction in healthcare.

Table 1. Literature Review of Papers

Author	Country	Subjects	Purpose	Questionnaire used	Conclusion
Gokcen et al 2013	Turkey	347 - ALL staff: doctors, nurses, EMT, paramedics, healthcare officers in Emergency Department	Evaluate levels of burnout, job satisfaction and depression and the likely related variables in the healthcare personnel	Maisbach Burnout Inventory Minnesota Satisfaction Questionnaire Beck Depression Inventory	Satisfaction with work environment showed a marked effect on burnout and depression

Batura et al 2016	Nepal	137 neonatal healthcare workers	Validate JSS as a tool to measure job satisfaction and intention to leave in Nepalese population	JSS (Spector 1997)	JSS was valid and reliable way of collecting job satisfaction data in their population but omits context. Qualitative data is important to go alongside to provide context
Lu et al 2017	China	3563 doctors across medical specialties	1) assess turnover intention of physicians 2) explore relationship between turnover intention, job satisfaction, work stress and family conflict	JDI (Smith et al 1969)	Job satisfaction, work stress, hours worked per week are factors influencing turnover intention
Erdogan et al 2020	Turkey	411 nurses ICU vs Outpatients	Does working in ICU, inpatient services or the operating room create differences in job satisfaction, work related strain and perceived stress of nurses	face to face interview based on Short-form Minnesota Job Satisfaction Questionnaire	mean satisfaction scores across all groups were significantly lowest in those who reported they did not have their dream job and that they were not fond of their jobs and were not economically satisfied
Ahmad et al 2020	Malaysia	343 healthcare workers. Not ED specific	Develop and validate a job satisfaction questionnaire for healthcare workers in Malaysia	Own Questionnaire	Questionnaire is valid and reliable for assessing job satisfaction among healthcare workforce
Small et al 2022	Jordan	286 ED staff	Comparison on job satisfaction between public and private emergency department workers	Own Questionnaire	Staff working in public ED had significantly lower satisfaction than those working in private ED. Doctors were more likely to have lower job satisfaction than staff in other roles
Karaferis et al 2022	Greece	612 hospital employees	Explore underlying factorial structure of JSS when applied to Greek hospital employees	JSS	Able to improve understanding of the nature and assessment of job satisfaction in the Greek healthcare context.
Cantarelli et al 2023	Italy	73441 employees	Investigate public employees job satisfaction and the variable that may pertain to their job satisfaction	Own previously validated survey	Environmental characteristics, organizational management practices and team co-ordination practices correlate with job satisfaction

Moscu et al 2023	Romania	184 Emergency department staff	Analyze the impact of work-related problems on burnout and satisfaction levels among ED staff of a single unit	JSS	participants were dissatisfied with work environment but satisfied with the nature of their work. Emotional exhaustion and depersonalization were associated with job dissatisfaction
Rsoul-Kopowska et al 2023	Poland	184 Physicians	Determine factors shaping job satisfaction amongst physicians	Unclear how questionnaire was produced	Satisfaction of participants was moderate, salary was identified as the factor with the highest satisfaction rating, the least important factors were employers' image, quality of services offered by the organization, additional days off and additional benefits on offer

As the table above shows, the research into job satisfaction in healthcare is particularly specific to the area it is being studied in and is not, on the whole, generalisable data. As mentioned previously, job satisfaction is a complex multi factorial concept that is changing due to external factors and societal values. Therefore, any study in this area is going to be studied specifically. However, what all the studies conclude is that job satisfaction is an important question to ask on a regular basis for organisations and management to understand factors within their control which can ultimately lead to increased staff retention, impact burnout, improve productivity and ensure greater stability of employment in healthcare.

Research Design and Methodology

This study was a cross-sectional, self-reporting, anonymized study. It was carried out by way of an online questionnaire available to all staff who worked in the Emergency Department. The questionnaire was available online either via a link or QR code or could be requested as a paper copy.

The questionnaire was based on the Job Satisfaction Scale (JSS) developed by Paul Spector (Spector 1985). The JSS was developed to measure job satisfaction in organizations in human service, public and non-profit sectors. It measures 9 dimensions of satisfaction and has been validated in several countries including USA, Singapore, Turkey, Pakistan, Taiwan, Iran and Nepal. (Batura et al ref 18,20-24). This questionnaire was chosen as it was used in a number of papers from the literature review and has been widely studied across a number of different occupations. The JSS has been shown to have strong validity and reliability.

Several of the studies in the literature review used the Minnesota Satisfaction Questionnaire. Brown et al (2006) compared the JSS to the Minnesota Satisfaction questionnaire and found strong internal consistency between the two questionnaires such that the 2 questionnaire scores could be compared against each other. The JSS was chosen over the MSQ as it is available free of charge for use for non-commercial purposes. It was designed to apply to non-profit and government organizations of which the NHS closely fits into that category. To explore more specifically the healthcare aspect of job satisfaction questions from the Cantrelli et al 2023 questionnaire were included. This questionnaire had been previously validated prior to its use in his 2023 Italian study and used on a particularly large number of subjects.

Job satisfaction was the main purpose of this questionnaire as it is one of the consequences of job engagement and its antecedents. The questionnaire was designed to also review the perceived organizational support, intention to quit and ED external factors of job engagement. Some questions from Saks (2006) questionnaire on job engagement were then included to explore these factors. The breakdown of the questions and their origins from each of the three sources are included in Appendix 1.

In total there were 44 questions to answer in 4 subsections. The subsections were:

1. Demographics/Descriptives
2. Emergency Department factors and engagement

3. Organization (Health Board) – Perceived Organizational Support
4. Intention to quit and job satisfaction

A copy of the final questionnaire, taken from Qualtrics, can be found in Appendix 1.

Participants were asked to score the questions in Sections 2 through to 5 on a Likert scale: Disagree Strongly (1) Disagree slightly (2) Neither agree nor disagree (3) Agree slightly (4) Agree Strongly (5)

At the end of the questionnaire there were free text boxes for any further information that the participant would like to share to try and capture some of the context of the answers as suggested by Batura et al 2016 in his validation study of JSS in healthcare workers.

The survey was conducted over three weeks in August 2023 and was open to all staff in the Emergency Department at one site which employs 200 ED specific staff. It was advertised by poster and email along with What's app and email reminders.

The study excluded anyone who was not part of the Emergency Medicine directorate including paramedics, those working in another specialty e.g. medicine or surgery, agency nurses and locum doctors, radiology. Ethics was obtained by Swansea University, and all data was guaranteed to remain confidential.

The questionnaire was published on, and responses collected through QualtricsTM platform. This also provided some statistical analysis of the results.

Results

77 responses were received, which was a response rate of 38.5% of all staff working within the Emergency Department Directorate. The characteristics of respondents are outlined in table 2 below

Table 2. Descriptive Characteristics of study participants

Descriptive characteristics	Number	Percentage
Age		
18-25	8	11
26-35	32	46
36-45	14	20
46-55	11	11
56-70	5	7
Ethnicity		
Asian or Asian British	11	16
White	55	80
Prefer not to say	3	.4
How long have you worked in the ED?		
Less than 1 year	21	27
2-5 years	24	31
6-10 years	7	9
More than 10 years	14	18
Prefer not to say	2	2
Is working in ED your long-term goal?		
Yes	43	61
No	10	14
Unsure	7	10
For now,	9	13
Prefer not to say	1	1

How long do you see yourself continuing in THIS ED		
Less than 6 months	13	19
Less than 1 year	11	16
Less than 5 years	17	25
More than 5 years	23	33
Prefer not to say	5	7

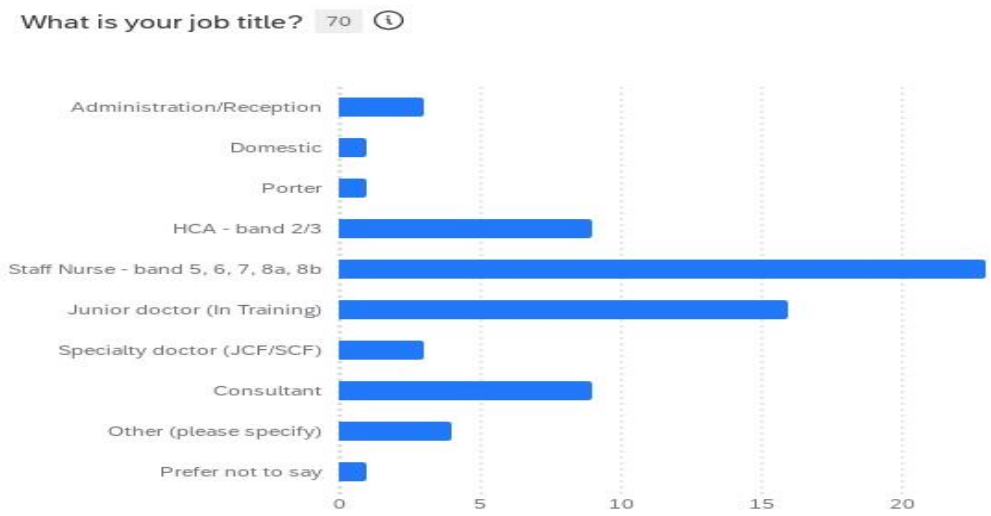


Figure 3. Study participant and job role (count).

From the graph and the table, it can be observed that nursing staff made up the biggest number of respondents followed by junior doctors in training. This fits with the structure of the Emergency Department, with the largest workforce being the nursing staff followed by the doctors, so the spread of jobs responding to the questionnaire is representative of the staffing levels in each group. Notably no managers responded to the questionnaire. Most respondents were age 26-35 (46%) and white ethnicity (80%).

31% of participants worked in the Emergency Department at this hospital for between 2 and 5 years, so had some experience of the department with 27% of participants having only been in post for less than a year. 18% had worked in the department for longer than 10 years. 61% felt that working in ED was their goal, and most respondents saw themselves working in this department for more than 5 years (33%).

Results in the table below are Item Scores from the questionnaire

The scores were calculated using a Likert Score: disagree strongly = 1, Disagree somewhat = 2, neither agree nor disagree = 3, agree somewhat = 4 agree strongly = 5. These were added up and the mean score was calculated. A mean score over 3 suggested agreements, a mean score of 2.8-3 suggested neutrality and a score less than 2.8 suggested disagreement with the statement. These were then RAG rated in the table below

Those items with a (*) are a negative question and therefore require a low score to suggest a positive response.

Table 3. Emergency Department Factors Mean Scores.

Items	Mean Score
Team achieves common goals	3.75
Work is well planned in the unit	2.83

My workload is manageable	2.33
I receive recognition of a good job	2.51
Many of rules and procedures make doing a good job difficult	3.43*
Seldom blocked by Red Tape	2.94*
Adequate Equipment	1.60
I like who I work with	3.9
I feel my job is meaningless	2.56*
I do not feel like the work I do is appreciated	3.42*
I like doing the things I do at work	3.80
I feel a sense of pride in doing my job	3.58
My job is enjoyable	3.11
Communication in the unit is good	2.47

Things that require improvement from the Emergency department aspect include work planning, workload, recognition, equipment, underappreciation and communication within the unit.

Table 4. Perceived organizational support mean scores.

Items	Mean
My organization encourages change and innovation	1.74
Encourages information sharing	2.81
I appreciate how managers manage the organization	1.75
Communication seems good	2.14
Stimulated to give my best work	2.09
Professional contribution of everyone is recognised	2.17
I do not know what is going on in the organization*	3.74
I feel unappreciated by the organization*	3.98
I am highly engaged in this organization	2.68
My organization really cares about my wellbeing	2.21
My organization strongly considers my goals and values	1.98
My organization shows little concern for me*	3.53
My organization cares about my opinions	2.12
My organization is willing to help me if I need a special favour	2.5
Help is available from my organization when I have a problem	2.86
I would be happy to work at my organization until I retire	2.63

From an organizational point of view there were particularly low scores throughout on the perceived organizational support and perceived organizational commitment suggesting that participants were not engaged with the organization, particularly with organizational management, feeling unappreciated, knowing what is going on and concern shown by the organization on an individual level.

Table 5: Intention to Quit and Job satisfaction mean scores.

Items	Mean
I frequently think about quitting my job*	3.59
I am planning to search for a new job in next 12 months*	3.23
If I have my own way, I will be working here one year from now	2.97
All in All, I am satisfied with my job	2.93
I do not like my job*	2.74
I like working here	3.24

Job satisfaction was a neutral outcome. The mean score for liking the job and working here was agreeable, however frequently thinking about quitting and looking for a new job were relatively high scores.

The free text answers suggested several themes:

'What do you feel is good about working within the Emergency Department?'

The resounding theme of the 77 responses to this question was the staff and team. One such example is *"The people. Everyone works incredibly hard, and I've never felt at home anywhere as much as I do in the ED."*

Do you have any suggestions as to what could be improved for those working in the Emergency Department?

There were several themes from this question:

- Staffing
- Infrastructure/design of the department
- Patient flow
- Feedback, recognition, respect
- Equipment and stocking
- Communication and understanding from the organization
- Digital solutions
- Patients not numbers
- Staff well-being

This qualitive data corresponds with the scores from the questionnaires.

From analyzing the general feedback from all participants above, I looked at some of the specific staff groups to see whether there was any statistical significance in their answers and undertook Chi x2 statistical testing through the QualtricsTM platform.

- Do you feel part of the team? 100% of porters (n=1) and 62% of healthcare assistants (HCA band 2/3) did not feel part of the team. 65.2% of staff nurses, 74% of junior doctors, 100% specialty doctors and 88.9% of consultants did feel part of the team (p=0.00383).
- Work is well planned in my unit. All staff members outside of being doctors (junior, consultant or specialty) felt that work was not well planned in the unit, nor did they feel they got any recognition for doing a good job.

- I do not feel like the work I do is appreciated: this was shown to most likely be agreed with by staff nurses.

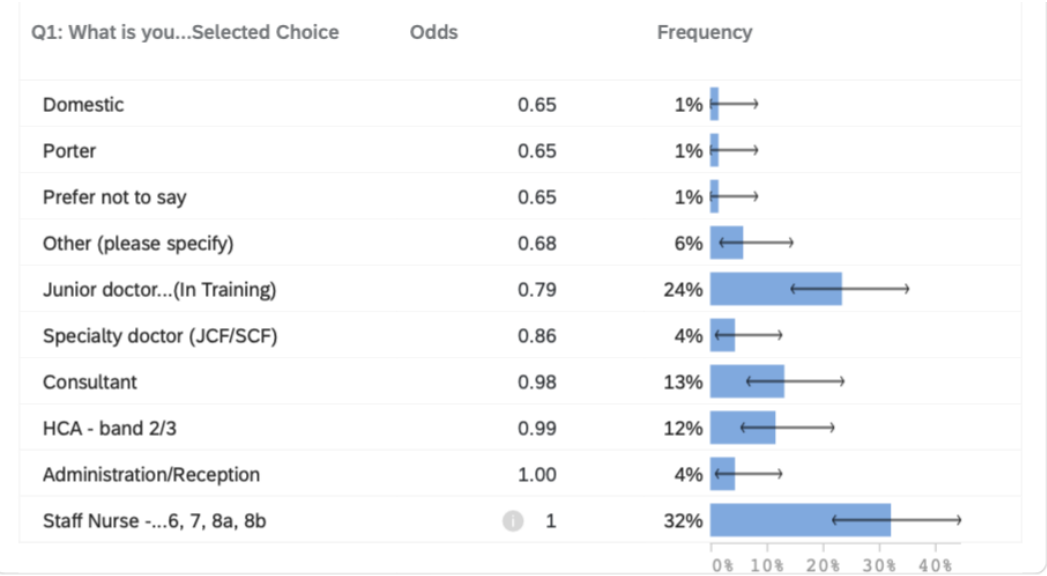


Figure 4: I do not feel like the work I do is appreciated.

Those thinking about quitting based on job role is shown below alongside the percentage that are actively looking for a new job

Table 6. Staff thinking of quitting and actively looking for a new job based on role

Job Role	Frequently think about quitting	Actively looking for new job in next 12 months
Administrative	100%	33.3%
Porters/domestics	100%	100%
HCA band2/3	57.1%	42.9%
Staff nurse	79.9%	66.6%
Junior doctor	46.6%	33.3%
Specialty doctors	66.7%	66.7%
Consultants	33.3%	11.1%
Other	66.6%	33.3%

There was a statistically significant relationship between planning to search for a new job in the next 12 months and frequently thinking about quitting their job ($p<0.00001$). However, there was no statistical relationship between planning to search for a new job in the next 12 months and job role ($p= 0.150$). There was also a strong statistically significant relationship between “Do you see yourself working in Emergency Medicine long term (anywhere)” and “how long do you see yourself continuing to work in this Emergency Department” $p=0.00331$.

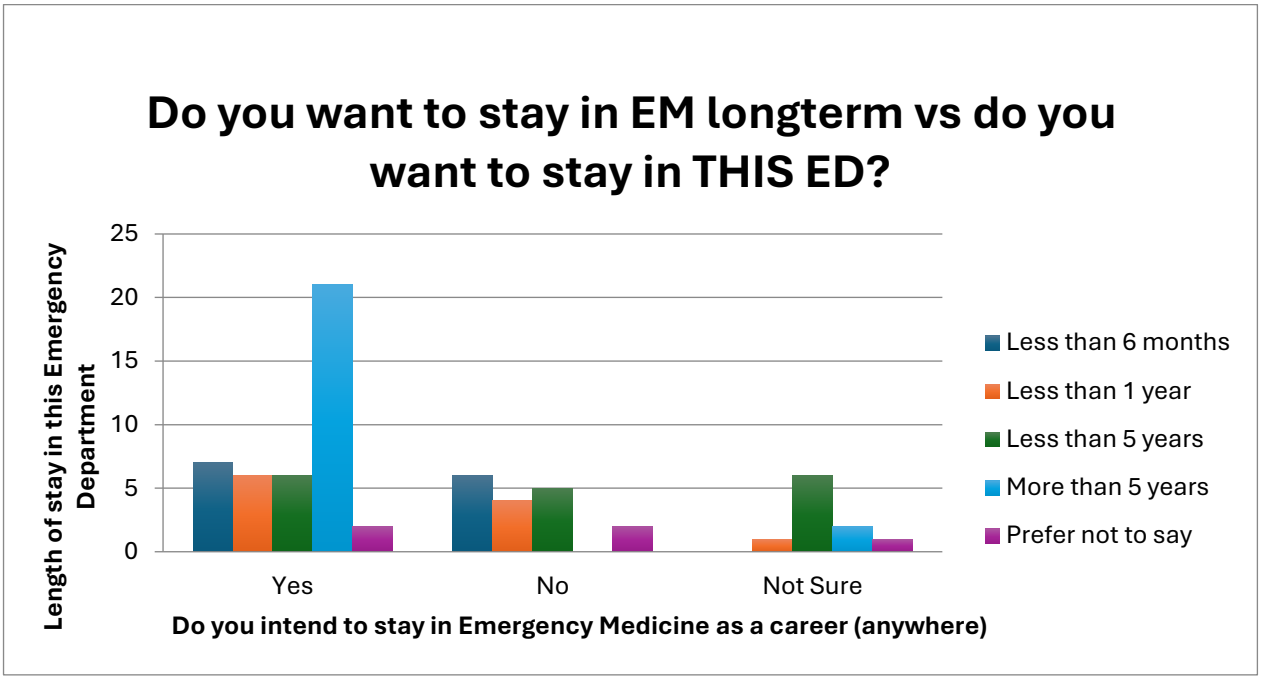


Figure 5. Graph looking at staying in this ED.

There was also no significant relationship between 'my organization shows little concern for me' and job role (p = 0.147).

Overall, 42% of participants were satisfied with their job. There was no statistically significant relationship between job satisfaction and job role (p=0.0556).

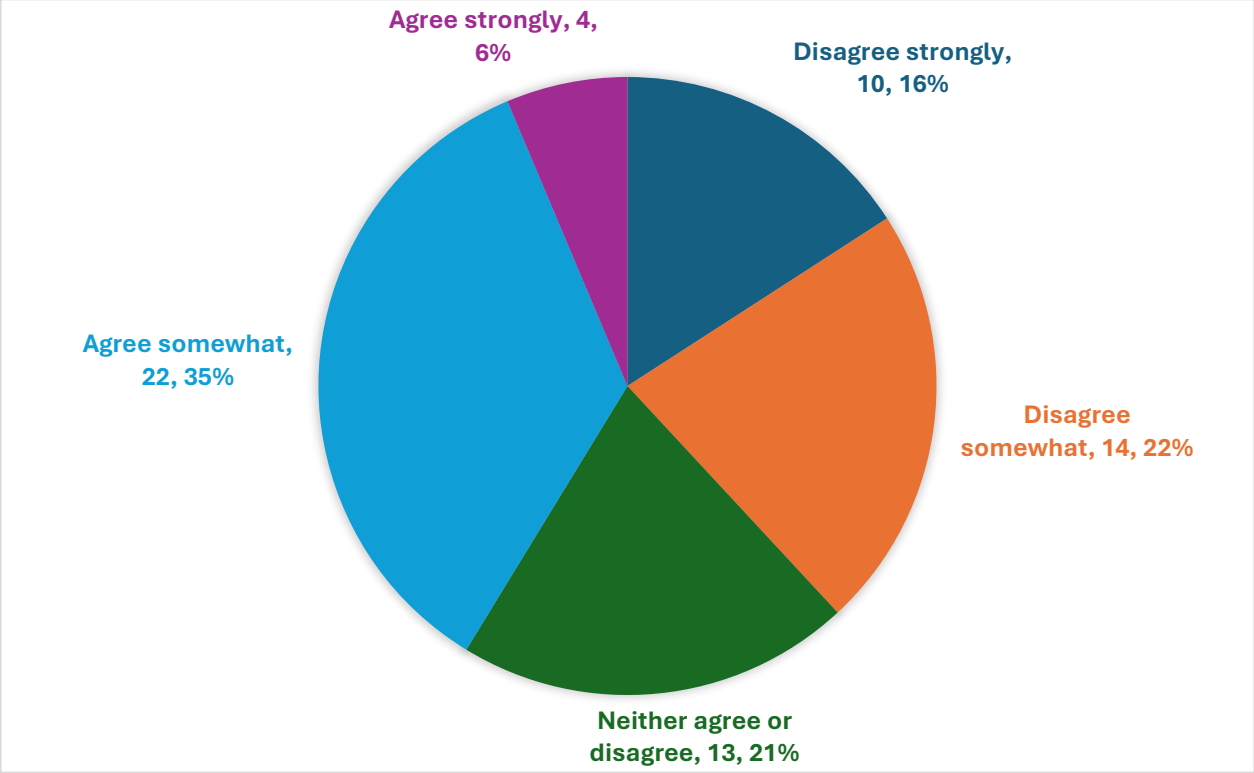


Figure 6. I am satisfied with my job (all participants).

Discussion

For over 10 years there has been an increasing number of studies and books on job engagement. It has been at the forefront of employee management research and practice (Saks 2019). The interest in employee engagement by organisations has grown due to the potential for increased engagement to provide a competitive advantage amid current reports that employee engagement is at its lowest across the world (Albrecht et al 2015).

Saks (2006) built on previous work by Schaufeli et al (2002) and put forward the theory that employees have at least two main roles; one being their work role and the other being their role as a member of their organisation. Sak's Social Exchange Theory discussed the antecedents and consequences of employee engagement, namely that job characteristics, perceived support (from the organisation as well as their direct supervisor), rewards and recognition and procedural and distributive justice all play a role in job engagement. The consequences of employee engagement is job satisfaction, organisational commitment, intention to quit and Organisational citizenship behaviour (Saks 2006)

Our study results align with this proposed theory. There were certain factors that were particularly low scoring around recognition and perceived organisational support. This may be at odds as to what the organisation feels about the support it is offering, but what is important is the staff perception.

"I'm a senior nurse on a high pay band and I LOVE emergency care and my weird and wonderful colleagues. However, I don't know how we can carry on like this. It feels like we are deliberately being understaffed, constantly undermined and are powerless to improve patient safety and care despite trying to blow the whistle on how we are forced to nurse patients. The moral injury is huge."

Our study outlines some of the areas which are impacting job satisfaction and engagement in this specific ED and whilst there is plenty of research surrounding job engagement and job satisfaction, there is very little research on employee engagement interventions. How do we improve employee engagement and therefore job satisfaction and organizational commitment?

Knight et al 2017, published a meta-analysis and found four types of interventions that had a small, but positive, effect on work engagement. These were namely, personal resource building, job resource building, leadership training and health promotion. In terms of a practical aspect, Saks 2019 validation study suggests that two key drivers for job engagement are skill variety and perceived organizational support. Organizations that provide and demonstrate their support for employees would find it extremely worthwhile for promoting job and organizational engagement (Saks 2019). From our study the staff enjoy their work and find it varied, they like working within the department, but other factors appear to be leading to them thinking about quitting and looking for another job. They are generally proud of what they do, however the lack of recognition and perceived under appreciation for what they do is prominent in their survey responses.

"We are constantly under pressure and that has become accepted as the norm. We had difficult times a few years ago, but that changed, and the working atmosphere improved dramatically as did the permanent staffing ratios, staff well-being and the general 'can do' approach. This changed about a month ago and the department has never felt so constricted, oppressive and abandoned. It is really difficult for staff to see a way forward."

Despite well-being and organizational support in place, there needs to be improvement in the participants' perception of this support, specifically to where they work. Many of the staff work shifts and so are unable to attend drop-in sessions that are held at lunchtimes, staff breaks are not at set times in the Emergency

department unlike other areas of the hospital (Daniels 2021), and it is felt that senior staff are not present, they don't visit the ED at busy times to offer staff any support or recognition.

> *"ED has roughly 15 full time porters, over half of which are off on the sick with illness/stress. If it was managed here in a FAIR and efficient way and opinions and advice from the lower bands were taken into serious consideration, there wouldn't be half as many issues as there are. Nobody wants to hear how the workers are coping, and are way too comfortable with letting us plod along day in day out with no change, It's only a matter of time before there are zero porters here as every bodies patience is wearing extremely thin."*

As suggested by Saks (2006) "a one size fits all approach to employee engagement might not be the most effective. Managers should find out what resources and benefits are most desired by employees…. Managers should understand that employee engagement is long-term… that requires continued interactions over time"

> *"More communication from senior nursing management. I feel it would be beneficial if new management were more approachable, familiarized themselves with the team. Appreciating that we are a big department with lots of staff but having senior managers attend handovers in the hub to pass on feedback or make themselves known. At the moment I feel we are being ignored"*

Emergency medicine and Emergency Departments have unique demands and working environments, generic policy and well-being recommendations are not suitable for staff working in this area. This area needs to be investigated separately with generic questionnaires on staff satisfaction (Daniels et al 2023) and innovative ways of providing support and recognition of their working conditions produced.

In our study only 41% of respondents were satisfied with their job. There was no statistically significant relationship between job satisfaction and job role, however of those who wanted to stay in Emergency Medicine as a career long term, 50% would stay more than 5 years in this Emergency Department. This suggests that the job and department are well liked, and other factors such as overcrowding is having an impact. 17% were intending to stay less than 6 months in this department. This doesn't consider those who are on an emergency medicine training rotation where there is a mandatory rotation out of departments every six to twelve months.

> *"The continuous extra patients and poor staffing is impacting the morale here; it isn't safe and it causing anxiety and stress to the most experienced staff recently I have felt weak and that I have failed my patients it isn't nice leaving a shift upset because you feel you couldn't give the care you wanted to patients."*

Many of the themes which were highlighted from the qualitative questions were similar to the work done by Daniels et al (2023) who worked on the psychologically informed policy and practice development project with RCEM and Bath University. This document produced key recommendations for retention of the workforce and staff well-being in Emergency Care based on the group's findings from a UK wide study. Notably the top four recommendations were all the themes found within our study.

- Creating an environment to thrive in (staffing, protected study time, hot food and rest facilities, self-rostering, well-resourced and fit for purpose department)

- Cultivating a better culture (Care and shared responsibility, inter-professional respect, accountability, nurturing growth, team cohesion)
- A tailored pathway of care from ED to staff support – insert PIPP staff support model
- Enhanced leadership including clinical leads, matrons and non-clinical managers being supported to provide compassionate, inclusive and approachable values.

Even though most publications are too generalized to be appropriate to use in the Emergency Department, Saks (2022) wrote a review on developing a Human Resources Model (HRM) which could improve employee engagement and therefore job satisfaction. The main foundation of this model is a caring and organizational climate of care and concern for employees. Whilst most organizations have employee well-being at the center of their values, it does need to be specific to different groups of staff. It needs to be goal-directed and demonstrate a true concern for people (Saks 2022). Satisfied human resources are the most valuable asset for high productivity, commitment, efficiency and quality of care in a healthcare organization (Faragher et al 2005).

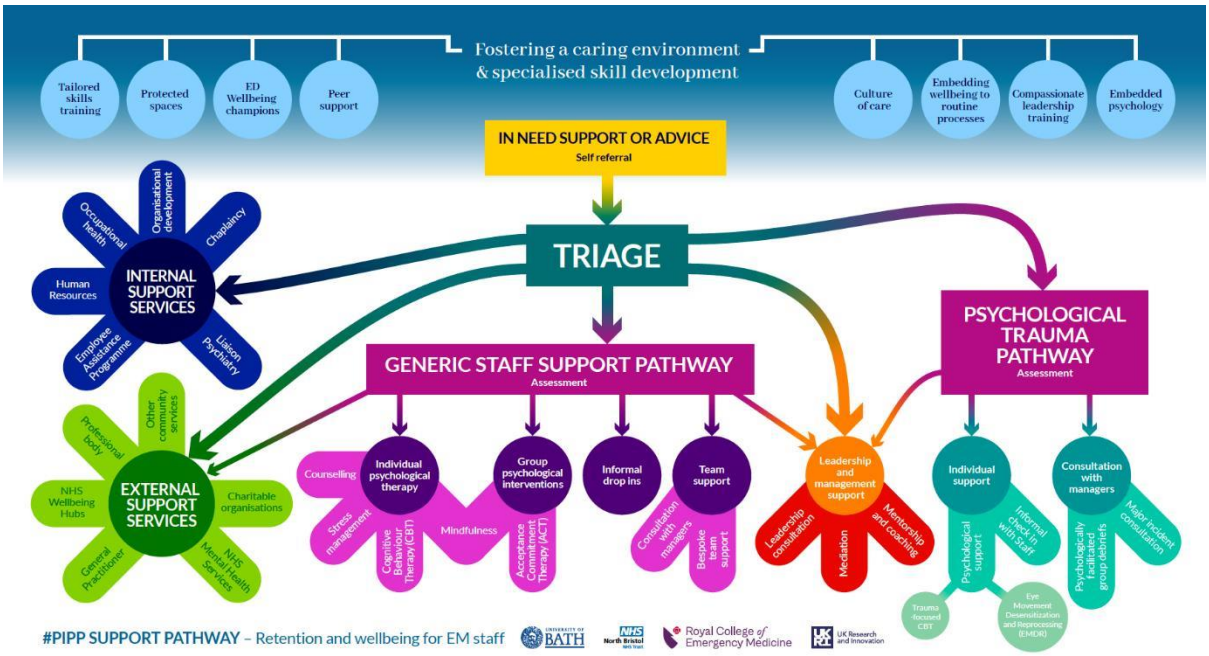


Figure 7. PIPP SUPPORT PATHWAY proposed by Daniels et al 2023.

Study Limitations

This study only involves one Emergency Department in one centre and therefore it is not generalisable, although general themes compare to the recent UK paper by Daniels et al (2023) this is very site-specific data. As with all self-reported data there is the question of responder bias, are those with lower job satisfaction or poor employee engagement more likely to respond to the questionnaire than those who are engaged and satisfied with their job?

This study does not look at relationships between variables other than job roles and therefore there can be no consideration of any causality effect. The responses are merely described as mean figures, however there was a broad representation of the different staff members within the department with the exception of managers. To take the study forward more statistical analysis is needed to investigate relationships between areas in the questionnaire.

The response rate to the questionnaire was only 35.8% of the workforce which is low compared to other similar surveys – the NHS staff survey often gets response rates 40-50%. Ideally to show any scientific validity in epidemiology response rates need to be in the order of 80% (Canterelli et al 2023). This in part was due to the time of year that the survey was published (August 2024), the start of the school holidays, change-over of junior doctors, and the ability for the researcher to promote the survey within the department.

If repeated, the researcher would want to look at promoting it more prior to publication of the survey to improve participant engagement.

Implications and Further Research

Job dissatisfaction is associated with worse patient outcomes, worse patient-provider relationships and longer waiting times as well as staff burnout, turnover and absenteeism (Chang et al 2017). Employee engagement and job satisfaction is not a static concept, as seen from previous research and models. There are many factors that can influence this. Therefore, it needs to be assessed on a regular basis.

From this questionnaire there is a majority of dissatisfaction within the department, particularly around the perceived organisational support, recognition and appreciation. What this study provides is a basis to consider how to improve job satisfaction within the specific emergency medicine group. Part of this will require an innovative look at providing support and how to recognise and appreciate the work that is done by the staff, that takes into account the complexities of working within a highly pressurised department. It needs to be done in an authentic way to get back the trust of staff.

Conclusion

Job satisfaction is a complex, multi-dimensional concept that has a huge variety of variables but has been shown to be a protective factor for staff burnout, improving patient experience and reducing waiting times. It impacts staff retention and productivity. This study aims to try and focus on particular areas that may have an impact on job satisfaction, and to discuss what opportunities there may be to improve staff engagement and job satisfaction within an emergency department. It is important that any opportunities are specific to the environment, authentic and caring. Job satisfaction needs to be regularly monitored. Staff need to be felt to be listened to and heard particularly during the more challenging times that the NHS is currently facing.

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Appendix A: Abbreviations

NHS – National Health Service

ED – Emergency Department

EM – Emergency Medicine

RCEM – Royal College of Emergency Medicine

HEIW – Health Education and Improvement

PIPP – psychologically Informed Policy and Practice Development

BMA – British Medical Association

JSS – Job Satisfaction Survey

JDI – Job Descriptive Index

Appendix G: Ethics Approval

Swansea University
Prifysgol Abertawe

Approval Date: 17/07/2024

Research Ethics Approval Number: 3 2024 9628 9617

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	Job satisfaction and staff engagement - What are the opportunities to enhance working conditions in the Emergency Department: A survey
Applicant name	KATY JEWELL
Submitted by	KATY JEWELL /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/11679

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 17/07/2024

Rhif Cymeradwyo Moeseg Ymchwil:

Diolch am gwblhau cais moeseg ymchwil am gymeradwyaeth foesegol ac am gyflwyno'r ddogfennaeth ofynnol drwy'r platfform ar-lein.

Teitl y Prosiect	Job satisfaction and staff engagement - What are the opportunities to enhance working conditions in the Emergency Department: A survey
Enw'r Ymgeisydd	KATY JEWELL
Cyflwynwyd gan	KATY JEWELL /
Dolen i'r ffurflen gais lawn	https://swansea.forms.ethicalreviewmanager.com/Project/Index/11679

Appendix C: Questionnaire development

Key
Black - Spector questionnaire
Purple - Cantrelli questionnaire
Red - My changes
Blue – Saks questionnaire

Emergency Department Questions - unit = ED*

I feel like I'm part of a team that works together to achieve common goals

Work is well planned in my unit and this allows us to achieve goals

Meetings are organised regularly in my unit

My workload is manageable.

There are few rewards for those who work here.

When I do a good job, I receive the recognition for it that I should receive.

Many of our rules and procedures make doing a good job difficult.

My efforts to do a good job are seldom blocked by red tape.

The equipment in my unit is adequate

There is too much bickering and fighting at work.

I like the people I work with.

I sometimes feel my job is meaningless.

I do not feel that the work I do is appreciated.

I like doing the things I do at work.

I feel a sense of pride in doing my job.

My job is enjoyable.

Communication within the unit is good

The goals and values of this organisation are evident on a daily basis in this unit

Organisation questions - organisation = health board

My organisation encourages change and innovation

The organisation encourages information sharing

I appreciate how managers manage the organisation

Communications seem good within this organisation.
My organisation stimulates me to give my best in my work
I am motivated to achieve organisational goals
In my organisation, the professional contribution of everyone is adequately recognised

I often feel that I do not know what is going on with the organisation.

One of the most exciting things for me is getting involved with things happening in this organisation.

I feel unappreciated by the organisation ~~when I think about what they pay me.~~

I am highly engaged in this organisation.

My organisation really cares about my well-being.
My organisation strongly considers my goals and values.
My organisation shows little concern for me.
My organisation cares about my opinions.
My organisation is willing to help me if I need a special favour.
Help is available from my organisation when I have a problem.

Intent to quit

I frequently think of quitting my job.
I am planning to search for a new job during the next 12 months.
If I have my own way, I will be working for this organisation one year from now.

Job satisfaction

All in all, I am satisfied with my job.

In general, I do not like my job.

In general, I like working here.

Organizational commitment - I would be happy to work at my organisation until I retire.

Appendix D: Questionnaire as published

Barriers and opportunities for staff engagement & job satisfaction in ED

Survey Flow

Standard: Block 1 (1 Question)

Block: Section 1: Demographics (51 Questions)

EndSurvey:

Participant Information:

Title of study

"Job satisfaction and engagement - What are the opportunities to enhance working conditions in the Emergency Department: A survey

About the survey & Invitation to participate

We invite you to take part in this research study by completing a survey. Before you decide whether or not to take part, please take time to read the following information which explains why this research is being done and what your involvement would consist of. Talk to others if you wish, and please feel free to ask the researcher (Katy Guy - Katy.Guy@wales.nhs.uk) if there is anything that you are unsure of.

Thank you for reading this.

The study

This research project examines the work and the organisational factors that influence job satisfaction to see what opportunities may be available to improve working conditions and staff retention in the Emergency Department. This is a pilot study which is looking at Morriston Hospital. The study will include managers, health professionals, technical and support staff who work within the Emergency Department. We will use questionnaires to collect information for this study. The information you provide will be anonymous.

Why have I been chosen to take part?

As an important part of the Emergency Department Team, your opinion and experience makes a valuable contribution is helping the researcher understand working conditions in the department.

Do I have to take part?

No, taking part in this study is voluntary. It is up to you to decide whether or not to take part. You are not obliged to take part in the research.

What will happen if I take part?

We would like you to complete a survey which should take you about 15 minutes to complete. We would like to know about your views and experiences of you working in the Emergency Department. You may leave the survey or withdraw your data at anytime.

How do I take part? The questionnaire can be completed by following the QR code or you can request a copy to be emailed to you via Katy.Guy@wales.nhs.uk

Confidentiality

All of the data we collect will be kept strictly confidential. All data will be handled in accordance with the Data Protection Act 1998. Your organisation will not have access to your completed questionnaire. The

information you give us in the survey will be entered into an anonymised database which will not contain any personal details about you. The study will be carried out in full compliance with all relevant guidance from the Swansea University ethics committee and Data Protection legislation.

What are the possible problems and disadvantages of taking part?

We do not anticipate any problems arising from participation in this study. However, if you have any concerns or questions, please contact the researcher (Katy Guy - Katy.Guy@wales.nhs.uk)

What are the possible benefits of taking part?

There are unlikely to be direct personal benefits to you from this study. Some people enjoy participating in this kind of research and welcome the opportunity to give their views about their work. We will feed back our findings to you and keep you regularly updated about the study and we hope that you will find this interesting.

What will happen to the results of the project?

The results of this study will be written up for a report to Swansea University for my Postgraduate Certificate and possibly for publications that will be read by health professionals and health service managers and other researchers. We will be happy to send you a free copy of the research report if you tell us you would like one.

Who has reviewed the study?

The study has been reviewed by Dr Sian Roderick of Swansea University.

Who can I contact if I have a concern or complaint about this study?

You can contact Dr. Katy Guy and Dr. Sian Roderick (contact details below), if you have any concerns about this study or a complaint.

Contact details: S.Roderick@swansea.ac.uk Katy.Guy@wales.nhs.uk

If you have any questions about the project please contact Dr Katy Guy Katy.Guy@wales.nhs.uk Tel: 01792703415. Emergency Department, Morriston Hospital, Swansea SA5 7JE.

The questionnaire should take a maximum of 10 minutes to complete.

If you have read the information above and agree to participate with the understanding that the data you submit will be processed accordingly, please tick the next question to start.

End of Block: Block 1

Start of Block: Section 1: Demographics

I have read the participant information and am happy to take part in the study

o Click here to continue to survey (1)

Skip To: Q1 If I have read the participant information and am happy to take part in the study = Click here to continue to survey

Section 1: Demographics

Q1 What is your job title?

- o Manager (1)
- o Administration/Reception (2)
- o Domestic (3)
- o Porter (4)
- o HCA - band 2/3 (5)
- o Staff Nurse - band 5, 6, 7, 8a, 8b (6)
- o Junior doctor (In Training) (7)
- o Specialty doctor (JCF/SCF) (8)
- o Consultant (9)
- o Other (please specify) (10) _____
- o Prefer not to say (11)

Q2 How long have you worked in the Emergency Department for?

- o Less than 1 year (1)
- o 2-5 years (2)
- o 6-10 years (3)
- o More than 10 years (4)
- o Prefer not to say (5)

Q3 What is your age?

- o 18-25 years (1)
- o 26-35 years (2)
- o 36-45 years (3)
- o 46-55 years (4)
- o 56-70 years (5)
- o 70+ years (6)
- o Prefer not to say (7)

Q4 What is your ethnicity?

- o Asian or Asian British (1)
- o Black, Black British, Caribbean or African (2)
- o Mixed or multiple ethnic groups (3)
- o White (4)

- o Other ethnic group (5)
- o Prefer not to say (6)

Q5 Is working in the Emergency Department/Emergency Medicine your career goal?

- o Yes (1)
- o No (2)
- o Unsure (3)
- o For now (4)
- o Prefer not to say (5)

Q6 How long do you see yourself continuing to work in THIS Emergency Department

- o Less than 6 months (1)
- o Less than 1 year (2)
- o Less than 5 years (3)
- o More than 5 years (4)
- o Prefer not to say (5)

Q7 Do you see yourself working in Emergency Medicine long term (this could be anywhere not just in this department)

- o Yes (1)
- o No (2)
- o Not Sure (3)
- o Prefer not to say (4)

Section 2: Emergency Department Questions - unit = ED*

In this section we are interested in your views about working within the Emergency Department. Please press the option that you feel are true in your experience.

Q8 I feel like I'm part of a team that works together to achieve common goals

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q9 Work is well planned in my unit and this allows us to achieve goals

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q10 My workload is manageable

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q11 When I do a good job, I receive the recognition I should for it

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q12 Many of our rules and procedures make doing a good job difficult

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q13 My efforts to do a good job are seldom blocked by red tape

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q14 The equipment in my unit is adequate

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q15 I like the people I work with

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q16 I sometimes feel my job is meaningless

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q17 I do not feel like the work I do is appreciated

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q18 I like doing the things I do at work

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q19 I feel a sense of pride in doing my job

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q20 My job is enjoyable

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q21 Communication within the unit is good

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Section 3: Organisation questions - organisation = health board.

In this section we are interested in your views about the Organisation (Swansea Bay University Health Board). Please press the option that you feel are true in your experience.

Q22 My organisation encourages change and innovation

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q23 My organisation encourages information sharing

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q24 I appreciate how managers manage the organisation

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q25 Communications seem good within the organisation

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q26 My organisation stimulates me to give my best work

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q27 In my organisation, the professional contribution of everyone is adequately recognised

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q28 I often feel that I do not know what is going on within the organisation

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q29 I feel unappreciated by the organisation

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q30 I am highly engaged in this organisation

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q31 My organisation really cares about my well-being

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q32 My organisation strongly considers my goals and values

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q33 My organisation shows little concern for me

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q34 My organisation cares about my opinions

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q35 My organisation is willing to help me if I need a special favour

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q36 Help is available from my organisation when I have a problem

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)

o Agree strongly (5)

Q37 I would be happy to work at my organisation until I retire

o Disagree strongly (1)
o Disagree somewhat (2)
o Neither agree or disagree (3)
o Agree somewhat (4)
o Agree strongly (5)

Page Break

Q38 I frequently think about quitting my job

o Disagree strongly (1)
o Disagree somewhat (2)
o Neither agree or disagree (3)
o Agree somewhat (4)
o Agree strongly (5)

Q39 I am planning to search for a new job in the next 12 months

o Disagree strongly (1)
o Disagree somewhat (2)
o Neither agree or disagree (3)
o Agree somewhat (4)
o Agree strongly (5)

Q40 If I have my own way, I will be working for this organisation one year from now

o Disagree strongly (1)

- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Section 4: Intent to quit

In this section we are interested in looking at your views on how satisfied you are with your job. Please press the option that you feel are true in your experience.

Q41 All in all I am satisfied with my job

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q42 In general I do not like my job

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q43 In general I like working here

- o Disagree strongly (1)
- o Disagree somewhat (2)
- o Neither agree or disagree (3)
- o Agree somewhat (4)
- o Agree strongly (5)

Q44 What do you feel is good about working within the Emergency Department?

_____

Q45 Do you have any suggestions as to what could be improved for those working in the Emergency Department?

_____

Q46 Is there anything else that you wish to share with the researcher that you feel is relevant to this study? All information is anonymised

_____

End of Block: Section 1: Demographics

Job satisfaction and staff engagement - What are the opportunities to enhance working conditions in the Emergency Department: A survey

Thank you for taking the time to complete the survey

We recognise the moral injury and deteriorating working conditions that Emergency Department Staff and the NHS as a whole, are currently going through. Demand is at an all time high and job satisfaction at an all time low.

With the results of this survey, we hope to determine whether there are any opportunities to enhance staff working conditions or the factors making staff want to leave the job.

Your information will remain anonymous and will be stored in line with GDPR regulations. It will be kept for 1 year before being destroyed. There will be no identifying features presented in the report with any associated comments.

If you have any questions or concerns after completing this survey, please feel free to contact either the researcher, Dr Katy Jewell (Guy) katy.guy@wales.nhs.uk), or project supervisor, Dr Sian Roderick S.Roderick@swansea.ac.uk.

What can I do if I feel upset after completing the survey?

If you feel affected by some of issues addressed in the survey, then help is available.

Please get in touch with your line manager or the well-being service through work. There are external agencies to help one of which is Canopi https://canopi.nhs.wales/

THANK YOU

We thank you for participating in this research and hope that this information has helped to answer any questions that you might have had.

Appendix E: Qualitative data

What do you feel is good about working within the Emergency Department?

Most of the managers are approachable and always trying to help. Always surrounded by knowledgeable people
Most, not all, staff care. And work as a team as well all have this understanding of how difficult the job is and we need to work together to get through.
The team, support from colleagues, being able to treat and reassure many patients and their relatives.
Supporting students, education, SPA time, constant learning, always being able to make a difference how ever small.
good team that pull together
Working in the team, managing resus patients
The staff, and the team I work along with are amazing, that's why I am still here.
Certain froends
Some of the people
team work
The staff, patients and the clinical work.
The team
there are staffs that are helpful, some are not
Staff
Good variety, opertunities to learn new skills
Team,
Staff within department.
Team work in the department across different professional and non-professional groups is good. Staff look after each other.
Clinical colleagues are amazing.
I feel the mission of advocating for patients and managing them when most vulnerable is valuable.
The ED staff are supportive of each other
Come across different cases every day
The camaraderie, the training opportunities, the reward you get from doing your job well when you can.
I feel good full job satisfaction when there good team work who very willing to help
Friendly
99% of the team works hard for each other and our Latinos
Fantastic team work despite current pressures.
The team of staff of all bands and disciplines who work together in the clinical area. The support given and received, often outside of work often makes the difference as to wether staff turn up for work or call in sick.
The team. Very helpful seniors.
Patients receive care, albeit inefficiently
Everyone works well together and good communication with doctors and nursing staff. If there’s an issue you feel you can go to any of the ED doctors for help.
Experience

The people. Everyone works incredibly hard and I've never felt at home anywhere, as much as i do in the ED.
The skills you aquire and the support some of the colleagues provide
I feel we are a strong team on the floor and support each other
team work
Our team, the way we are so slick and effective in a difficult resuscitation, the sense of humour, the busy and dynamic workload
The staff, some managers/sisters the development team
The nursing & medical ED staff are fantastic and work extremely well together!
I like working as part of a team. My work colleagues make work life manageable
I feel like I enjoy my actual job and learning new skills
Not much these days
The variety of patient experience
Great team. We look out for each other and work better together.
The team within ED
The people - hardworking and honest able to have a laugh in difficult circumstances. When a life threatening emergency occurs everyone chips in and supports each other.
The Team
is a very supportive consultant
Good team work
Working in a big team and having exposure to new experiences ans learning opportunities
The team and the people are great to work with
Great clinical team, work together, I enjoy the work and feel supported
Most of the shop floor staff are clinically solid and friendly.
The team and our incredible ability to pull together in the most stressful situations
Speialism
Approachable and friendly colleagues

Do you have any suggestions as to what could be improved for those working within the ED?

The bed managers and matrons come down and only on certain days they push the wards for beds, most importantly we need them every day 1. Ensuring safe discharges but supporting their staff and helping and not just making comments on how busy the department is, we know.. we're the ones working there. Just help everyday and pushing wards to avoid extras in resus and the trolley bays

Where do I begin. Replacement of equipment. Higher standard of cleanliness (not so much domestics) but staff not cleaning beds, trolleys, obs machines and wheelchairs. Many times bodily fluids have had to be cleaned off equipment before use. The store rooms need to have a better system, as people just dump things anywhere rather than putting them back correctly. This causes issues when in an emergency and unable to find stock. Bed blocking and plus patients need to be minimised. Understandable people need beds, but also, what good are we to a patient if they arrest and they are sat in the middle of a bed area where there isn't adequate equipment to assist them in an emergency. I personally think triage should be trained to turn patients away or send them to another service if possible as this would dramatically reduce the amount of people coming into a and e and wasting

hospital time and taking up a bed that could be used for a patient in need. Thus, hopefully preventing incidents such as patients arresting in the waiting room.

1. Better IT systems, more accessible to nursing staff to aid communication between clinicians. Would enable removal of white boards, lost notes, delays, a huge problem for all reducing job satisfaction. 2. Recent introduction of a new integrated clerk, more involvement in patient journey, particularly chasing investigations that referred speciality patients are waiting for to be discharged. 3. House-keeper, requested for at least 15 years as I have worked in areas previously with them (everyone thinks its a good idea but never implemented as money would need to come from nursing budget! Why?). To stock, manage equipment, plug in, report when broken, organise - save clinician another distracting role! 4. Equipment - A faulty pod system for at least 15 years, fixed breaks, how is this allowed? Replace or employ more porters. Inappropriate trolleys, couches that break become dangerous, who is accountable for this? Companies who are awarded contract to supply equipment can they not be accountable and accessible when things break? It would not happen in private sector, directly impacts of patient care and clinician job satisfaction. Radios that don't work to access porters, porters need a visible space in the department so they are accessible. 5. Ownership - speciality patients have meant more speciality doctors in the department. I believe this has contributed to lack of ownership. Domestics, porters probably don't feel part of the team but they are vital. So many employees we need to meet/anonymous suggestions box, ideas/concerns. We need to foster a culture that demonstrates care not just suggests it. We are not working together enough. 6. Many staff with many skills! We could ask staff to complete a form with their interests/skills that could contribute to the development of the department. What can people bring to the table? The education team could support this, involving people contributes to their sense of belonging.

Better off duty. More equipment or equipment that actually works. No extra patients blocking areas. Enough staff to actually care for patients. Not using greenbay as a extension of minors

Space and number of patients of referred patients meaning there is no space for ED patients who require a bed space, so you have to compromise care

1. The management should visit ED regularly and see how we work (not sitting in their offices and looing at numbers on the screen). 2.Speak to the people working at the front door, ask them how we can do better, for patients and for the staff morale and retention. 3.Ensure our policies and pathways are transparent.

Nope

Stop clicks in the department.

more staff better equipment

Management interferes and makes it more challenging. More and better areas to see patients. It is demoralising and creates sadness to treat patients in sub-optimal conditions. Eg inappropriate bed spaces or corridors. Response from the management and hospital to praise ED Staff

Managers need to allow us to run the ED safely and efficiently without dictating to us based purely on numbers on a computer

working more as a team to ensure the best care for patients and staff coming into a shift.

as working in ED admin. It would be alot of help if all the Doctors type in the system their diagnosis of their patients

No idea what can help at the moment

More staff in minors, more porters, better stock in minors

Reducing crowding would improve the working environment for all

Stability of senior roles.

Better planning of use of temporary workforce instead of last minute covering (if can be found) and by anyone available - we have good agency nurses who know this department who should be booked in advance to support the new and junior nursing workforce. This would improve skill mix and numbers on all shifts and reduce the dread of coming in, and what I think is a contributing factor to increased sickness absence.

Tell us what is being done to our service we are losing staff to Neath and staff are not replaced. We only found out that there were trainee jobs by accident. No one involves in decision making

Managers who actually have an ED background.

Overcrowding in the ED is horrific. Patients are placed in the middle of thoroughfares blocking access and making the department unimaginably difficult to work in. Morale is at it's lowest for many years and no solutions appear to be working. Improving flow out of the ED is a must and avoiding overcrowding

The physical environment in the Adult ED is atrocious - both the infrastructure and the overcrowding

Please consider all equally. Encourage everyone. Recognize everybody's work

The demand makes working in ED hard but having wellbeing checks would boost moral!

The problem is multifactorial as well as the solution.hence overall good teamwork and more staff,adequate supply of working materials at where they suppose to be and frequent training and retraining of staff will go a long way in ameliorating the stress at work.

Getting rid of managers and actually spreading positivity towards staff

Asking for staff feedback on how things are run. As if we are the service users who provide service for the patient. Band 5's/EDA's spent majority of their working time with patients.. we can see what works and what doesn't within our scope of practice

Career progression plans for all

Managers who understand ED and not individuals who think that they do.

If there was a way to improve the infrastructure and reduce waiting times, as this indirectly causes stress.

For a start there could be more efforts to employ, or even to keep the staff we already have somewhat happy to be here, the tensions here as of the past few months and no doubt in the future is ridiculous. Nobody looks forward to working here and that's all across the board. Appreciation would go a long way for all staff members. And job roles should be specified. Way too many people doing the work of others because of laziness and lack of compassion. It is not a team here, it feels more so like war.

The higher management understanding the pressure that nursing staff are under and the work load. As well as the correct number of nurses pre shift with a good skill mix

Staffing levels & skill mix!!! The morale is so low here it has definitely influenced my negative answers to this questionnaire

Less paperwork! There's so many files for patients. If everyone's notes were solely computer based, there would be less mistakes, less patients would be missed etc. So bad for the environment, especially when we have to photocopy everything for transfers to wards. Time consuming and wasteful.

Experienced doctor in triage, more team work from all employees, more positive influence and praise, when something bad happens that support is given, no more beds in the middle of bays its demoralising for patients

ED education team out on the floor for updating skills to prevent having to come in for extra hours on top of working week hours. Being kept up to date with changes being made in the department. The department retuning back to how it was pre covid e.g REACT. Wage scales should be higher for ED staff due to our skills.

let it be run by its own staff not upstairs

Let us run our department properly! Non clinical managers with a bullying attitude seem to be multiplying. They don't see that our patients are real people, they don't care how difficult they make it for us to provide quality care. They are dismantling and destroying the spirit of our department and it will break us.

We need more staff, better equipment and more training opportunities, less extra patients and a more realistic approach from the matrons

Better communication, more support, more understanding by organisation about unsafe working conditions

Better access to areas that are stocked with working equipment. Better communication from managers You

Give more opportunities to progress

Appreciation

Better flow out from the department into community care. Effortless referral system e.g one referral system and one referral form. Team employed to manage all inappropriate attendances without conflict

Improved communication about the changes happening (building work, matrons etc)

Too many suggestions to list but essentially a functioning wider organisation to allow the ED to function. Fewer non-clinical managers & fewer managers overall

I think every aspect of communication is poor in ED. Handing over patients, lessons learnt from incidents/events.

Flow, respect for our specialty - not the "just send it to ED to sort" mentality from others

Increase flow, increase nursing capacity in waiting room/green, increase senior support (MG/Cons) in PM, push Greatix/positive feedback and recognise hard work done, do WBPAs (I have never worked anywhere where consultants do so few!), actually come to see a patient when a senior reg asks for help, improve inter specialty working relationships at a consultant level to help juniors with referrals, have rota'd MIU time, stop consultant bullying at hand over (improve the computer system - welsh PAS does not give you any sense of who is in your dept; have a red line with corridor care and stop having patients plussed all over the department. I was tired of apologising every time I saw a patient for the standard of care given.

Digitalised discharge summaries that show on WCP. Easier access/easier to use access to old ED notes other than ABMU portal

Improved patient flow, treatment of staff, rota pattern (eg checking what is actually needed to meet 50% banding because I don't believe anyone has checked how it can be in the best interests of junior doctors working there to meet out of hours and qualify for the banding, better feedback given, staff morale for all and overall I think if patient flow was managed better then we wouldn't feel demoralised

More focus on staff wellbeing and better work life balance. Constant exposure to a stressful environment takes its toll on health and wellbeing of the staff members

The only part I hate about my job is dealing with patients who have been waiting too long for care, this leads to dissatisfaction for both patients and clinicians and patients deteriorate.

As a clinician: a co-located CT scanner to minimise transfer outside Ed. A more robust ambulatory pathway with SDEC. Self rostering. A separate paediatric resus.

Looking out for the junior staff. Taking the time to get to know them.

Listen to everyone; look at sun- specialism: value each members non clinical skills

Adequate rest spaces and toilets for staff, Better allocation of staff in high flow regions.

Is there anything else that you wish to share with the researcher that you...

I think I have said everything I need to, but it's just very important we are listened to! And hopefully change will happen!

I think I've said it all. Sorry for the rant!

I have completed many a survey, discussion with staff from work force planning etc, never have any suggestions been implemented. It would be great to see even small changes as a result of this survey. Thank you

no

Thank you for this time

We should be working together. Band 3s and certain band 2s need to realise they are not consultants.

It will be easy if we are paperless

no

Nil.

Management are bullies who undervalue and pressurise clinical staff.

Please provide study days to everyone, education department is not supportive to everyone, racism still exists especially from education team.

The demand on staff and the department make working in ED incredibly hard however good teamwork, managers and leaders really boost moral in the work place despite the challenges.

Adequate staffing

Morale is probably the lowest it has ever been, more training and teaching

More communication from senior nursing management. I feel it would be beneficial if new management were more approachable, familiarised themselves with the team. Appreciating that we are a big department with lots of staff but having senior managers attend handovers in the hub to pass on feedback or make themselves known. At the moment I feel we are being ignored

We are constantly under pressure and that has become accepted as the norm. We had difficult times a few years ago, but that changed and the working atmosphere improved dramatically as did the permanent staffing ratios, staff well-being and the general 'can do' approach. This changed about a month ago and the department has never felt so constricted, oppressive and abandoned. It is really difficult for staff to see a way forward.

ED has roughly 15 full time porters, over half of which are off on the sick with illness/stress. If it was managed here in a FAIR and efficient way and opinions and advice from the lower bands were taken into serious consideration , there wouldn't be half as many issues as there are. Nobody wants to hear how the workers are coping, and are way too comfortable with letting us plod along day in day out with no change,. It's only a matter of time before there are zero porters here as every bodies patience is wearing extremely thin.

The continuous extra patients and poor staffing is impacting the morale here, it isn't safe and it causing anxiety and stress to the most experienced staff recently I have felt weak and that I have failed my patients it isn't nice leaving a shift upset because you feel you couldn't give the care you wanted to patients.

Personally, i absolutely love my job. Yes it's incredibly hard work and frustrating and exhausting. But knowing you've made a difference makes it all worthwhile.

The lack of privacy that is given to patients is embarressing, react needs to go back to red resus, need more porters within the department, improper use of cannulas, updated cookbook, more medical education on interpretations of investigations being carried out, doctors to stop shying away from doing repeat bloods i.e trops

Incentive to stay in ED e.g better wages band 3&4 for EDA and all nurses band 6

The staff are burnt out due to the work load and pressures from all the extra patients in the middle of areas that we never used to have

I'm a senior nurse on a high pay band and I LOVE emergency care and my weird and wonderful colleagues. However I don't know how we can carry on like this. It feels like we are deliberately being understaffed, constantly undermined and are powerless to improve patient safety and care despite trying to blow the whistle on how we are forced to nurse patients. The moral injury is huge.

You ogten feel that managers are more interested in targets that patients and staff wellbeing

Some staff are moved up a band and others have to be interviewed before they can move up which is unfair to others doing the same job

The survey does not seem to take account of natural change such as retirement. My answers are vague in places due to this

I think paramedics can contribute to a toxic environment at times and force the incredibly stretched nursing/portering staff to do jobs that they could easily do.

The work has changed from the role we went into. What keeps me going is being close to tetirement . I fear for the specialties future and for my younger colleagues

Morriston broke my resolve and made me really not enjoy emergency medicine. There are some great nurses and consultants who work there but no job I have ever done has made me feel as miserable as Morriston

N/a

I would consider this a career in dual with GP if that was possible

No

Although I love my job and have learnt at great deal since joining the department, the waiting times and ridiculous procedural delays lead to job dissatisfaction

Swansea ED needs to aim higher; they can be at forefront of doing innovative projects; but seem to be thinking of doing things in the past

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About the Author

Katherine Jewell. Katherine is a Consultant in Emergency Medicine. She graduated from Cardiff University in 2003 and undertook her Emergency Medicine training across South Wales. Katherine has recently completed the CLIMB programme through the Dragons Heart Institute, an innovative leadership programme. She also has a special interest in Sports and Exercise Medicine having recently become a Member of the Faculty of Sports and Exercise Medicine and has previously undertaken a Postgraduate diploma in Sports and Exercise Medicine in Cardiff Metropolitan University in 2015. Katherine has a particular interest in compassionate leadership and staff well-being. She is also a wife and a mum to a very independent 5-year-old.

Implementation of Clinical Supervision for Advanced Paramedics in the Welsh Ambulance Service University Trust (WAST)

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Abstract:

This research report outlines the rationale, development and implementation of a clinical supervision policy within the Welsh Ambulance University Service Trust (WAST). Clinical supervision has become increasingly recognised as a critical component of healthcare, providing essential support for reflective practice, professional development, and emotional well-being among healthcare professionals.

The report explores the frameworks which steered the professional requirement to increase the level of clinical supervision to the paramedic profession, and significance of embedding a clinical supervision model across WAST, focusing particularly on the unique challenges faced in implementing a consistent model for Advanced Paramedic Practitioners (APPs) and Trainee Advanced Paramedic Practitioners (TAPPs).

The College of Paramedics, the professional body for paramedic practice in the UK, jointly with the Association of ambulance Chief Executives (AACE) crafted a Clinical Supervision framework for UK Ambulance Services to adopt. As a result, the author led on the organisational policy development and implementation of said policy, collaborating with multiple stakeholders within the Welsh Ambulance Service Trust.

It was imperative to explore the national and UK wide frameworks such as the Health Education and Improvement Wales (HEIW) Enhanced, Advanced and Consultant Practice Framework and Clinical supervision framework for UK ambulance services (HEIW, 2023; AACE, 2021) to inform decision making, as well as understanding how other professions e.g. nursing developed their clinical supervision models.

Understanding the current organisational picture through a detailed gap analysis revealed significant disparities in clinical supervision access across the organisation, particularly in non-emergency care and advanced paramedic roles. To address these gaps, a case was developed to introduce senior clinical roles into the organisation and expanded the clinical supervision structure to ensure all staff, regardless of role or geographic location, have access to supervision at least four times a year.

The report also examines the integration of clinical supervision into the broader strategic goals of WAST, such as enhancing patient care outcomes and supporting workforce well-being. The policy's alignment with initiatives like A Healthier Wales and the Six Goals for Urgent and Emergency Care Plan underscores its importance in responding to the increasing demands placed on healthcare services. Through structured clinical supervision, WAST aims to foster a culture of continuous learning, support staff in complex clinical decision-making, and ultimately improve patient safety and care quality.

Keywords: Clinical supervision, Advanced Paramedic Practitioners, Welsh Ambulance Service, Paramedic education, Reflective practice, Workforce well-being, Health policy implementation, Patient safety, Health Education and Improvement Wales, UK ambulance services

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Introduction

Clinical supervision is increasingly recognised as an essential element of healthcare delivery, particularly in the context of professional development, maintaining safe practice, and supporting the emotional well-being of healthcare workers. In paramedic practice, the nature of work across ambulance settings demands a high level of autonomy, which brings unique challenges related to decision-making and professional development. However, the formal implementation of clinical supervision in paramedicine is relatively new, especially compared to nursing and other allied health professions (AHP), where supervision models are more established.

The Health and Care Professions Council (HCPC) is the formal regulator for the paramedic profession and 15 other Allied Health Professions (e.g. physiotherapy and dietetics). The HCPC defines clinical supervision as "a process of professional learning and development that enables individuals to reflect on and develop their knowledge, skills, and competence through agreed and regular support with another professional" (HCPC, 2022). The clinical supervision process enables individuals to develop knowledge and competence, assume responsibility for their practice, and enhance service user protection, quality, and safety of care (HCPC, 2021).

Clinical supervision has been available across established professions such as nursing for decades (Nursing and Midwifery Council [NMC], 2018). As a profession that has been regulated for over 100 years, regulation has meant that individuals who have passed their 'nursing' qualification are benchmarked against a standard specific to their profession to enable continued registration (NMC, 2017).

The evolution of the paramedic profession has been somewhat different with a small number of pilot schemes starting in the 1970s to provide ambulance crews with advanced resuscitation techniques (Newton et al, 2020). With the transition of ambulance services moving from local authorities to the National Health Service (NHS) in 1974 and the Department of Health (DoH) later rolling out further schemes for "extended trained ambulance staff" in 1985. The first part time undergraduate paramedic degree programs did not emerge until 1996 (College of Paramedics [COP], 2021).

In 1999 ambulance staff were allowed to vote on whether they felt the title 'paramedic' should be state registered, a clear yes vote was delivered, this enabled the profession to become state registered with Council for Professions Supplementary to Medicine (CPSM) in 2000, over 80 years after Nursing gained registration entitlement (COP, 2021).

This comparison is important to acknowledge as literature is often very established across other developed professions such as Nursing and Medicine, however, despite registration with the now Health and Care Professions council (HCPC) which replaced the CPSM in 2003, the body of research and evidence across the paramedic landscape is often considered underdeveloped (Newton et al. 2020). One likely reason for this was prior to 2018 that the level of qualification for entry to the HCPC register was stipulated as BSc (Bachelor of Science) level. Prior to this a range of qualifications were accepted including 16-week transition courses for internal applicants, through to Higher Diploma (HeDip) routes. This breadth in education has meant that the expertise in research and development has often been limited and the reliance on other professions such as nursing and medicine to support professional development has been evident, often with no paramedics sitting on ambulance boards, or policy and guideline creation forums e.g. Joint Royal Colleges Ambulance Liaison committee (JRCALC).

As expertise and professional development has increased in the paramedic profession across the UK, the emergence of roles such as Director of Paramedicine in 2020 has developed to support clinically driven paramedic specific requirements within these services, so too has the impetus to provide clinical supervision to develop the expertise and skills of the future workforce.

The progression of BSc education for entry into most healthcare professions has further allowed for consistency in professional development with the emergence of advanced clinical practice (ACP) roles across an array of healthcare professions, including paramedicine. An Advanced Clinical Practitioner is a "A role, requiring a registered practitioner to have acquired an expert knowledge base, complex decision-making skills, and clinical competencies for expanded scope of practice, the characteristics of which are shaped by the context in which the individual practices. Demonstrable, relevant master's level education is recommended for entry level" NLIAH (2010).

Having senior paramedic clinicians working across the advanced practice and consultant roles within ambulance services is considered an emerging and important clinical development for the profession. Whilst there is significant variation across ambulance services within the senior clinical workforce, having these clinicians in place provides the clinical expertise to enable clinical supervision to be delivered to the paramedic workforce.

In 2021, the Ambulance Association of Chief Executives (AACE), together with the College of Paramedics, NHS England, and NHS Improvement, published a clinical supervision framework for UK ambulance services. This framework advised that each ambulance service should embed a clinical supervision framework within their organisation by December 2022.

This report will outline the importance of clinical supervision practice for the wider healthcare system, exploring specifically how this interface with paramedicine. It will then consider the rationale for embedding a clinical supervision model into an ambulance service in Wales, specifically focusing on the additional challenges faced by developing a consistent model for the advanced paramedic practice (APP) workforce within this setting.

Literature Review

Clinical supervision plays a crucial role in ensuring that healthcare professionals can reflect on their practice, improve their decision-making skills, and continue developing professionally. In paramedicine, where decision-making often happens in isolation and under pressure, clinical supervision provides a much-needed reflective space. It offers a structured way for professionals to step back from immediate demands, review their actions, and learn from both successes and mistakes (Kilminster & Jolly, 2000).

The *Health and Care Professions Council* (HCPC, 2021) identifies clinical supervision as fundamental for paramedics to maintain professional standards and ensure safe practice. For advanced paramedics, who frequently work independently in high-pressure situations, clinical supervision is vital for consolidating clinical skills, maintaining accountability, and ensuring that clinical decisions are well-considered and aligned with the latest guidelines.

Across the UK the emergence of Advanced and Consultant level practice has allowed professions to develop meaningful career pathways at the highest points of professional practice. Advanced Clinical Practice is a level of practice allowing professionals from a range of clinical professions and backgrounds to undertake a joint learning MSc process based on the four pillars of advanced clinical practice (HEE, 2017). Developing underpinning knowledge in Research, Education, Leadership and core clinical components which they then implement into their specific area of practice.

Following on from the multi professional framework for advanced practice in England published in 2017, Wales, through the Health Education and Improvement Wales (HEIW) body developed the *Enhanced Advanced Consultant Framework* (2023). This similar framework outlines the necessary competencies for clinicians to work through as they develop their career path from core registrant into enhanced, advanced and consultant level roles, with clinical supervision positioned as a critical component of professional development. This core document formulated a strong foundation for the development of a clinical supervision policy for paramedics within the ambulance setting in Wales.

Additionally, *Lord Carter's review* of unwarranted variation in English NHS ambulance services (2018) highlights the role of supervision in standardising care across regions. This the focus of the review was in England, AACE adopted the findings from the review and advised that all UK ambulance services align to the framework guidance that was developed as a result.

This literature review will explore the rationale for clinical supervision in healthcare, particularly focusing on its relevance to advanced paramedics, and will examine the current frameworks and policies in Wales.

Emotional and Professional Benefits of Clinical Supervision

Current research supports the significant emotional and professional benefits of clinical supervision. *Foster, Thompson, and Anderson* (2020) demonstrated that paramedics who participated in regular supervision with the opportunity to learn through experience, critically reflect, understanding the most up to date guidance, knowledge or process and consider what could have been done differently, reported greater

confidence in their clinical decision-making and fewer instances of clinical errors, particularly in high-pressure or high-stakes scenarios.

Similarly, *Carpenter, Webb, and Bostock* (2018) found that healthcare professionals with consistent access to supervision showed lower levels of burnout and emotional exhaustion, particularly those working in high-stress environments. The importance of supervision in maintaining emotional well-being is especially relevant to paramedics, who are frequently exposed to trauma and high-stress environments.

Ambulance services are cognisant of the frequent exposure to high-stress and traumatic events, often with extensive well-being and emotional support offers across their respective organisations and access to third party charities such as The Ambulance Services Charity (TASC). However, it is important to recognise the evidence highlights that clinical supervision is an important tool to prevent emotional exhaustion and burnout when delivered effectively.

These benefits are further echoed by the findings of *Dawson et al.* (2013), who concluded that structured supervision reduced stress levels in ambulance staff and improved their ability to cope with traumatic events. Reflecting on challenging situations with a more experienced colleague, in an open non-judgemental manner has been shown to prevent similar mistakes happening again and allows clinicians to process emotionally taxing situations

Improving Reflective Practice

Reflective practice is another core benefit of clinical supervision. As emphasised by *Schön* (1983), reflective practice enables professionals to continually improve their work by thinking critically about their experiences and actions. For advanced clinical practitioners (ACPs) including advanced paramedics (APPs), this is crucial because the complexity of the cases they encounter demands continuous learning. Supervision helps paramedics engage with evidence-based practice, reflect on their decision-making, and integrate feedback into future patient care.

Kilminster and Jolly (2000) found that healthcare professionals who participated in regular supervision were more likely to engage in reflective practice and adapt their clinical decisions based on critical self-assessment.

In both core paramedic practice and advanced paramedic practice, maintaining a portfolio of evidence is a requirement of the regulator (HCPC, 2025), with professionals picked randomly as part of the re-registration process every 2 years, to demonstrate how they have maintained their clinical competence during this time. Evidence of Continuous Professional Development (CPD) is a mandatory component of re-registration. Reflective practice is an essential tool to demonstrate personal growth and development and submissions in this format are strongly encouraged. At advanced practice level it is also a mandatory requirement in the author's organisation, as the ability to explore an area of practice in an open-minded fashion, explore the current evidence base and correlate their findings into future learning, demonstrates critical analysis of a situation or area of practice and the ability for continuous improvement as a result.

Clinical Supervision in Advanced Practice

The development of the Advanced Paramedic Practitioner (APP) workforce has been a key focus for WAST, particularly in the context of increasing service demands and workforce pressures across healthcare in Wales. Advanced practitioners, initially introduced in 2004, have become critical to bridging care gaps, particularly through their rotational working across Wales, where they have developed robust networks and relationships with local health boards.

Trainee Advanced Paramedic Practitioners (TAPPs) are required to complete an MSc in Advanced Clinical Practice, covering the four pillars of practice—clinical, leadership & management, research, and education. A crucial component of this training is the clinical placement hours, traditionally in primary and urgent care settings. However, before September 2024, there was no formal structure to ensure placements occurred within these settings, leading trainees to rely on informal local support structures. A training contract has since been introduced, mandating primary care placements for all new TAPPs. This structured training, aligned with the Welsh Government's 'A Healthier Wales' and the 'Six Goals for Urgent and Emergency Care Plan,' ensures that APPs develop competencies that directly contribute to the healthcare system's needs (Welsh Government, 2019).

Through the PACESETTER pilot scheme, funded by the Welsh Government and delivered in collaboration with Betsi Cadwalader University Health Board (BCUHB) as a pilot between 2019-2022, TAPPs working in primary and urgent care settings demonstrated a 30% reduction in hospital conveyance compared to paramedic counterparts. This model has now been expanded across all seven health boards in Wales, offering a structured development pathway for APPs while alleviating pressures on emergency departments by providing safe, clinically guided alternatives for patient care (PACESETTER, 2023).

For advanced paramedics, who manage more complex cases and often work in autonomous roles, clinical supervision provides an essential safety net. As highlighted in the *HEIW Enhanced Advanced Consultant Framework* (2023), advanced paramedics are responsible for clinical leadership, education, and complex decision-making. Regular supervision helps consolidate these competencies by providing a structured space to discuss complex cases, leadership challenges, and clinical decision-making processes.

Leadership is a key component of advanced paramedic roles, as they are often responsible for mentoring junior staff and leading clinical teams. Regular clinical supervision supports the development of these leadership skills by providing an opportunity to reflect on leadership challenges, discuss best practices, and receive feedback from more experienced clinicians (Foster et al., 2020).

In Wales, where paramedics often work in geographically isolated areas, leadership development through supervision is crucial in ensuring that clinicians feel supported and capable of managing difficult situations. For practical delivery this is done via a blended approach of virtual meetings and face-to-face contact.

Advanced paramedics are frequently required to make autonomous clinical decisions, often in time-sensitive or complex situations. Supervision provides a platform for reflecting on these decisions, discussing alternative approaches, and ensuring that clinical decisions are aligned with best practices and current guidelines. The *Foster et al.* (2020) study highlighted those paramedics who engaged in clinical supervision felt more confident in their decision-making, which ultimately translated into better patient outcomes. Similarly, *Schofield and Phelan* (2018) found that clinical supervision for advanced practitioners improved critical thinking and enabled them to apply evidence-based guidelines more effectively.

Barriers to Implementing Clinical Supervision in Paramedicine

Despite its proven benefits, there are several barriers to implementing clinical supervision across paramedicine. One of the primary challenges in Wales is the geographical spread of services. In rural areas, paramedics often work in isolation, making it difficult to access regular supervision. The Welsh Ambulance Service, like many across the UK, faces logistical challenges in ensuring that all paramedics, regardless of location, have access to clinical supervision (Lord Carter, 2018).

Another challenge is the variability in supervision practices. While some sectors of the ambulance service in Wales have developed comprehensive supervision structures, others are still in the early stages of development. This variability can lead to unequal access to support, which may impact paramedics' professional development and patient care (O'Halloran, Porter, & Blackwood, 2019). A standardised national supervision framework, aligned with HEIW guidelines, should help ensure that all paramedics receive the same level of support.

Staff shortages and operational pressures within ambulance services are also significant barriers to the consistent implementation of supervision. Advanced paramedics often have demanding clinical workloads, making it difficult to allocate time for supervision without affecting service delivery. The need for protected time for supervision is essential, as is the need for organisations to prioritise this practice to ensure both the well-being of their staff and the quality of patient care.

One barrier which is reducing with the increase in BSc qualified staff is the academic underpinning to deliver clinical supervision. In order to deliver clinical supervision in practice, an understanding of theoretical principles and mechanisms to enable the clinical supervision process is integral. With the emergence of mandatory qualifications for entry level to the register, senior and advanced paramedics educated to master's level and beyond, and a highly skilled workforce managing an increasingly complex and changing caseload of patients, the factors for success are in place.

Comparisons with Other Healthcare Professions

Clinical supervision has long been established in professions such as nursing, where it plays a critical role in professional development, reflective practice, and patient safety. Nurses, particularly those in advanced practice roles, benefit from well-defined supervision models that have been refined over decades (Butterworth et al., 2008). In contrast, paramedicine is relatively new to structured supervision, with formal frameworks still emerging.

As *Benner* (1982) articulated in their "novice to expert" model, healthcare professionals require structured reflection and guidance to move from competence to expertise. In paramedicine, the integration of clinical supervision into practice has the potential to accelerate this progression, allowing advanced paramedics to develop their clinical skills, leadership, and emotional resilience more effectively. However, the lack of established supervision frameworks in paramedicine means that many practitioners are still in the "novice" phase when it comes to reflective practice and clinical leadership.

Lord Carter's (2018) review highlighted that inconsistent access to clinical supervision contributes to variations in care quality. Standardising supervision practices across NHS ambulance services, as has been done in nursing, would help reduce these variations and ensure that paramedics are better supported in their professional development.

Current Policies and Frameworks in Wales

Wales has made progress in recognising the importance of clinical supervision for advanced paramedics through key policy frameworks. The *HEIW Enhanced Advanced Consultant Framework* (2023) outlines clinical supervision as a core competency for advanced practitioners, placing a strong emphasis on its role in supporting clinical decision-making, leadership, and emotional well-being.

However, the implementation of supervision remains inconsistent across Wales. This lack of consistency can create disparities in the support that paramedics receive. A national framework that aligns with the HEIW guidelines and ensures equal access to supervision across Wales would help address these disparities and ensure that all paramedics receive the support they need.

Standardising supervision practices would also address the findings of *Lord Carter's (2018) review*, which called for greater consistency in support systems across NHS ambulance services. A national framework would help reduce care discrepancies and ensure that paramedics across Wales work to the same high standards, improving patient outcomes and supporting professional development.

Clinical supervision plays a critical role in supporting paramedics in Wales by providing a structured space for reflection, professional growth, and emotional support. The *HEIW Enhanced Advanced Consultant Framework* (2023) and *Lord Carter's review* (2018) both emphasise the need for formalised supervision models, particularly as paramedics take on more complex clinical and leadership roles such as advanced clinical practice positions. While barriers to implementation exist, such as geographic challenges and operational pressures, a national framework could help standardise supervision practices across Wales. By doing so, it would ensure that all paramedics, regardless of location, receive the support they need to provide high-quality care and continue developing their skills.

Policy Implementation and Gap Analysis

In 2021, the Ambulance Association of Chief Executives (AACE), together with the College of Paramedics, NHS England and NHS Improvement, published a clinical supervision framework for UK ambulance services advising that each ambulance service should work to embed a clinical supervision framework within their organisation.

Policy Creation

The author was tasked with the role of clinical supervision policy development within the organisation. Recognising this would require several key stakeholders, a task and finish group was established to work through the core considerations for development. Task and Finish Groups (T&F) are small specialist teams established to work through a specific task or problem with a larger initiative (HEIW, 2022). This was the authors first time to lead on a piece of work requiring this approach, and a process of learning took place prior to commencing to understand the function of what was to be achieved. Utilising tools such as the

HEIW 5 step approach to Task & Finish Groups and accessing project management support to undertake the task, allowed the conditions for development to be laid down.

The aim of the T&F group was to provide a framework for clinical supervision across the organisation which can be utilised or adopted within different operational areas of clinical practice. This included colleagues who practice clinically in both direct and indirect patient contact roles, a minimum of four times a year.

This broad scope recognised that many staff groups within the organisation may be affected by, or be able to develop learning and awareness through clinical supervision models, including staff groups that may not instantly come to mind such as the 'putting things right' team who deal with patient concerns, call takers who are the first point of contact for emergency calls into the service right the way through to senior clinicians such as advanced paramedics. The breadth of patient contact roles across the workforce meant that the policy needed a broad to enable to it be implemented on an organisational footprint.

Representation was sought from various ambulance sectors and directorates including Clinical delivery, Operational delivery, Integrated Care, Trade Union, Education, Workforce, Communications Team, Clinical Psychology, Inclusion, Culture and Wellbeing. The core objectives were established and included in the policy.

Table 1: Core Objectives of WAST Clinical Supervision Policy

To outline the frequency, content and available modes of clinical supervision offered in the organisation
Ensure clinical supervision focuses on providing staff with the opportunity to reflect and share knowledge and skills to support their continued professional development
Clearly outline the role of the clinical supervisor and ensure staff have access to a suitably qualified supervisor.
Create a contract for supervisors and supervisees to have a shared understanding of agreed outcomes where appropriate.
Create a clinical supervision environment that is flexible and equitable, to ensure all staff have access to the sessions, regardless of working patterns.
Provide staff with the time and technology to have access to appropriate clinical supervision, including creating rosters that factor in the requirement for clinical supervision as part of their ongoing learning and development needs.
Create a contract for supervisors and supervisees to have a shared understanding of agreed outcomes where appropriate
Ensure learning is facilitated through effective reporting mechanisms and develop a reliable method of identifying staff who require additional supervision.
Align to the organisational strategic ambition to reduce staff sickness and increase staff welfare through well-being and clinical support.
Raise concerns about patient safety or the standard of education and training openly and safely without fear of adverse consequences
Demonstrate a culture that is committed to fostering a learning environment and responds to feedback from supervisees and supervisors to continually improve the clinical supervision experience.

A policy was developed by the Task and Finish group, including sections such as:

- Frequency of Clinical Supervision
- Content of Clinical Supervision
- Mode of delivery
- Training and implementation
- Roles and Responsibilities

Recognising that the requirements above would be different for clinicians depending on their area of practice within the organisation the approach to providing a consistent method to adoption was outlined, rather than a prescriptive mandatory obligation, leaving nuance for the content to flex dependant on the requirements for the area of practice being considered.

Templates were also included to provide consistency across the organisation for areas such as:

- Individual Contract for Clinical Supervision
- Individual Sessions for Clinical Supervision
- Case- Based discussions
- Group Sessions

The final element was the development of a consistent way of providing audit and monitoring. This was not of the content of clinical supervision discussed- it is important this function is closed and between the supervisor and Supervisee, but the wider ability to demonstrate the frequency, duration and volume of clinical supervision being delivered.

A Microsoft (MS) form was designed to capture clinical supervision contacts, the aim of which, will feed into a larger data capture dashboard, likely utilising the Microsoft Power BI functionality. This process is still in development. But being able to demonstrate high level data around the number of clinical supervision events that have taken place is paramount for evidencing benefit. NHS England (NHSE) agrees safe and efficient patient care relies on high quality data to drive up standards (NHSE Digital 2022).

Implementing Policy

Once the policy was developed an executive request was received to understand how this policy could then be translated into practice and implemented consistently across the organisation.

The author undertook an initial scoping exercise to establish what clinical supervision was currently in place. Scoping is a process of determining what the essential functions are within an organisation (NHSE, 2024). Meeting with senior clinicians and operational delivery managers, the author established there were six core essential areas of clinical practice that are necessary to deliver organisational services.

The report explored current provision using a traffic light scheme, green was to demonstrate areas that matched the requirements of the clinical supervision policy, amber where they partially met the requirements and red where none of the requirements were met. This process highlighted significant variation across the organisation with no areas of the organisation having a full complement of clinical supervision support in place.

Table 2: Scoping of Current Clinical Supervision Requirements within the organization.

Remote Service Areas

Area	Type	Current
111	Registrant & Non-Registrant	Some
CSD	Registrant	None
EMS Co-ordination	Non- Registrant	None

Patient Facing Service Areas

Grade	Area	Current
EMS	Registrant & Non-Registrant	Some
APP	Registrant	None
ACA	Non-Registrant	None

The conclusion of the report was to advise a further two T&F groups were established to lead on the implementation of clinical supervision into two core areas of clinical practice: the remote clinical areas of practice and the patient facing operational areas of clinical practice.

This approach was approved by the executive team, and the author was asked to further lead on the implementation plan for clinical supervision in the Patient Facing Service Areas of the organisation which consisted of three core groups of staff:

1. Ambulance Care Assistants are non-registrants who provide a core function in patient transportation to routine appointments (approximately 50,000 journeys a month, WAST, 2025) and attend 999 patients who require hospital transport after being assessed by a registered clinician.
2. EMS- Emergency Medical Service- consists of Emergency Medical Technicians (EMTs) and qualified paramedics. They attend the full spectrum of 999 calls that come through to the service and make decisions around patient treatment and management.

3. Advanced Paramedic Practitioners (APPs)- are senior clinicians within the organisation, they support patients with complex medical presentations to receive care closer to their home as well as providing the providing EMS functions above. It typically requires 3 years of Masters education in Advanced Clinical Practice to become an APP. Trainees are therefore categorised by Trainee Advanced Paramedic Practitioner (TAPP) followed by their year of study (TAPP1/ TAPP2/ TAPP3).

With the Patient Facing areas established, a detailed gap analysis of current provision was undertaken. A gap analysis is a method for comparing where current performance is against the desired performance level (OnStrategy, 2025). The process revealed significant discrepancies in the availability of clinical supervision, particularly in roles like non-emergency Ambulance Care (ACA/ACA2) and advanced paramedic practice (TAPP1/TAPP2/TAPP3). These areas had minimal supervision structures in place, underscoring the urgent need for a standardised approach to support staff.

Table 3: Gap Analysis of Current Clinical supervision Provision

Role	Gap Analysis - Current Clinical Supervision Provision			
	1	2	3	4
EMT1	MIST - Mandatory In Service Training	SP ride out	SP ride out	Mentoring by EMT3
EMT2		SP ride out	SP ride out	Mentoring by EMT3
EMT3		SP ride out	SP ride out	Gap in current CS provision
NQP		SP ride out	SP ride out	Mentoring by Paramedic
Para		SP ride out	SP ride out	Gap in current CS provision
SP		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
ACA		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
ACA2		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
OTL		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
TAPP 1		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
TAPP 2		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
TAPP 3		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
APP		Gap in current CS provision	Gap in current CS provision	Gap in current CS provision
Prescribing APP		Prescribing appraisal undertaken	Gap in current CS provision	Gap in current CS provision

The introduction of the Senior Paramedic (SP) role in April 2021 (highlighted partly in green in table 3) provided a notable exception. SPs are senior clinicians within the EMS workforce, working with teams of 30 clinicians (EMT and Paramedic), they are a clinician role designed to support and aid the clinical supervision and oversight of their team and wider local area. They do this in part by 'riding out' with their team twice a year during which they provide direct observation, feedback, clinical supervision, and ongoing support. They also oversee airway techniques and provide local Continuous Professional Development (CPD) opportunities.

Table 4: Options Appraisal of Clinical Supervision

Role	Options Appraisal Clinical Supervision Sessions						
	1	2	3	4	Additional Session(s)	Additional Information	Clinical Supervision for Supervisor
EMT1	MIST - Mandatory In Service Training	SP ride out	SP ride out	Mentoring by EMT3	Group supervision session by Senior APP	Ad-hoc support from SP as and when required	Supervisor for SPs: quarterly group meetings and ride-outs undertaken already with HBCL
EMT2		SP ride out	SP ride out	Mentoring by EMT3			
EMT3		SP ride out	SP ride out	Group supervision session by Senior APP			
NQP		SP ride out	SP ride out	Mentoring by Paramedic			
Para		SP ride out	SP ride out	Group supervision session by Senior APP			
ACA		Face to face supervision	Ride out with Senior ACA	Group supervision by Senior ACA	N/A	N/A	Supervisor for Senior ACAs: quarterly group meetings with new band 5 OTL roles that are in discussion
ACA2		Face to face supervision	Ride out with Senior ACA	Group supervision by Senior ACA			
OTL		Face to face supervision	Ride out with Senior ACA	Group supervision by Senior ACA			
TAPP 1		Clinical ride out with APP	Clinical ride out with Senior APP	Clinical ride out with Senior APP	Possibility of placement within areas of practice requiring support	N/A	Supervisor for Senior APPs: quarterly group meetings with Professional Development Lead / Consultant Clinician and annual ride out
TAPP 2		Clinical ride out with Senior APP	Clinical ride out with Senior APP	Group supervision session by Senior APP			
TAPP 3		Clinical ride out with Senior APP	Clinical ride out with Senior APP	Group supervision session by Senior APP			
APP		Clinical ride out with Senior APP	Clinical ride out with Senior APP	Group supervision session by Senior APP			
Prescribing APP		Prescribing appraisal undertaken	Clinical ride out with Senior APP	Clinical ride out with Senior APP			

Recognising the success of the Senior Paramedic model, it was proposed to expand similar "senior" roles into both the non-emergency Ambulance Care sector and the Advanced Paramedic Practice teams. This expansion would enable the delivery of clinical supervision tailored to each workforce area. An options appraisal (Table 4) outlined how senior roles could be embedded within the organisation.

Clinical Supervision for Advanced Paramedic Practice

The options appraisal was submitted to the executive team in Aug 2024 and approved. The inclusion of Senior APP roles, with protected time for clinical supervision, will ensure that advanced practitioners receive the necessary support to continue developing their skills across all four pillars of advanced practice.

The Welsh Ambulance Service's commitment to embedding clinical supervision is aligned with the Health Education and Improvement Wales (HEIW) Advanced Clinical Practice Framework (HEIW, 2023), which emphasises that advanced practitioners must operate across all four pillars, not just in clinical practice. By creating a supervision structure that allows APPs to balance clinical duties with leadership, education, and research, WAST will be fostering a portfolio-based career model that is sustainable and aligned with national standards.

To ensure consistency and alignment with national standards, it was also necessary for WAST to adopt the national job description profiles for advanced practitioners, developed by the Welsh Advisory Group for Advanced Clinical Practice (WAGACP). These profiles, designed to be generic and adaptable, allow for flexibility across different sectors and professional backgrounds. Advanced Nurse Practitioners, for instance, can now work alongside Advanced Paramedic Practitioners, with both roles adhering to a consistent framework of advanced practice (WAGACP, 2023).

A significant shift within WAST has been the decision to move prescribing qualifications from the Agenda for Change Band 8a level to Band 7, enabling a larger cohort of paramedics to undertake the prescribing

qualification as part of their core MSc training. This decision aligns WAST with other health sectors in Wales, such as nursing and physiotherapy, where prescribing is integrated into advanced practice roles at earlier stages of development (HEIW, 2023).

The Senior APP role aligns to the national profile for “Developed Advanced Practitioners,” (WAGACP, 2023) with the new national job description allowing for expanded roles across the four pillars of practice, with protected time for clinical supervision and support for junior colleagues. This structure ensures that WAST’s advanced paramedics can develop into well-rounded clinicians, leaders, and educators, contributing to both their own professional growth and the wider healthcare system.

The Welsh Ambulance Service Trust's clinical supervision policy represents a critical step toward improving staff well-being, professional development, and patient care outcomes. By embedding a structured clinical supervision framework across all areas of the service, WAST is aligning itself with national and organisational priorities, such as those outlined in ‘A Healthier Wales’ and the HEIW Advanced Practice Framework. The implementation of senior clinical roles, the alignment with national job descriptions, and the expansion of prescribing qualifications demonstrate WAST’s commitment to fostering a culture of continuous learning and support. As WAST continues to evolve, this policy will play a vital role in supporting staff welfare, improving patient safety, and ensuring that the service meets the demands of an increasingly complex healthcare landscape.

Conclusion

The implementation of a structured clinical supervision policy within the Welsh Ambulance Service Trust (WAST) marks a significant advancement in both staff welfare and patient safety. By embedding a standardised supervision model across all operational areas, including non-emergency and advanced paramedic sectors, WAST is aligning with the national frameworks outlined by Health Education and Improvement Wales (HEIW) and broader Welsh Government initiatives, such as A Healthier Wales and the Six Goals for Urgent and Emergency Care Plan (Welsh Government, 2019).

The development and implementation of the clinical supervision policy address gaps in support for paramedics working in high-pressure, autonomous roles, particularly in advanced practice. Advanced Paramedic Practitioners (APPs) and Trainee Advanced Paramedic Practitioners (TAPPs) are key to the organisation’s future delivery as the complexity of patients increase, offering solutions to some of the most pressing challenges in healthcare today, including reducing unnecessary hospital conveyance and improving patient outcomes through integrated care pathways (PACESETTER, 2023).

WAST’s approach to clinical supervision supports not only clinical development but also leadership, education, and research, consistent with HEIW’s Advanced Practice Framework. The integration of senior roles, protected supervision time, and the adoption of national job descriptions further reinforce the organisation’s commitment to creating a sustainable workforce capable of delivering high-quality care across diverse healthcare settings (HEIW, 2023).

Increasing healthcare demands have accelerated the need for reform within WAST. The clinical supervision policy is a key element of this reform, ensuring that all staff, particularly those in remote or isolated roles, have access to consistent support, reflection, and guidance. In doing so, WAST is fostering a culture of continuous learning, which ultimately improves service delivery, enhances clinical decision-making, and promotes better patient outcomes (Butterworth et al., 2008).

WAST’s commitment to clinical supervision will continue to evolve as the organisation adapts to new healthcare challenges and opportunities. The policy’s alignment with national standards and frameworks ensures that WAST remains at the forefront of ambulance services, leading by example in staff development, patient care, and operational excellence. The ongoing support for advanced paramedic practice, through clinical supervision and structured training, is central to this vision and will play a critical role in shaping the future of healthcare delivery in Wales.

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Hybrid Work and Social Workers: Analysing Changes in Working Conditions

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Abstract:

Following the COVID pandemic there has been a reluctance shared by social workers and employers to return to office work as before. Many Local Authorities saw an opportunity to save money by vacating buildings and offices as a response to reduced budgets. This led to a hybrid way of working for social workers, a mixture of home and office working. However, there is little research to show how this is impacting on social workers and if more advice and learning is needed to make this new way of working as beneficial as possible for social workers, but more importantly those they are supporting, vulnerable children/adults/families. In 2021 Ravalier's research showed that the working conditions for social work as a profession are the worst compared to other similar professions (Ravalier et.all, 2021). The study aims to analyse the perceived benefits and challenges of hybrid working on working conditions for social worker teams working within a small local authority in Southeast Wales.

Keywords: hybrid working, social work, working conditions

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INTRODUCTION

Background and Context

Social workers had to adapt quickly to digital working during COVID pandemic. Many industries argue this new creative way of working has benefits like productivity and saving traveling time, whilst others recognise working from home was blurring the boundaries of home and work life. Furthermore, research shows that working in isolation and in front of the screen for prolonged periods of time has a negative impact on wellbeing.

Following the COVID pandemic there has been a reluctance shared by social workers and employers to return to office work as before. Many Local Authorities saw an opportunity to save money by vacating buildings and offices as a response to reduced budgets. This led to a hybrid way of working for social workers, a combination of home and office working. However, there is little research to show how this is impacting on social workers and if more advice and guidace is needed to make this new way of working as beneficial as possible for social workers, but more importantly those they are supporting, vulnerable children/adults/families.

The research project aims to investigate the effects of hybrid working on the working conditions for social workers. In 2021 Ravalier's research showed that the working conditions for social work as a profession are the worst compared to other similar professions (Ravalier et.all, 2021). With this in mind, the study aims to analyse the perceived benefits and challenges of hybrid working by social worker teams working within a small local authority in South East Wales.

The social work landscape in Wales

The social work landscape in UK is complex and continually evolving, shaped by various social, economic and political factors. The social work profession in the UK faces significant pressures, including high caseloads, staff shortages and burnout. These challenges have been exacerbated by the COVID – 19 pandemic, leading to increase demand for services and additional stress on social workers. Local authorities responsible for delivering social services, currently face budget constraints resulted from the past decade of austerity, which have led to cuts of social work staff and services.

Social workers in Wales face many of the same challenges as their counterparts across the UK, however there are specific issues shaped by the Welsh context, particularly in relation to devolved governance, local policies and demographic factors. Wales has some of the highest levels of poverty and deprivation in the UK, particularly in areas like South Wales Valleys. For social workers this means complex caseloads, with multiple issues such as substances abuse, housing issues, unemployment which leads to children living in poverty and not accessing education or health services (Poverty in Wales 2018 report). In this particular area the impact of Brexit has also led to loss of funding from European Union which supported infrastructure development, social projects, improvements in communities, all an addition support to social services in Wales.

Social Services and Wellbeing (Wales) Act 2014 is the legislative framework which was introduce to transform social care services in Wales. The Act aims to promote prevention, well-being and person-centred care through co-production and integration of services. Various government evaluations raised that whilst there has been a successful implementation of the principles of the Act, this is inconsistent across areas, and there are barriers to practice such as issues with funding and capacity. Social Care Wales advised of the need for better recruitment and retention in order to fully implement the preventative focus. In 2018 the British Association of Social Workers (BASW) reported social workers feel the pressure of putting the Act's principles into practice due to high caseloads, administrative burdens and limited resources (BASW, 2018).

Personal motivation of the researcher

The researcher has over 20 years of social work experience and was motivated to undertake the study after working as a team manager for a few years in children services. Although not from Wales, the researcher feels Wales has become her adoptive home and she is passionate about making a difference in the place she works and lives. Wales is a nation with a strong sense of community, with a culture born from Aneurin Bevan's passion for a welfare state where everyone has support regardless of financial means, where social workers remain committed in spite of high level of needs and difficulties. The researcher feels strongly social

workers deserve more support from fellow professionals to shift the negative stigma and recognise the immense difference they make to people's lives but also society at large. The changes which lead to social problems and an increase in demand of services, such as Covid-19 and Brexit, have an impact on social workers as professionals and individuals. Without caring for them, there will be no workforce skilled enough and passionate enough to want and try to make a difference. Social Workers are not only doing their job but invest themselves to relate, to connect which can only be done at the expense of one's self. The researcher hopes this study will give social workers a voice and will lead to positive changes within the social work profession.

Research questions, aims and objectives

- What are the perceived barriers and benefits of hybrid working model for social workers?
- How does hybrid working model affect job satisfaction and wellbeing of social workers compared to traditional in – office working model?

Conclusion and structure of theses

This chapter introduced the social work landscape in Wales as well as the motivation of the researcher in completing the study. It also highlights the scope of the research study and the objectives to identify the impact of hybrid working, something which was introduced within social work through austerity with limited research on how this is impacting the social work practice but also social workers themselves. Chapter 2 will present a review of the existing literature in this field of study, before outlining the chosen research design in Chapter 3. Chapter 4 will present the findings of the research and the relation to the relevant literature. The final chapter will then provide the conclusions, implications, and recommendations of the research study.

LITERATURE REVIEW

Social Work as Relationship-Base Practice

Social work profession relies on relationship-based practice, using the relationship between social worker and service user as a secure base to influence change of self and understanding of others and the world (Ruch, 2005).

The secure base concept comes from the attachment theory developed by Bowlby in 1988 and identifies relationships as the key to emotional regulation. As they grow, children rely on their relationship with their caregivers to learn how to regulate emotions and develop resilience. As adults, we continue to require the secure base of relationships to manage emotional challenges and maintain emotional resilience. (as cited by Cook et. all, 2020)

Howe argues that the social worker is an active agent influencing others and being influenced by those social workers work with, through behaviors, thoughts and feelings. (Howe, 1998, 2018 as cited by Pascoe, 2022). To better understand the people, they support and identify the right support, social workers are required to remain empathic, defined by the Oxford Dictionary as the ability to understand and share the feelings of other. This emotional interchange requires social workers to remain emotionally resilient through regular reflection, emotional support, as well as opportunities to re-charge.

Cook argues that the team can provide a secure base for social workers to help them process emotions, share experiences, find acceptance and emotional containment, find a sense of belonging and cooperation which helps social workers to manage stress and feel more confident in their practice (Cook et al., 2020).

The argument is further expanded by Rush (2007) who believes that emotional containment comes from informal discussions between colleagues, and Helm (2016) who sees the informal discussions within a team as an opportunity for sense-making. (Cook et al., 2020).

The Covid pandemic forced social workers to adapt to working from home remotely for a significant period, which impacted not only on engagement with service users but also the way the social work teams worked together reducing the team' role to act as a secure base. Labushagne and Cook argue that remote work limited access to immediate peer support and was problematic for newly qualified social workers and new

team members who did not have established relationships with the team prior to lockdowns (Labuschagne et al., 2021 and Cook et al., 2020 as cited by Pascoe, 2022).

Agile working practices are mentioned in literature from 2016 (Jeyasingham, 2016 as cited by Cook et al., 2020) long before the COVID pandemic when the concerns around this were tested and showed remote working has a direct impact on social workers resilience. In an article published by The Journal of Children's Services in 2020, many social workers shared the concern that having coped during the lockdown would lead to cost cutting measures to push towards remote working only. However, the article predicted that social work practice will be a combination of face-to-face and virtual practice, a hybrid model, and recommended that further research is needed to identify the specific risks or social workers' retention, resilience and reasoning (Cook et al., 2020).

Hybrid Working and social work

Numerous studies from various industries show an increase in the hybrid working arrangements: in a study in North America 40% of over 4 million employees reported the necessity of a hybrid model; Capgemini Research Institute reported that working remotely is becoming the new norm; a survey conducted by McKinsey in May 2022 showed that many organisations across several countries were adopting a hybrid way of working (Ateeq, 2022).

Whilst there are numerous studies in relation to social work practice during the time of pandemic, very few have considered the working models that emerged post-pandemic.

The Department of Education advised in 2021 that virtual visits should only be used as an exception, however research shows that social workers adapted to using both digital platforms as well as face-to-face visits to manage their anxieties around not being able to assess risks through digital platform whilst appreciating the time saving and safety digital platform can offer for meetings or engaging teenagers (Pink et. all, 2022).

Pink, Frguson and Kelly (2022) argue that hybrid practice in social work is inevitable and necessary, a needed progress in adapting to the new digital world we live and work in. Furthermore, it suggests more should be done to ensure an appropriate framework exists for an adaptable practice, whereby social workers are equipped to use hybrid work to enhance their practice and judgements every day, improving the assessment process, intervention and risk management.

Another study conducted by Daley in 2023 suggests that hybrid arrangements were implemented due to practical priorities like making savings, rather than based on evidence on how this benefits social workers or those they support. The same study argues that there is limited research into how hybrid working arrangements are suitable for social workers in child protection teams and that for many teams there is no office space to return to post-Covid.

The Local Government Association published guidance around hybrid working however these seem to be dependent on many factors such as location, roles, time, making it difficult for Local Authorities to interpret the use of hybrid working.

The British Association of Social Work survey in 2021 revealed that 68% of responded reported that working from home made it more difficult to *"switch-off".* Another study showed that although workers preferred to continue working under a hybrid working arrangement, they also recognize the difficulties related to video call exhaustion and blurred work-home boundaries. (Taylor et al., 2021).

Working Conditions and social work

In 2022 the World Health Organisation reported a 25% increase worldwide in the prevalence of anxiety and depression as a direct result of the pandemic and the periods of lockdown. Compared to this 69% of social workers reported a decline in their mental health in late 2020 (Daley, 2023).

The high percentage reported by social workers can be explained by the Ravalier's study which showed that social workers are employed under the most difficult conditions of any occupation in UK (Ravalier et al., 2023). In a post-pandemic study Ravalier et al. (2022) argued that across the world, social workers have chronical poor working conditions, and these have an impact on their well-being and services they provide.

Following a 5 years longitudinal study into working conditions for social workers, Ravalier et al. concluded working conditions for social workers in UK continue to remain poor compared to other professions. The study identified the poor working conditions were related to high workloads, inconsistent supervision, lack of resources, lack of respect and also poor pay.

The study links poor working conditions with high level of stress in social workers and argues this leads to psychological and physiological health and well-being issues. Although not for this study, there are numerous wide studies which show the link between work stress and development of chronic conditions such as heart disease or depression. The Health and Safey Statistics (2021) showed that social workers had the second highest levels of stress related sickness absence in UK (Ravalier et al., 2023).

This in turn has a direct impact on the services provided to children and families. High level of sickness absence leads to the relationships formed between social workers and those they support to be interrupted, leading to delays in service provision, poorer outcomes and a negative culture in which social workers are seen as not reliable and services having a high turnover of staff. The government reported that 2021 saw the highest turnover of staff in social work over the previous 5 years. Ravalier study shows that in the same year, 2021, 40% of social workers were dissatisfied with their job and 30% of social workers were looking to leave the profession.

In summary

A traditional literature review was conducted to frame and guide the study and establish the research questions and objectives (as seen in table 1).

The review identified numerous studies related to the impact of Covid-19, post-pandemic shift to a hybrid working model in many professions as well as social work. Whilst some studies were not social work specific they suggested a general trend of staff wishing to have more autonomy and flexibility rather than a return to traditional office base working. Only very few studies talked about hybrid working in social work, advocating for an embrace of digital interventions alongside the face-to-face interactions. It was helpful to consider the studies which highlighted the impact of remote working on social workers and how hybrid working requires considerations for social workers' wellbeing, additional support and guidance to embed the concept of digital social work as part of practice. Furthermore, social workers require a secure base to enable them to process the emotional impact of the job, find acceptance and support from peers which helps reflection, resilience and learning, particularly for newly qualified staff.

The literature review highlighted that the changes towards hybrid working in social work have been led more by austerity and less by evidence of how this is benefiting social workers. Although there are numerous studies which raise concerns about the working conditions in the social work profession, the literature review identified a gap in the current knowledge around the impact of hybrid working on working conditions for social workers, something which this study is looking to contribute to.

Table 1. Literature Review – Activity and purpose

Activity	Purpose
Literature Research criteria	Google Scholar was used for an initial wider search using key words searches of following terms: hybrid working, hybrid social work, working conditions, wellbeing. The researcher considered only the articles post 2023 to avoid focusing solely on the pandemic experience, as a high number of such articles were generated. The articles in another language were not included. A further selection was made by reading the abstract and ensuring the subject was social work related. Following this the researcher fully read the relevant articles and followed the relevant citations from those articles to find further relevant research in the subject area. Only the citations which encompassed a combination of 2 or more of the research area were followed. The time frame was adjusted to 2020 onwards to include articles which seemed relevant. The researcher followed social work or social care as the defining feature as this is the target population. Any other public or private work sector other than social work or social care were excluded.
Repositories used	Google Scholar, Research Rabbit to have a visual of connections between various studies, I-find (however no articles were found social work specific, Proquest (however no articles were found social work specific), Scopus (however no articles were found social work specific)
Search criteria 2	Relevant social work journals search by key words and post 2020

RESEARCH METHODOLOGY AND DESIGN

Introduction and purpose

This section will present and defend the chosen research methodology and demonstrate how this design effectively answers the research questions.

Research design choice

The overall design of the research was based on Saunders et al. (2007) Research Onion model. The researcher followed the stages of the model for a robust approach to the research method.

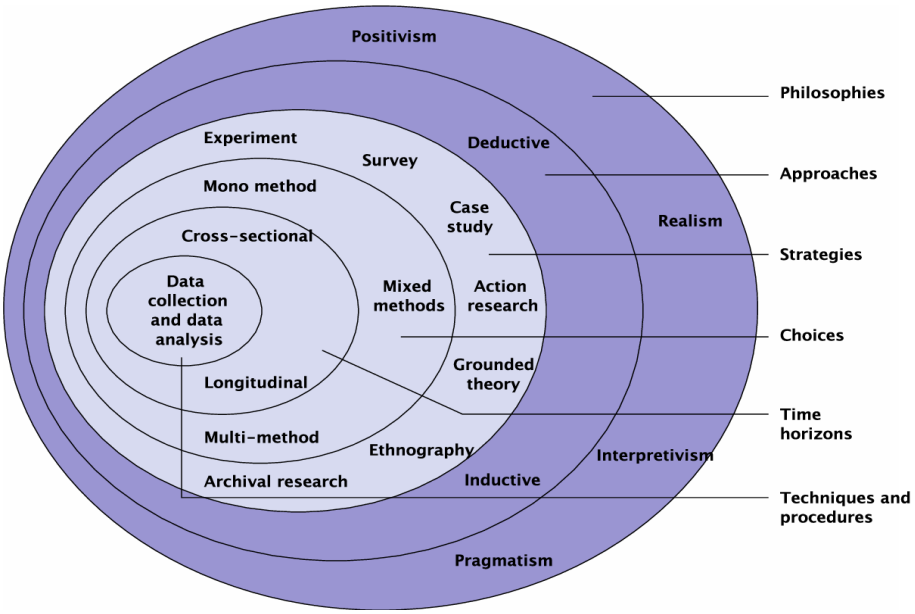


Figure 1. The Research Onion. Source: Saunders (2009, p 108)

Table 2. Research design and methodology. Source: The Researcher (2024)

Research Design and Methodology used	
Philosophy	Interpretivism epistemological approach
Approach	Deductive approach
Strategy	Survey
Choice	Quantitative
Time Horizon	Cross-sectional
Techniques and procedures	Perceptual Questionnaire

The aim of the study is to understand social workers' perceptions of how hybrid working model is impacting on their wellbeing, job satisfaction and working conditions. Therefore, an interpretivist philosophy was applied, as described by Shutz (1978), a social reality which has a specific meaning for the human beings who live, think and act within (McLaughlin 2012). This is considered an appropriate line of enquiry in social science, similar to social work methods such as empathy, non-biased approaches, focusing on meaning (Gray, 2009).

Conducting a literature review

The literature review, as presented in section 2, showed a gap in understanding how hybrid working models impact on working conditions for social workers and the need to develop frameworks to ensure social work

practice is enhanced by hybrid working and social workers are trained in how to use this effectively. Furthermore, the research hopes to enhance the knowledge on this subject and lead to measures which safeguard social workers wellbeing and improve job satisfaction and retention.

Questionnaire design

A non-standard questionnaire was designed using robust empirical evidence in literature. In 2004 Health and Safet Executive released a set of standards which are based on 7 key factors affecting working conditions and workplace stress (as seen in Figure 2).

Fig. 2– HSE Standards

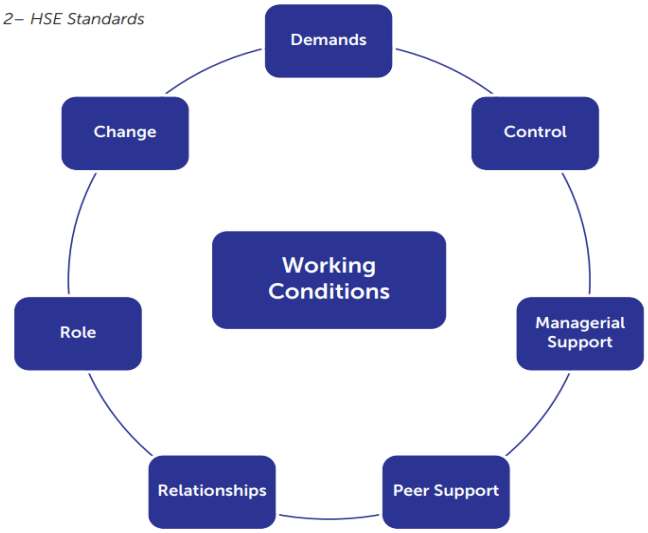


Figure 2. HSE Standards. Source: Health and Safety Executive, 2004

In 2020 the British Association of Social Workers (BASW) and the Social Workers Union (SWU) commission research into the working conditions experienced by social workers (Ravalier, 2019; Ravalier et al., 2020). This led to the development of a well-being and working conditions tool to help social workers be informed, empowered and look after themselves better in their place of work (Ravalier and Allen, 2020). The development of the toolkit and research carried out for this took into consideration the HSE set of standards.

Therefore the researcher designed a non-standard questionnaire taking into account the 7 key factors presented above, alongside the literature review findings and the researcher knowledge of the local authority context in which the research was carried out (please see table 3, Questionnaire Methods).

Table 3. Questionnaire Methods

Participant selection	Social workers and senior social workers working within a small local authority in the South East of Wales.
Survey distribution	The link was shared via email to all the social work teams within Children Services, 57 social workers and 15 senior social worker.
Survey design	The questionnaire was organised in 10 sections: Demographics Working arrangements, Work demands, Productivity, Stress level/emotional demands, Work-life balance, Managerial support, Peer support, Job satisfaction and Overall impact Each section used a mix of Likert scale questions, multiple-choice questions and open ended questions.
Survey format	Qualtrics online

Analysis of data

The data was summarized to identify similarities and also unique perspectives to create key themes/patterns to better understand the correlation between hybrid working and working conditions as well as impact on job satisfaction and wellbeing.

Themes were scored based on the number of times mentioned by the participants with the higher score becoming a key theme. Data displays were used to detect common themes and identify any outliers (Kumar, 2018).

The questionnaire was analysed using Qualtrics and graphical outputs were generated.

Limitation of the study

The study is limited to a small local authority setting in South East Wales with limited comparisons to other similar organisations.

Ethical considerations

The research has been approved by the Swansea University Research Ethics Committee in July 2024 (Appendix A).

Chapter summary

The previous chapter highlighted the need to understand the impact of hybrid working model on working conditions for social workers, as well as their perception on how hybrid working is impacting on their wellbeing and job satisfaction. The latter two were identified by the literature as main areas impacted by poor working conditions. A non-standard questionnaire was developed to capture this data. The next chapter will present the findings of the questionnaire.

4. FINDINGS

Introduction

The purpose of this chapter is to present a review of the findings from the study.

Survey findings

The questionnaire was designed using Qualtrics (see Appendix C) and received 40 responses however after the data cleaning the findings were based on 37 responses. The request for participants was that they were qualified as social workers and were employed by a chosen local authority within the children services. Due to the small size of the study this could not be extended to adult services or to other local authorities.

Demographic data

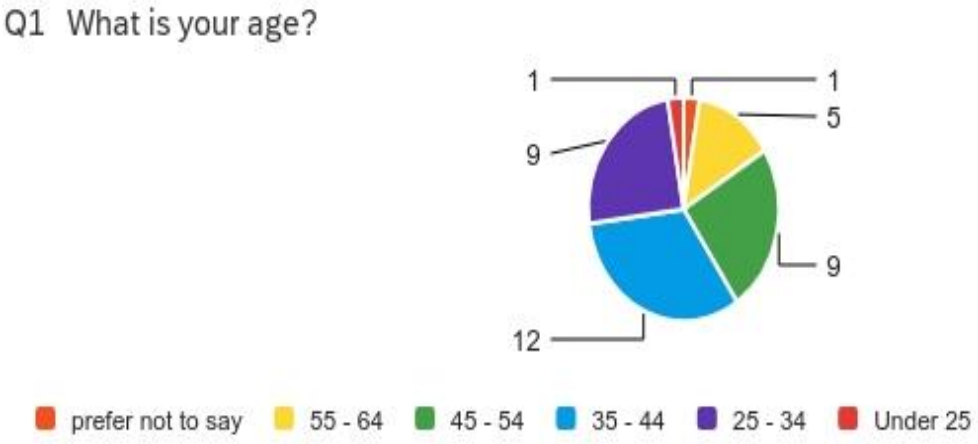


Figure 3. Age of participants

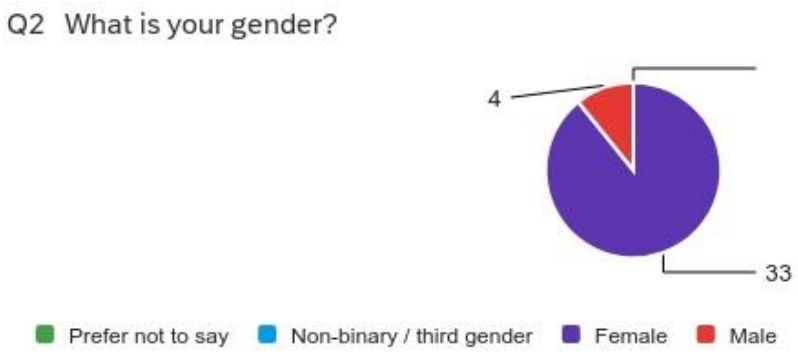


Figure 4. Gender of participants

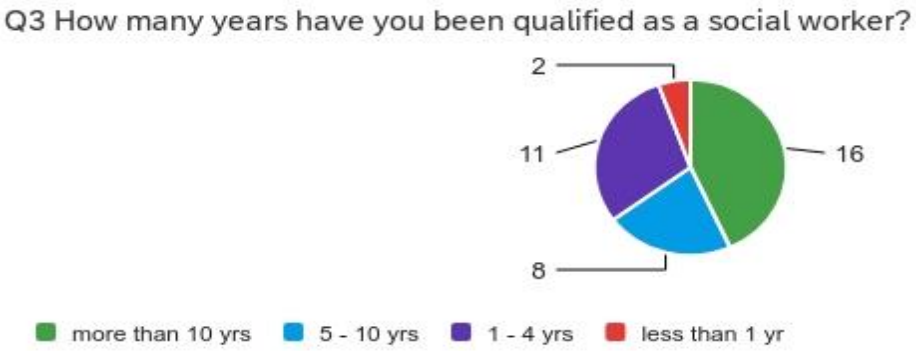


Figure 5. Length of qualification

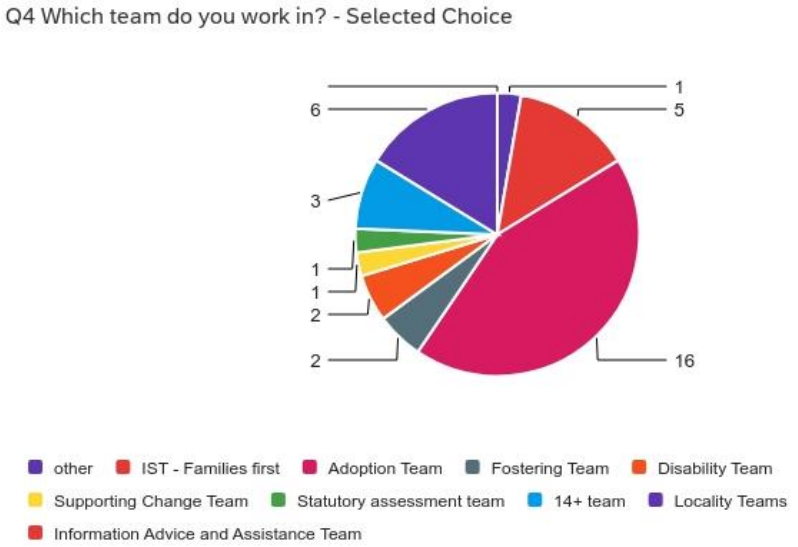


Figure 6. Additional information on respondents' team area

Note:

Figure 6 shows additional information regarding the respondents' team area. Many of the responses came from one area, which is not surprising as responders in this area operate in the vicinity of the researcher. This is not unusual in action research; however future research may need to expand to a wider audience.

Table 4. Themes from demographic information

Themes	Quantitative data	Researcher comments
Demographics	**Age** 12 respondents 35 – 44 yrs old 9 respondents 25 – 35 yrs old 9 respondents 45 – 54 yrs old **Gender:** 33 females 4 males **Qualification length** 43% - more than 10 yrs 30% - between 1-4 yrs (post-pandemic) **Area of work** 16 respondents from one area which is a service with several teams 21 respondents from other teams which are all working in proximity with each other and are under the same management team	Average age Higher proportion of females More experienced staff, to note 30% of staff qualified post-pandemic so only worked under remote or hybrid arrangements High number of respondents from one area of work as they operate in the vicinity of the researcher. Future research will need to expand to a wider audience

Working arrangements

Under this section 36 out of the 37 responders confirmed they are working under a hybrid working arrangement with a large variety amongst respondents on how they split their working week between home and office. The media was an equal split of time between office and home with a small number reporting they work mainly in the office or mainly from home. From the latter respondents' comments it seems that they are more likely to go to the office when covering duty days or to use office equipment.

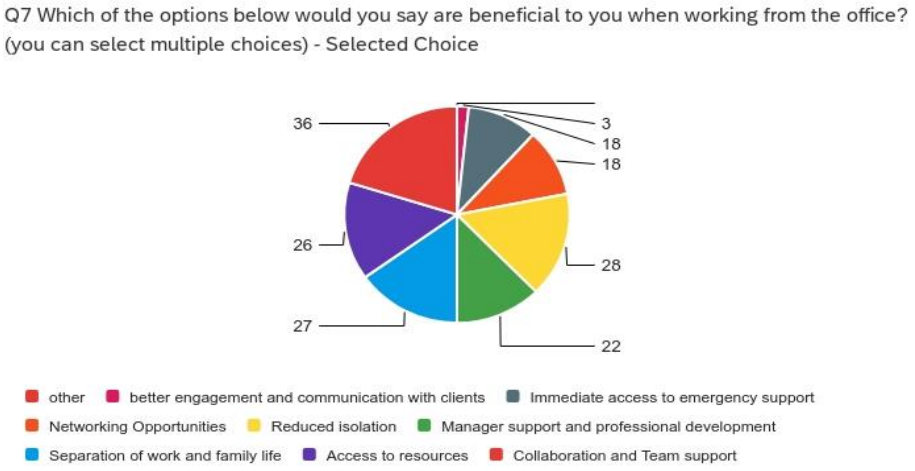


Figure 7. Working from office benefits

Note:

When considering the benefit of working from home arrangements a high proportion of respondents identified these as collaboration and team support (36 respondents), followed by reduced isolation (28 respondents) and separation of work and family life (27 respondents). More than half of respondents saw as beneficial having access to resources when in working in the office (26) and having manager support and professional development (22). Significant numbers were also recorded for having team support and collaboration as well as access to emergency support (18 respondents).

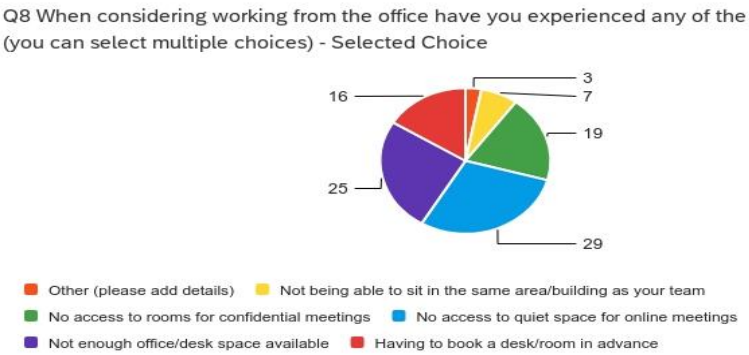


Figure 8. Working from office barriers

Note:

When considering the barriers of working from the office, overall suitability of the office space was identified as a barrier, either by not having access to a quiet space for online meetings (29 respondents), or not enough office/desk space available (25 respondents), or no access to rooms for confidential meetings (19 respondents). 43% of respondents identified booking a room /desk in advance as a barrier.

One responded reported as a barrier having no natural light in the office.

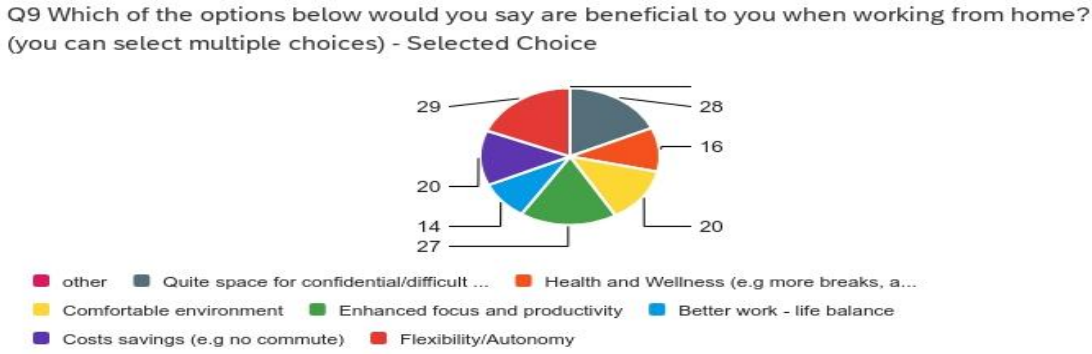


Figure 9. Working from home benefits

Note:

78% of respondents valued most having flexibility/autonomy (29 responses) when working from home, closely followed by having quiet space for confidential/difficult meetings (28 responses) and better productivity (27 responses). 54% of respondents chose comfortable environment and cost savings (20 respondents). 43% value the opportunity for health and wellness when working from home and 37.8% chose better work-life balance as a benefit.

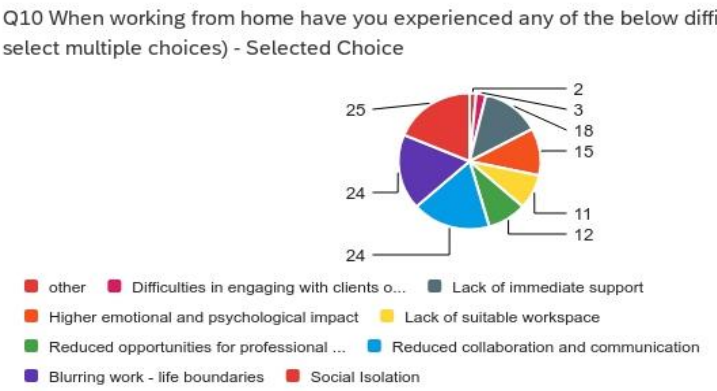


Figure 10. Working from home barriers

Note:

67.5% of respondents identified social isolation as something they have experienced when working from home. An equal number, 24 respondents (64.8%) identified reduced collaboration/communication and blurred work-life boundaries as difficulties. 18 respondents (48.6%) reported they have experienced lack of support when working from home, followed by 15 respondents (40.5%) who have found working from home to have a higher emotional and psychological impact.

Table 5. Themes from working arrangements

Themes	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Working arrangements	97.2% working under hybrid working arrangements **Benefits working in the office** 97.2% collaboration and team support 75.6% reduced isolation 72.9% separation of work and family life 70.2% access to resources 59.4% manager support and development 48.6% team support and access to emergency support **Barriers working in the office** 78.3% no quiet space for online meetings 67.5% not enough desk space available 43% having to book a desk/office in advance **Working from home benefits** 78% having flexibility/autonomy 75.6% quiet space for confidential meetings 72.9% better productivity 54% cost saving and comfortable environment 43% opportunity for health and wellness 37.8% better work life balance **Barriers to working from home** 67.5% social isolation 64.8% reduced collaboration/communication and blurred work-life boundaries 48.6% reported they have experienced lack of support 40.5% higher emotional and psychological impact	**Barrier to working in the office** "*Lack of natural light*" **Barrier to working from home** "*Can get engrossed in work and I miss breaks. Have to make a conscious effort to set alarms etc*" "*I miss having the 'debrief' with colleagues when working from home after a difficult interaction – need to be more proactive and seek out this support myself. I miss hearing how others manage issues/deal with situations, feel don't pick up their 'top tips' ".*	When working in the office respondents scored high on collaboration and team support, not working in isolation and being able to separate work and family life. Barriers when working in the office where the overall suitability of the office space to be able to work online (quiet area for online calls) and face-to-face (no rooms available for confidential meetings). The limitation of desks/rooms and difficulties with booking these in advance create a barrier to working in the office. When working from home having flexibility/autonomy, quiet space and better productivity were scored high. Fairly high scoring was recorded for cost saving and opportunities for wellbeing. The barriers to working from home identified high scoring for social isolation, reduced communication/collaboration and blurred work-life boundaries. The themes emerging from qualitative data are similar, one respondent commenting "*I miss breaks*" and another "*I miss having the debrief with my colleagues after a difficult interaction. I miss hearing how others manage issues/deal with situations*".

Work demands

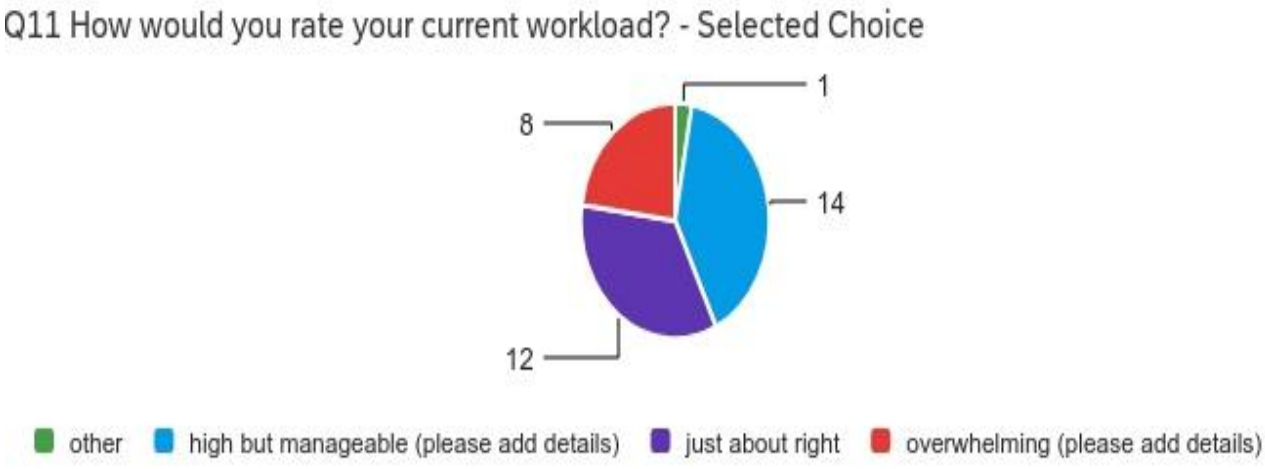


Figure 11. Workload rating

Note:

63% of respondents view their caseload as overwhelming or high but manageable.

Qualitative comments when thematically analysed show that 14 out of 16 comments highlighted the high or increase in caseloads associated with high job complexity and low staff levels or staff absence, with one respondent feeling more work was added due to cost cutting exercise. Respondents also shared strategies which help them manage such as support from manager, very strict work-life balance and "*prioritising and focusing on what is achievable*".

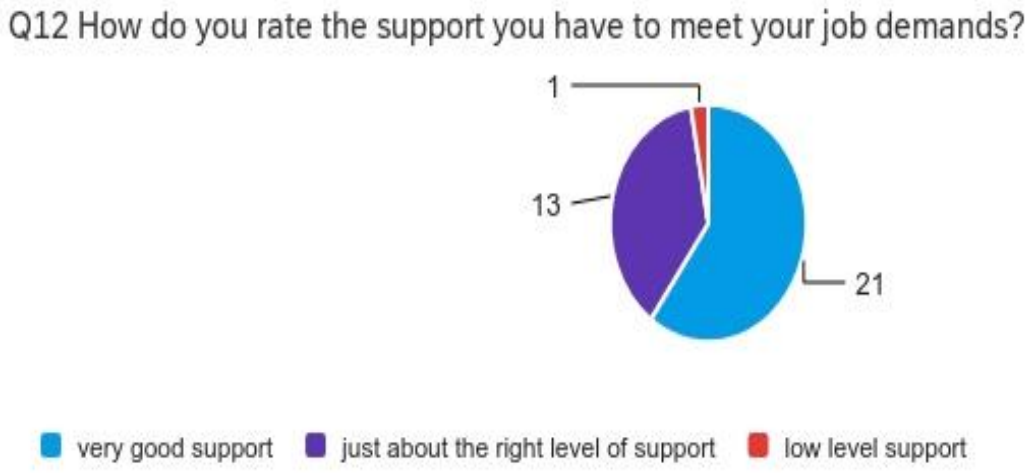


Figure 12. Support rating

Note:

34 respondents reported they feel they have good support or the right level of support to meet their job demands.

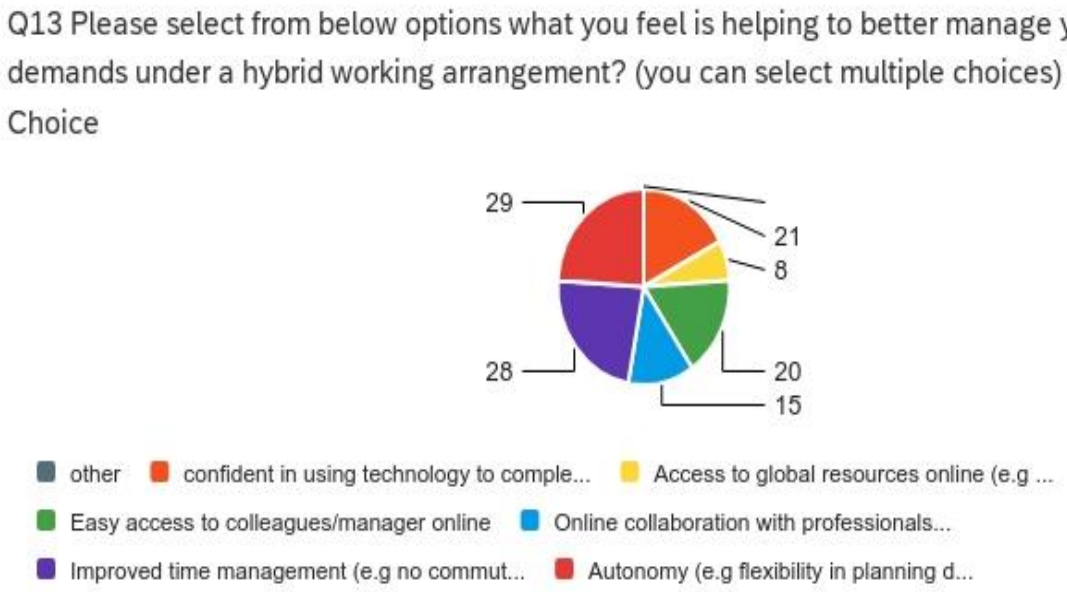


Figure 13. Factors which help manage work demands

Note:

When considering the benefits of hybrid working in managing work demands respondents scored highly having autonomy and improved times management (e.g no commuting). This was followed by being confident in using technology to allow hybrid working and also having easy access online to colleagues and manager.

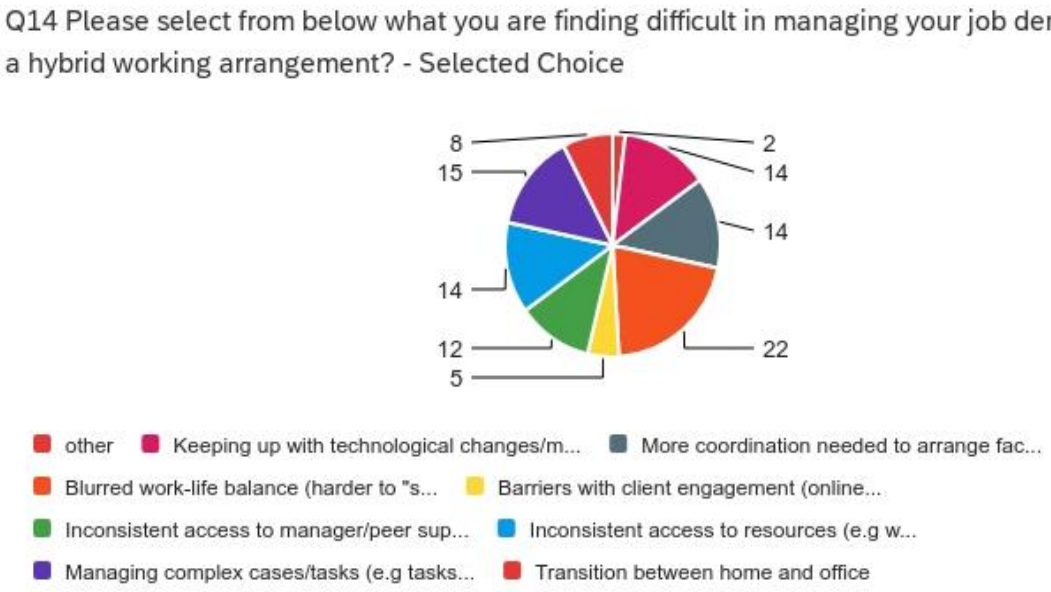


Figure 14. Difficult factors in managing work demands

Note:

When considering the difficulties in meeting the work demands under hybrid working arrangements respondents scored highly for the blurred work-life balance/harder to switch off when high demands (22 respondents), managing complex cases/tasks (continuity of service across different environments, tasks

divided between remote/in person settings), using more time to coordinate meetings over various settings and having inconsistent access to resources and management/peer support.

Qualitative comments when thematically analysed show that respondents miss having peer support and that lack of appropriate office space is an issue and can cause delays.

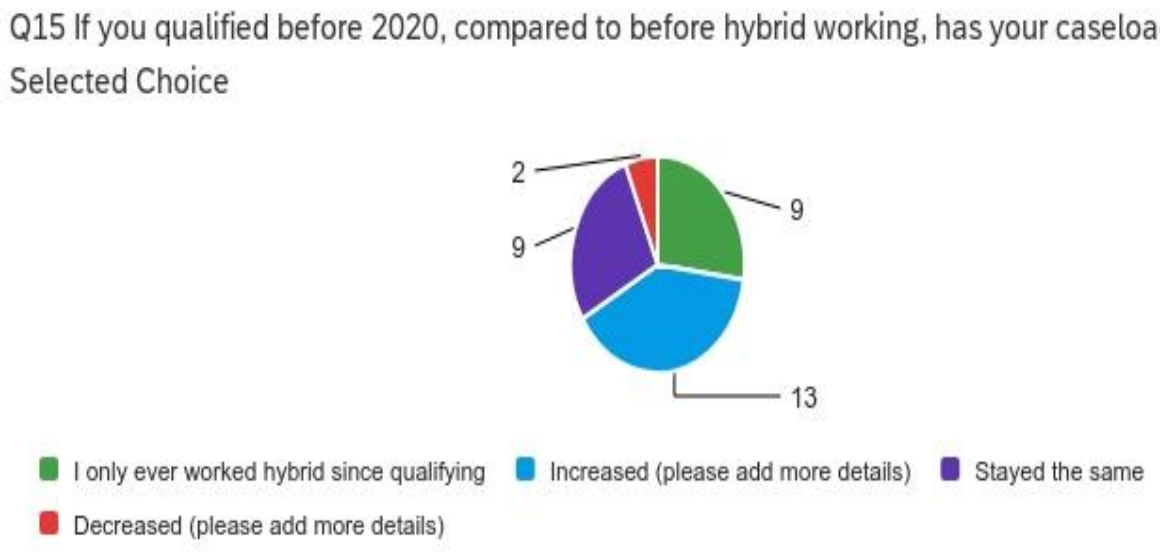


Figure 15. Changes in workload under hybrid working model

Note:

Under hybrid working arrangements 13 respondents reported their caseload has increased and 9 others reporting that their caseload has stayed the same. 27.2% of respondents qualified after 2020 and only worked under hybrid working arrangements.

Qualitative comments when analyzed showed that those who reported a decrease in caseload was due to change in roles, with one of them highlighting the benefits of delivering training online under hybrid working arrangements, saving time in having to find appropriate location/venue/parking/resources and reporting a significant improvement in training attendance.

Table 6. Themes from working demands

Themes	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Working demands	**Workload** 63% of respondents view their caseload as overwhelming or high but manageable. **Support** 91.9% feel they have good support or the right level of support to meet their job demands. **Hybrid working benefits** 83% autonomy/flexibility 80% improved time management 60% confident to use technology 57% easy access to colleagues and manager online 43% online collaboration with professionals network 23% access to global resources **Hybrid working difficulties** 59.4% blurred work-life balance, harder to switch off when high demands 40.5% managing complex cases/tasks, continuity of service across different environments, tasks divided between remote/in person settings 37.8% more coordination needed to plan in person/remote work, keeping up with technology, inconsistent access to resources (working from various offices/rooms) 32.4% inconsistent access to management/peer support **Changes in workload under hybrid working** 39.3% report increase in caseload 27.2.% no change in caseload 27.2% worked hybrid since qualifying 6% decreased	**Workload** 14 out of 16 comments highlighted the high or increase in caseloads associated with high job complexity and low staff levels or staff absence, with one respondent feeling more work was added due to cost cutting exercise. Respondents also shared strategies which help them manage such as support from manager, very strict work-life balance and "*prioritising and focusing on what is achievable*". **Hybrid working difficulties** "*Not being able to talk things through with colleagues informally at the end of a difficult visit/call. Not having that peer support*." "*Room booking is an issue, more office space is compressed/shared/reduced, means less access to meeting rooms. This can impact on face to face meetings, cause delays*." **Changes in workload under hybrid working** **Decreased** Change of role. One comment on the benefits of delivering training online, saving time in finding appropriate location/venue/parking/resources and training attendance significantly improved. **Increased** 8 comments all highlighting the increase demand, reduced funding and less staff, workers fitting more work online/from home 4 out of 8 commented on caseloads increasing because of demand and not related to hybrid working "*recent budget cuts have increased caseloads not hybrid working"* *"related to demand not hybrid working"* *"funding withdrawn through austerity cuts*"	High caseloads due to complexity, low level of staff or absence, cost cutting. Strategies reported: managerial support, strict work-life balance, prioritizing. Benefits to hybrid working are autonomy/flexibility, appropriate technology, easy access to peers and manager, online collaboration. Difficulties to hybrid working are blurred work-life balance, harder to switch off when high demands, having to manage complexity and missing peer support, time loss when coordinating work/tasks over various settings online/in person whilst no appropriate office space. The qualitative data highlighted an increase in caseload and work demand not necessarily related to hybrid working but through austerity cuts, budget issues which led to less staff to meet the demand.

Productivity

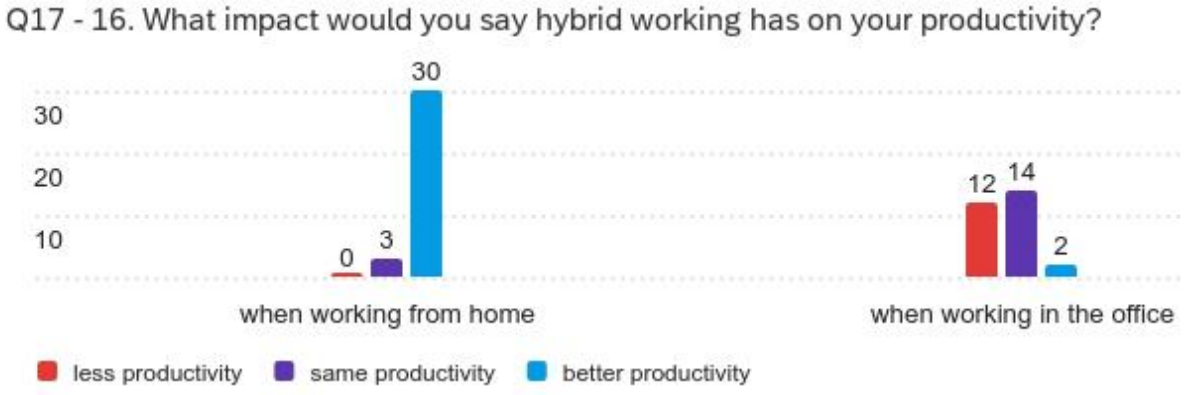


Figure 16. Impact of hybrid working on productivity

Note: A high percentage of respondents reported having better productivity when working from home (90.9%). 42% of respondents reported feeling less productive when working in the office.

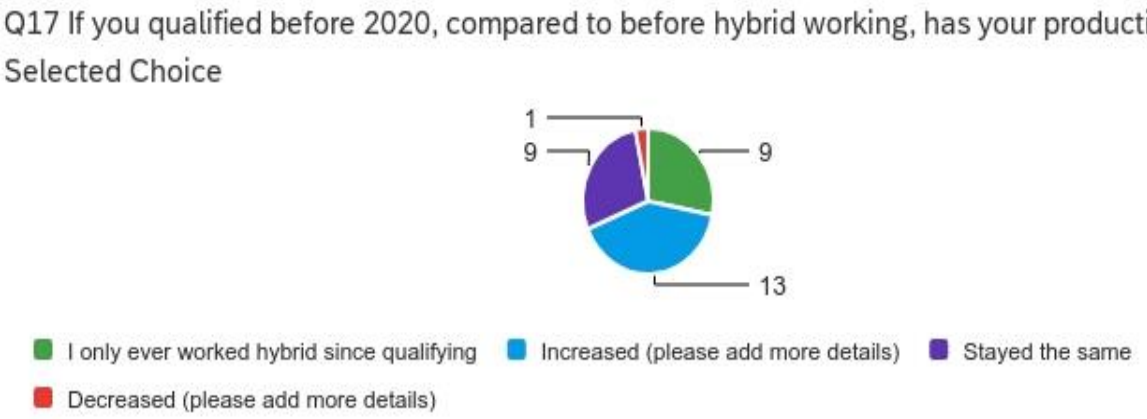


Figure 17. Changes of productivity under hybrid working model

Note:

Half of the respondents reported an increase in productivity since working under hybrid working arrangements.

One respondent reported a decrease in productivity and added in comments feeling "*overloaded*".

Thematic analysis of the respondents' comments showed that working from home is increasing productivity however suggested working longer hours and concerns about impact on mental health.

Table 7. Themes from productivity

Themes	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Productivity	**When working from home** 90.9% reported better productivity **When working in the office** 50% reported less productivity 42.8% reported same productivity **Changes in productivity under hybrid working** 40.6% increase in productivity 28% same productivity 3% decreased	**Productivity decrease under hybrid working** "*overloaded*" **Productivity increased under hybrid working** Online work allowing for more work to fit in Less distractions/more focus at home *"I have a long commute to the office, so work until the time I would have arrived home, meaning I have extra time to work before logging off in the evening*". *"Productivity is generally higher due to less distraction and less travelling but this takes a toll on the mental load, team cohesiveness and quality of work".*	Generally reporting higher productivity when working from home as having no interruptions and able to focus. However responses suggest people work longer hours: *"I have a long commute to the office, so work until the time I would have arrived home, meaning I have extra time to work before logging off in the evening*". Or feeling the impact of working from home on mental health: *"Productivity is generally higher due to less distraction and less travelling but this takes a toll on the mental load, team cohesiveness and quality of work".*

Stress level/emotional demand

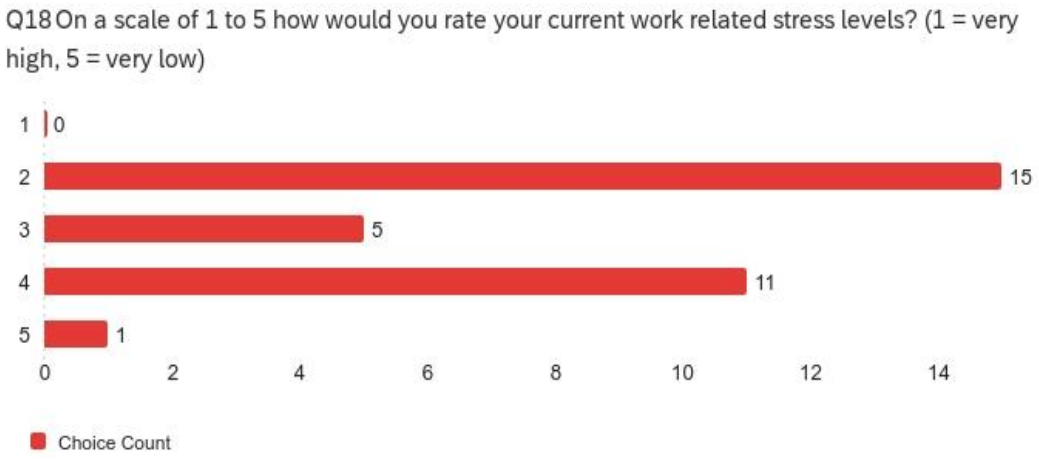


Figure 18. Work-related stress rating

Note: 46.8% respondents reported high level of stress, 15.6% reported average level of stress and 34.3% reported low level of stress.

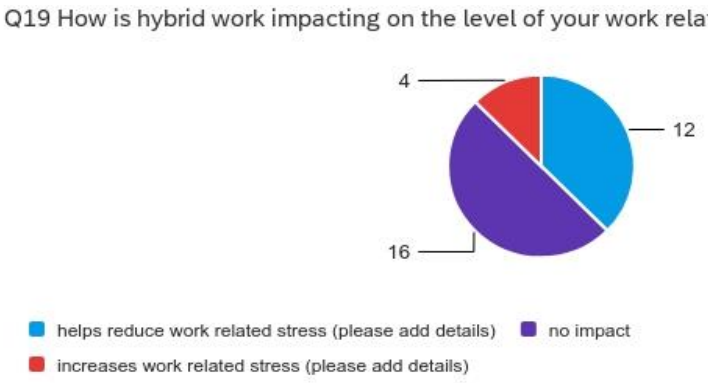


Figure 19. Hybrid working impact on work-related stress

Note:

50% of respondents felt hybrid working has no impact on the level of work-related stress.

A higher proportion of respondents felt hybrid working reduces (37.5%) rather than increases (12.5%) work-related stress.

From the thematic analysis of the qualitative data 10 respondents commented on valuing flexibility, less time travelling, the ability to focus when working from home and feeling more productive. 3 out of 10 respondents raised concerns about not being able to offload to colleagues and feeling disconnected:

> "*it has helped reduced stress in some aspects (…) however it increases stress as it's harder to offload and talk through something that is causing stress with colleagues*"

From those who reported the view that hybrid work is increasing work-related stress, the thematic analysis identified respondents feeling there are less opportunities for support from peers and pressure on keeping up with technology demands.

> *"Less peer support, more cases, feeling more isolated with the work, less able to bounce ideas off people/offload, more technology demands which take up time and energy"*

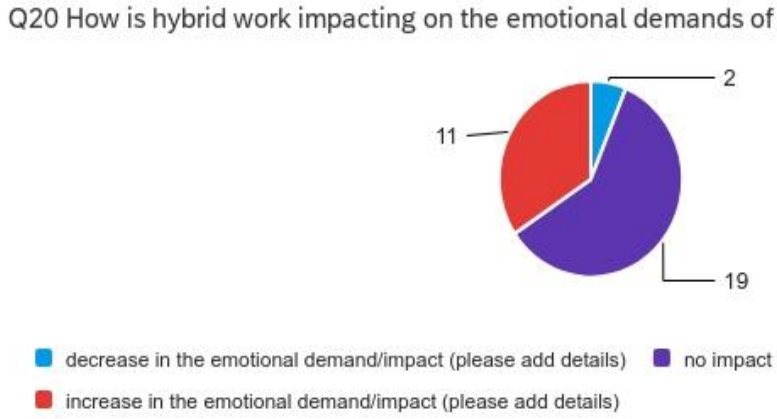


Figure 20. Hybrid working impact on emotional demands

Note:

59% responders felt hybrid working has no impact on the emotional demands of the job.

A higher proportion of respondents felt hybrid working increases (34%) rather than decreses (6%) the emotional demands.

From the thematic analysis of the qualitative data 6 out of 7 respondents commented on having to deal with the emotional content/impact of the job on their own with less opportunities to share with colleagues/access support:

"I deal with a lot of emotional content and not having a team around me to share the emotion makes it more difficult"

"I get more stressed when I am on my own"

"Can made individuals isolated with no room to share feelings"

"less peer care and support"

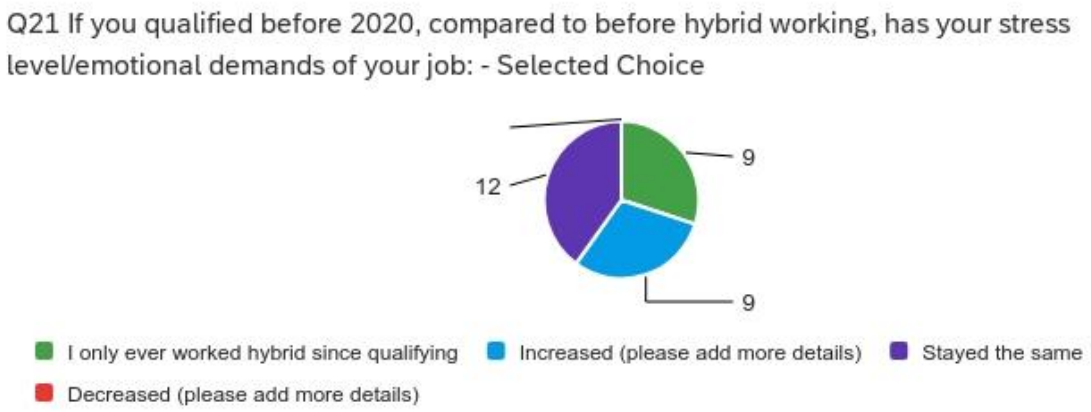


Figure 21. Changes in work-related stress/emotional demands under hybrid working

Note:

40% respondents reported they felt the work-related stress level and emotional demands stayed the same as before under hybrid working and 30% reported they felt these have increased under hybrid working.

The thematical analysis of the qualitative data showed similar themes as in previous questions as to why respondents felt hybrid working led to an increase in work-related stress level and emotional demand: lone working, less orportunities of support, not having the team immediate support. One respondent commented on having a healthier work-life balance under hybrid working arrangements, whilst another shared difficulties in managing this because of having young children in care whilst managing "*high levels of emotional trauma*" from those she works with.

Table 8. Themes from work-related stress level/emotional demand

Theme	Quantitative data	Qualitative data Respondent's comments	Researcher comments
Work-related tress level/emotional demand	**Current work-related stress level** 46.8% high level of stress 15.6% average level of stress 34.3% low **Hybrid work impact on work-related stress** 50% no impact 37.5% reduced work-related stress 12.5% increased work-related stress **Hybrid work impact on emotional demands of the job** 59% no impact on emotional demand	**Increased work-related stress** "When feeling stressed is difficult to talk to someone then and there" "Less peer support, more cases, feeling more isolated with the work, less able to bounce ideas off people/offload, more technology demands which take up time and energy" "High expectations in terms of contact Teams calls and being available" **Reduced work-related stress** 10 respondents commented on valuing the flexibility, less time traveling, ability to focus when working from home, feeling more productive. However, 3 responders	Around half of the respondents reported high level of work-related stress. Half or more of respondents believe hybrid working had no impact on the level of work-related stress or emotional demand. Those who reported an increase in work-related stress and emotional demand under hybrid working mainly referred to the impact of working remotely and not having access to emotional support, feeling disconnected/isolated from peers, having to deal with emotional content on their own.

Theme	Quantitative data	Qualitative data Respondent's comments	Researcher comments
	34% increase in emotional demand 6% decrease in emotional demand **Changes in work-related stress level/emotional demand under hybrid working** 40% the same as before hybrid working 30% increased under hybrid working	commented the downside of not being able to offload to colleagues, feeling disconnected and lacking the support from colleagues. "*it has helped reduced stress in some aspects (…) however it increases stress as it's harder to offload and talk through something that is causing stress with colleagues*" One responded highlighted that hybrid working arrangements has enabled delivery of online training to 600 staff over the last 5 years. **Increase in emotional demand** 6 out of 7 respondents commented on having to deal with the emotional content/impact of the job on their own with less opportunities to share with colleagues/access support *"I deal with a lot of emotional content and not having a team around me to share the emotion makes it more difficult"* *"I get more stressed when I am on my own"* *"Can made individuals isolated with no room to share feelings"* *"less peer care and support"* **Decrease emotional demand** *"I have far more time to me and can complete all the other tasks that I need to do and have some time to myself. If I am in the office I notice I am exhausted by Friday just from the longer days and travel".* **Increase in work-related stress and emotional demand under hybrid working** 6 respondents commented on higher emotional demand and work related stress due to not having the team immediate support, feeling overwhelmed, lone working, less opportunities to seek support. Whilst one respondent commented hybrid working allows for a healthier work-life balance which compensates for the above, another suggested difficulties in managing work-life balance due to having young children in care whilst managing "*high levels of emotional trauma*" from those she works with.	Home circumstances make a difference on the respondents' perception with one reporting healthier work-life balance under hybrid work and another struggling with this because of having young children. A slightly higher proportion reported hybrid working reduces rather than increases work-related stress, due to some benefits to hybrid working like flexibility and autonomy to organize work. When considering the emotional demands of the job, a higher proportion reported hybrid working increases rather than decreases the emotional demands of the job.

Work - Life Balance

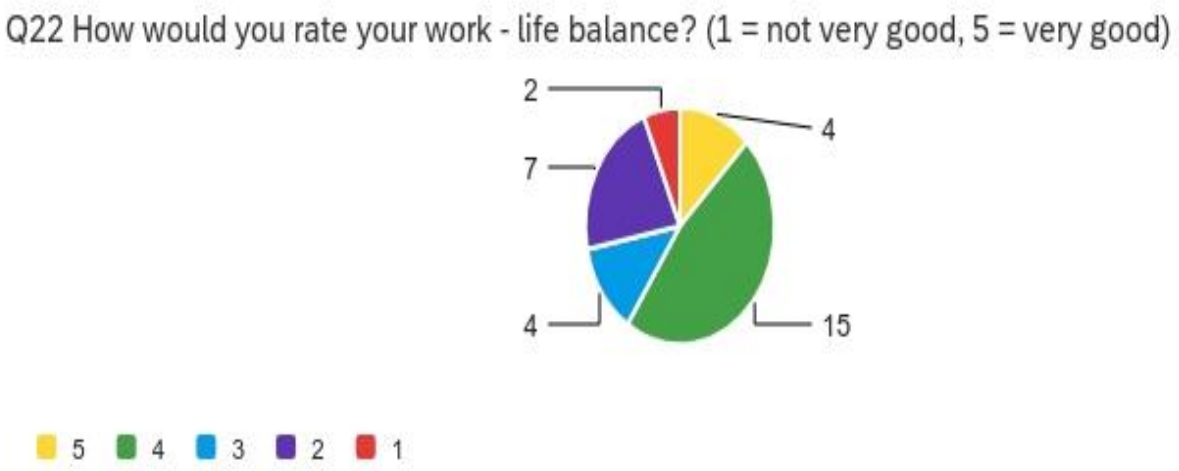


Figure 22. Work- life balance rating

Note: 59% respondents reported a good or very good work-life balance with 28% reporting a not very good work life balance.

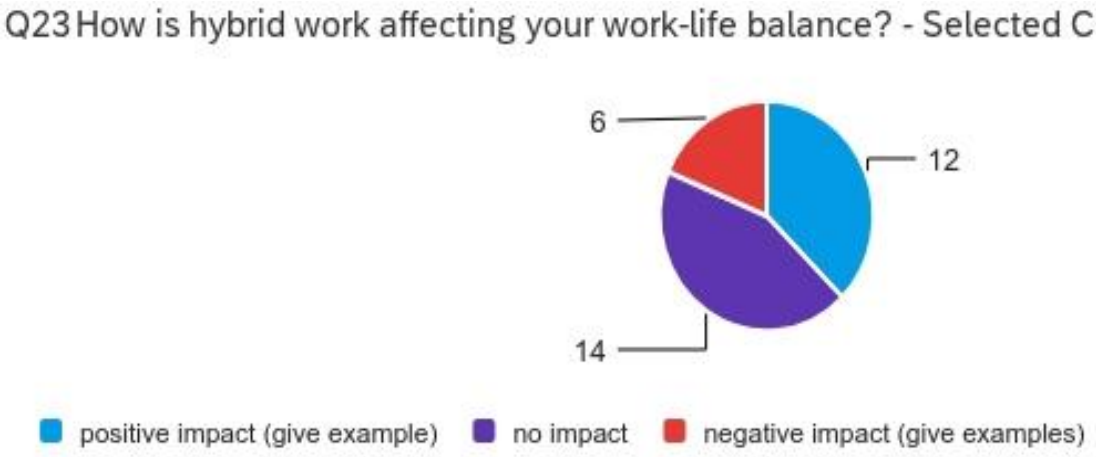


Figure 23. Hybrid working impact on work- life balance

Note:

43% of respondents believe hybrid working had no impact on their work-life balance. However, a higher percentage believe hybrid working has had a positive impact (37%) than negative impact (18%).

The thematical analysis of the qualitative data showed 7 out of 8 respondents valued having flexibility, less time commuting, spending more time at home and being more productive under hybrid working arrangements. 2 respondents commented on benefits for wellbeing when working from home such as being able to run in the mornings and being more present for their children.

When analysing the comments respondents made in relation to the negative impact of hybrid working the following themes emerged: blurred boundaries, harder to switch off, working overtime.

> *"It is harder to finish work on time because the temptation is there when there's lots to do to work in the evening (…) I have often logged back in after my son is in bed to complete tasks that I didn't manage to complete that day"*

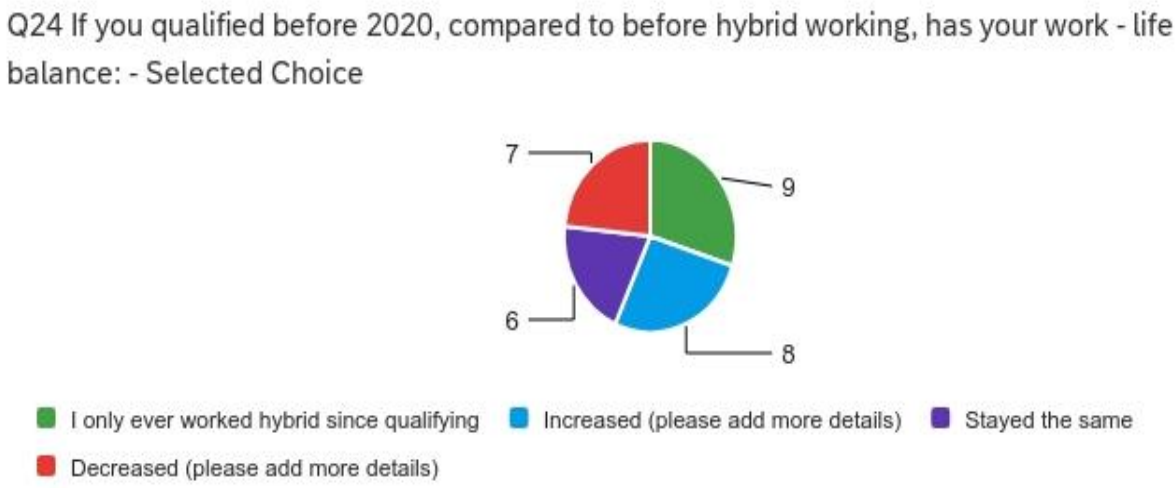


Figure 24. Work-life balance changes under hybrid working model

Note:

25% of respondents felt the hybrid working improved their work life balance with 21% of respondents feeling it deteriorated their work-life balance.

The responses were similar to the comments made in previous section with respondents commenting on the benefits being flexibility, less time traveling, more time with family. One respondent commented that since Covid they change the role to a less demanding team where hybrid working was possible and improved her work-life balance. She commented "otherwise I don't think I would still be a social worker".

The thematical analysis of the respondents' comments in relation to the negative impact of hybrid working raised concerns in regards to blurred boundaries and working longer hours:

"Home has become work and vice versa"

Table 9. Themes from work-life balance

Theme	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Work-life balance	**Work-life balance rating** 59.3% reported very good or good work-life balance 12.5% reported medium work-life balance 28% reported not very good work-life balance. **Hybrid working impact on work-life balance** 43% no impact 37.5% positive impact 18% negative impact	**Positive impact** 7 out of 8 respondents commented on valuing flexibility, less time commuting and spending more time at home, being more productive. 2 respondents commented on benefits for their wellbeing and home life such as being able to run in the morning and being more present for their children. One respondent commented they found it harder to log off from work at	Overall respondents reported a good work-life balance as well as a positive impact of hybrid working on work-life balance. For those who have also worked before hybrid working, they reported an improvement in their work life balance since hybrid working. From the qualitative data respondents see as an improvement or positive

	Changes on work-life balance under hybrid working 18% stayed the same 25% improved/increase 21% declined/decreased	the end of the day when working from home. **Negative impact** 6 respondents commented on blurred boundaries between home and work life, harder to switch off, working overtime *"It is harder to finish work on time because the temptation is there when there's lots to do to work in the evening (…) I have often logged back in after my son is in bed to complete tasks that I didn't manage to complete that day"* **Improved work-life balance under hybrid work** Respondents commented on having more time with family, being more benefits than disadvantages to working under a hybrid working arrangement, having less time travelling. *"I can spend more time on "life" without having to compromise on work time".* One respondent commented that since Covid they change the role to a less demanding team where hybrid working was possible and improved her work-life balance. She commented "*otherwise I don't think I would still be a social worker"* **Deteriorated work-life balance under hybrid work** All 3 respondents which commented raised the same concerns around blurred boundaries, working more hours as more time available without commuting *"Home has become work and vice versa"*	impact of hybrid working on work-life balance having flexibility, less time commuting, being present for family, being able to do more in their personal lives. Although a smaller percentage of those who see hybrid working as a negative or decreasing work-life balance, they make significant contributions such as the difficulties in switching off, working extra hours and struggling with blurred boundaries between home and work: *"It is harder to finish work on time because the temptation is there when there's lots to do to work in the evening (…) I have often logged back in after my son is in bed to complete tasks that I didn't manage to complete that day"* *"Home has become work and vice versa"*

Managerial support

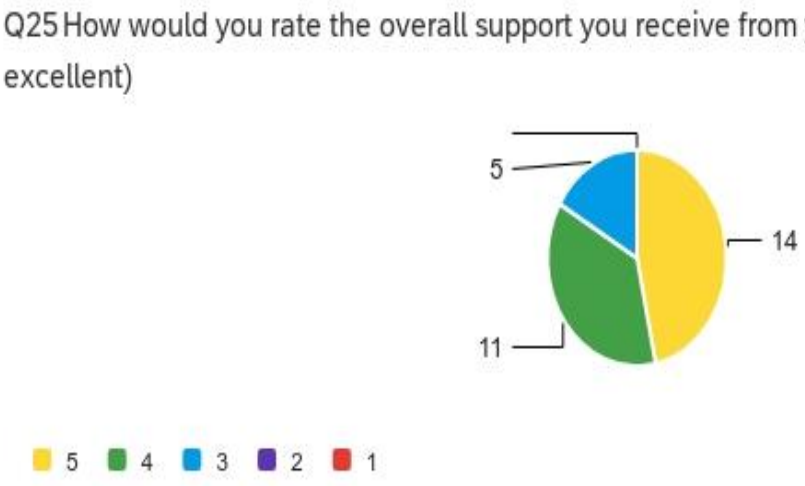


Figure 25. Support from manager rating

Note: Most respondents (83%) reported good or excellent support from the manager.



Figure 26. Communication with manager frequency

Note: 80% of respondents reported being in contact with the manager daily or several times a week.

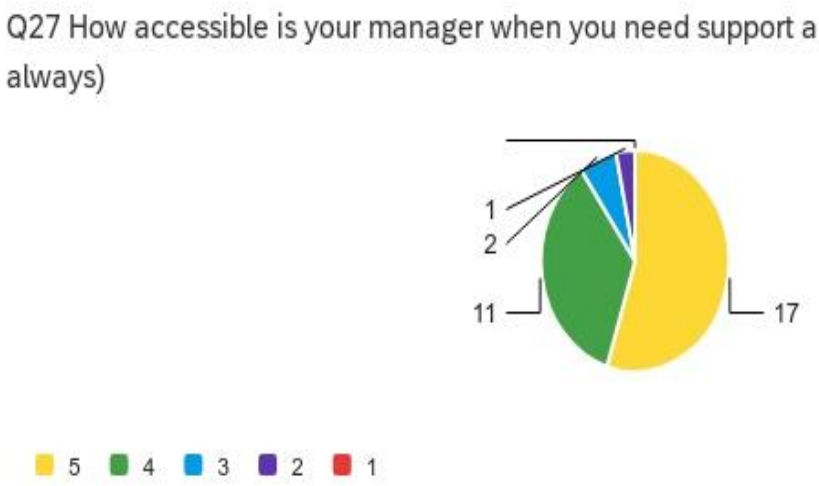


Figure 27. Manager accessibility

Note: 90% of respondents reported they have access to the manager most of the times or always when needing support and guidance.

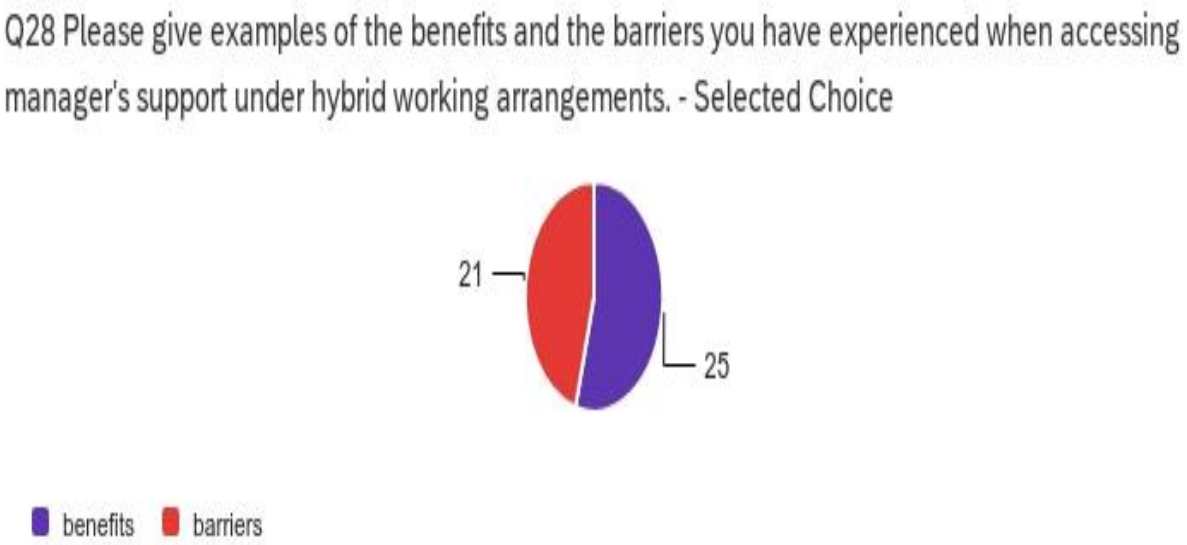


Figure 28. Manager support benefits and barriers under hybrid working model

Note:

15 out of 20 respondents highlighted the use of technology as a positive to have instant/easy access to manager support and being able to check manager availability. Several commented managers are approachable, very supportive, making themselves available.

> *"I am able to speak to my manager via Teams, phone, email or I person which was not available pre hybrid working"*

8 out of 16 respondents commented they felt it was a barrier having to plan informal chats with the manager versus having these routinely when working in the office

"when you want that quick informal debrief it's not so accessible as being based in the same office"

2 respondents commented on missing the face to face contact with manager

3 respondents commented it is harder to coordinate diaries, manager being busy and not knowing when manager was available.

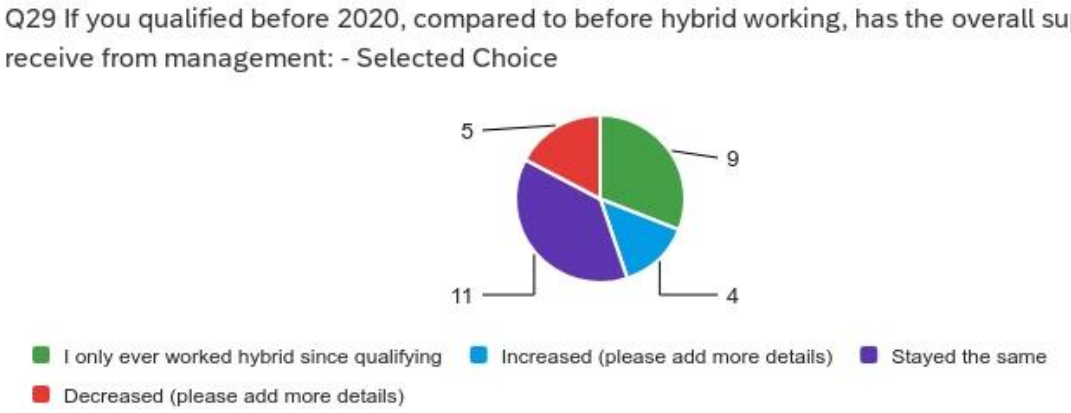


Figure 29. Changes in managerial support under hybrid working

Note: 39% of respondents reported the managerial support has not changed under hybrid working arrangements.

Whilst 17% of respondents reported an improvement in managerial support, 14% reported a deterioration of managerial support under hybrid working arrangements.

Only 2 respondents added additional comments as to why they feel the support has decrease: not being in the same office and manager being harder to contact when both working remotely.

Th qualitative data regarding the increase in managerial support showed similar themes as previous question as seeing technology as a benefit to accessing managerial support under hybrid working arrangements.

"*Manager understands the impact of hybrid working and increasing demands so offers support more often/readily"*

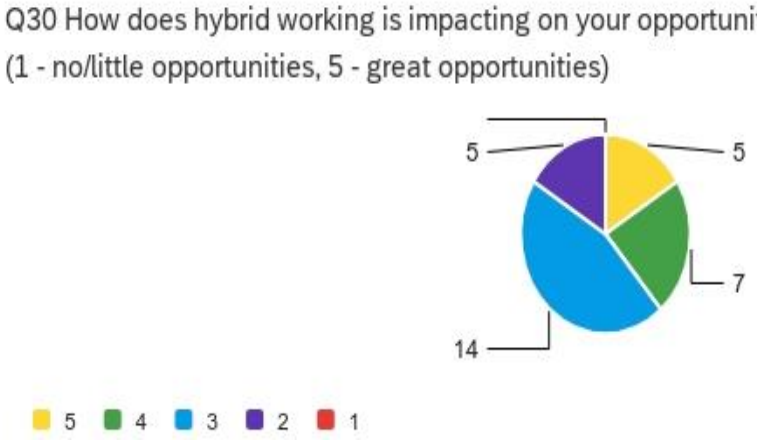


Figure 30. Professional development under hybrid working rating

Note: 45% of respondents reported a median level of opportunities, 38% reported good or great level of opportunities and 16% reported some opportunities for professional development under hybrid working.

Table 10. Themes from managerial support

Theme	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Managerial support	**Managerial support rating** 83% good or very good support 16% average support **Communication with manager frequency** 80% daily or several times a week **Manager accessibility** 90% reported manager being available most of the times or always **Experience of accessing manager support under hybrid working** 25 responses regarding benefits 21 responses regarding barriers **Changes on managerial support under hybrid working** 39% no change 17.8% decreased 14% increased **Professional development** 45% median level of opportunities 38% good or great opportunities 16% some opportunities	**Communication with manager** 2 respondents commented not communicating with manager often but being supported by senior practitioner **Benefits when accessing manager support** 15 out of 20 respondents which commented highlighted the use of technology to have instant/easy access to manager support and being able to check manager availability. Several commented manager being approachable, very supportive, making themselves available. *"I am able to speak to my manager via Teams, phone, email or in person which was not available pre hybrid working"* **Barriers when accessing manager support** 8 out of 16 respondents commented they felt it was a barrier having to plan informal chats with the manager versus having these routinely when working in the office *"when you want that quick informal debrief it's not so accessible as being based in the same office"* 2 respondents commented on missing the face to face contact with manager 3 respondents commented it is harder to coordinate diaries, manager being busy and not knowing when manager was available. **Decrease in managerial support under hybrid working** Not in the same office Manager harder to contact **Increase in managerial support under hybrid working** *"Manager understands the impact of hybrid working and increasing demands so offers support more often/readily"*	Overall respondents feel supported by their managers, being in contact regularly with their managers and having access to the managers by using the available technology. *"I am able to speak to my manager via Teams, phone, email or in person which was not available pre hybrid working".* *"Manager understands the impact of hybrid working and increasing demands so offers support more often/readily"* The barriers reported to managerial support were manager not being available, having to plan informal chats/coordinate diaries due to remote working and missing face to face contact with the manager. *"when you want that quick informal debrief it's not so accessible as being based in the same office"* Whilst respondents reported a good level of opportunities to access professional development, on reflection, more data would have been useful to understand this topic better.

Peer support

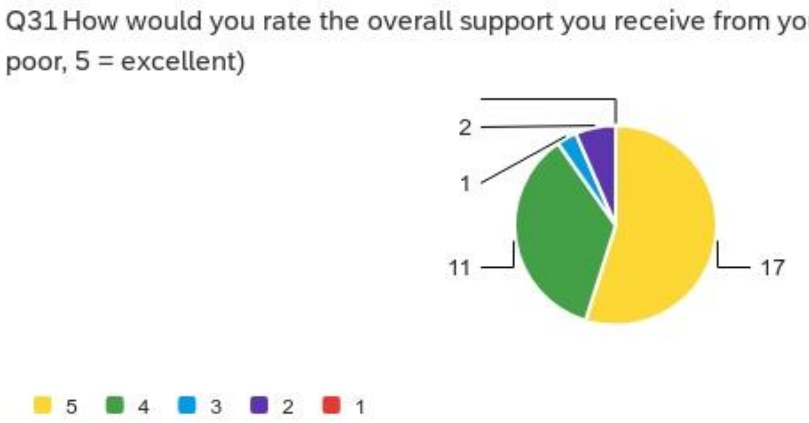


Figure 31. Overall support from peers rating

Note: 90% of respondents reported good or excellent support from team colleagues.

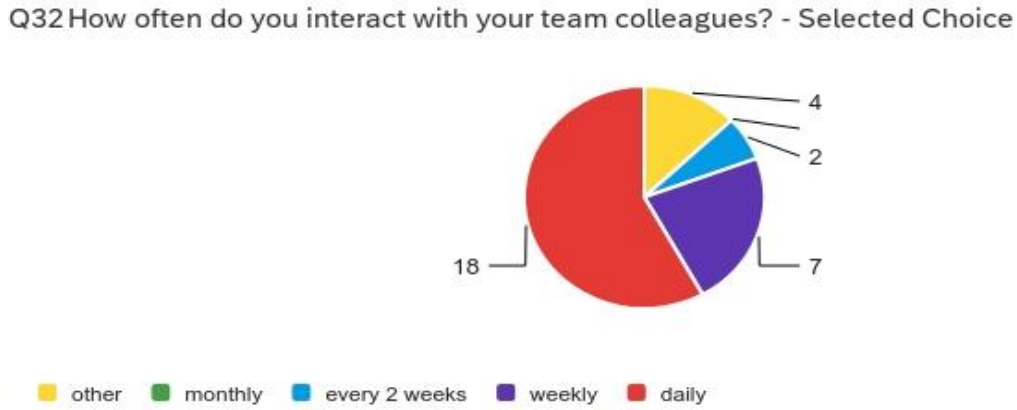


Figure 32. Level of interaction with team members

Note: The majority of respondents interact with team members daily or weekly.

The qulitative data showed some respondents did not see all their team colleagues regulalry and Microsoft Teams was used to intract with team colleagues.

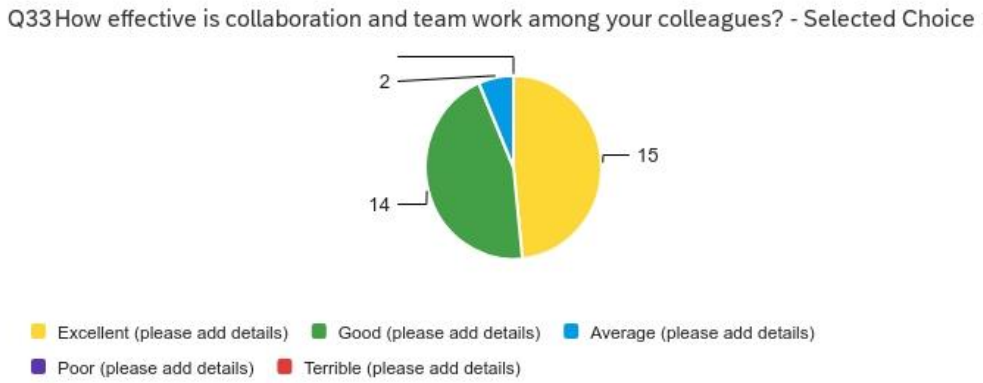


Figure 33. Team collaboration rating

Note: 93.5% of the respondents reported good or excellent team collaboration/team work.

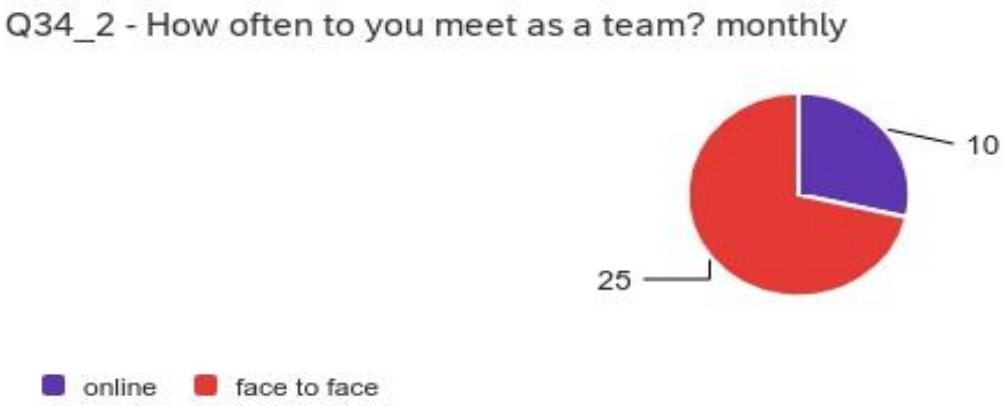


Figure 34. Team meetings rating

Note: All respondents reported meeting as a team once a month online or face to face with 71% meeting in person.

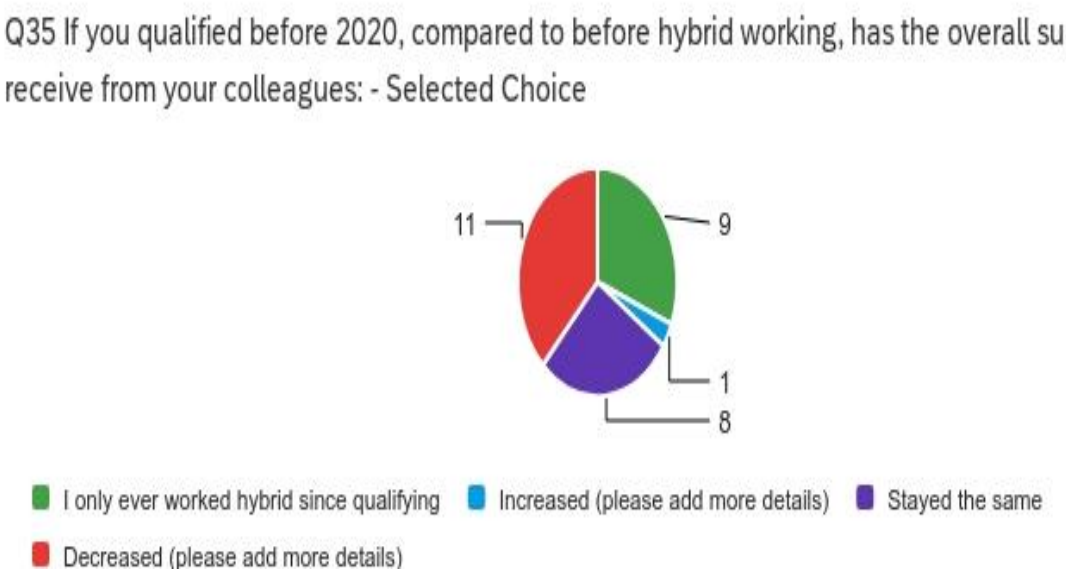


Figure 35. Team support under hybrid working model

*Note:*37% of respondents reported the support form the team has decreased under hybrid working.

The qualitative data showed that 9 out of 9 respondents reported missing seeing colleagues face to face, interacting with the team/service, having less opportunities to interact and share practice with colleagues.

> "*I feel more isolated than before as I don't see them regularly and know how busy they are and find it hard to reach out for support online".*
>
> *"Not being in the office is harder to have conversations day to day about caseloads, support needs, as in you can just turn your chair to chat with a colleague"*
>
> *"Do miss hearing what's happening professionally and personally with colleagues as you don't have those informal discussions as much as when face to face over the kettle".*

Table 11. Themes from peer support

Theme	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Peer support	**Overall peer support** 90% reported good or excellent overall support **Interaction with team members** 80% daily or weekly **Team collaboration/team work** 93.5% good or excellent **Meeting as a team** 71% meeting face to face monthly **Team support under hybrid working** 27.5% stayed the same 37% support decreased	**Interaction with team members** Comments showed some respondents did not see all their colleagues regularly, that there is no consistency on how often they interact with team members and that Teams is used as a tool to communicate when needed. **Team collaboration/team work** 20 comments regarding team collaboration being good or excellent. Themes emerging: Good communication, team happy to listen/advise/support, team looking after each other, communicating in person/online and also good relations outside work, making an effort to attend team meetings, established/close relationships.	Most respondents reported feeling supported by their peers/team, regular interaction and communication, good collaboration and team work with a high number of respondents commenting on having a positive team culture of support, collaboration, learning form each other. An interesting point was made by one respondent when thinking of the benefits of having support face to face from colleagues and how this is impacting on newly qualified:

Theme	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Peer support	29% only worked under hybrid arrangements	"*Very supportive team who has a wealth of knowledge and experience which assists in us developing. Although we all case manage, we work collaboratively to support each other and ensure the best outcomes for those we support".* "We are all happy to help each other out and offer advice and a listening ear" One respondent shared their concern for newly qualified social workers: *"The team does try to keep in touch via phone and Teams daily, which makes us feel as if we are there for each other however it is completely different than walking into a full office with lots of team members where there was always someone who shared a similar experience or can offer some advice or support. I am an experience social worker so I can function without that support however I can only imagine it is very difficult for newly qualified staff*." **Team support under hybrid working** 9 out of 9 respondents shared they feel under hybrid working arrangements they miss seeing colleagues, interacting with the team/service, having less opportunities to interact, share practice "*I feel more isolated than before as I don't see them regularly and know how busy they are and find it hard to reach out for support online".* *"Not being in the office is harder to have conversations day to day about caseloads, support needs, as in you can just turn your chair to chat with a colleague"* *"Do miss hearing what's happening professionally and personally with colleagues as you don't have those informal discussions as much as when face to face over the kettle".*	*"I am an experience social worker so I can function without that support however I can only imagine it is very difficult for newly qualified staff*." However, when considering hybrid working impact on peer support a higher percentage reported they feel this has decreased, they miss seeing colleagues in the office, interacting as a team/service, having less opportunities to interact/share practice "*I feel more isolated than before as I don't see them regularly and know how busy they are and find it hard to reach out for support online".* *"Not being in the office is harder to have conversations day to day about caseloads, support needs, as in you can just turn your chair to chat with a colleague"* *"Do miss hearing what's happening professionally and personally with colleagues as you don't have those informal discussions as much as when face to face over the kettle".*

Job satisfaction

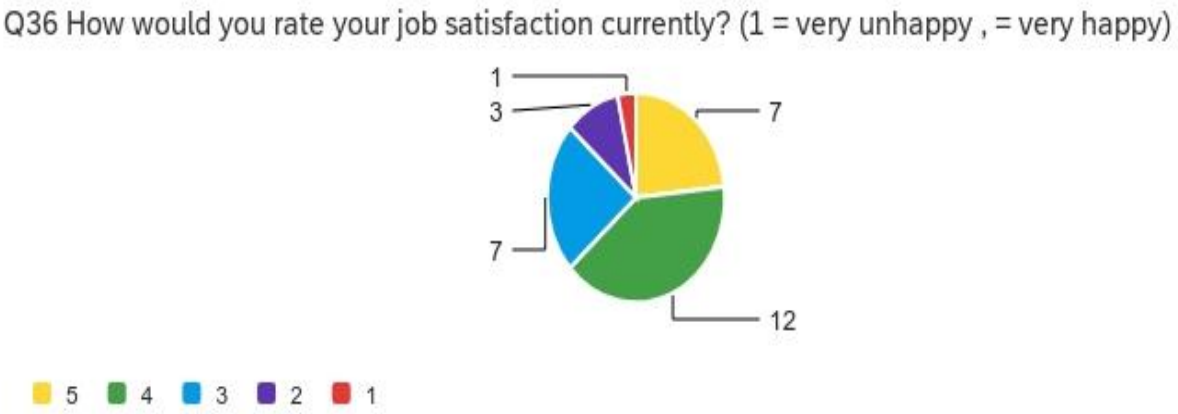


Figure 36. Job satisfaction rating

*Note:*63% of respondents shared they are happy or very happy with their job with 13% reporting they are unhappy or very unhappy.

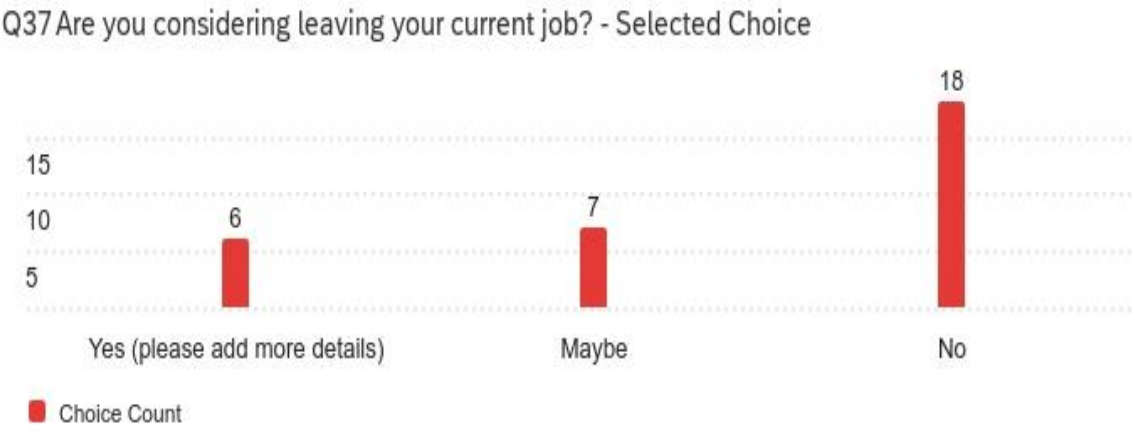


Figure 37. Job continuity rating

Note: 18 respondents responded they do not wish to leave their job. From those wishing to leave the job 2 respondents clarified they are retiring/have a new job with the other 4 respondents sharing concerns regarding increase in work demands.

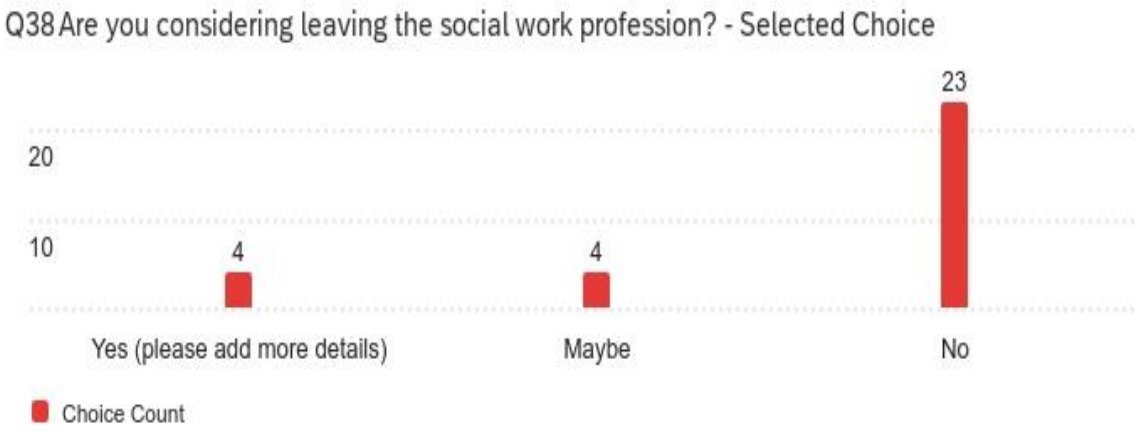


Figure 38. Profession continuity rating

Note: Most respondents are not considering leaving the profession. Those wishing to leave the profession shared concernes regarding high demands/stress/lack of resources.

Table 12. Themes from job satisfaction

Themes	Quantitative data	Qualitative data Respondents' comments	Researcher comments
Job satisfaction	**Current job satisfaction** 63% happy or very happy 23% median on neutral 13% unhappy or very unhappy **Job continuity rating** 18 not leaving 7 maybe 6 leaving **Profession continuity rating** 23 not leaving the profession 4 maybe 4 wishing to leave the profession	**Leaving the job** From the respondents who indicated they are looking to leave their job 2 clarified they are retiring/found a new job, and 3 others commented they considering leaving the job because of work pressure/demands: *"I enjoy my job but it does go through very stressful periods and I think that eventually I do want to leave the profession"* *"Feeling deskilled and ineffective at times"* *"Workloads are increasing but there are no plans to increase the number of staff in the team".* **Leaving the profession** 4 respondent added comments regarding their wish to leave the profession. One clarified she was leaving because of retirement. The others all shared leaving due to high demand/stress/lack of resources *"I was considering it when I went on sick leave due to stress"* *"The good periods are great but there is a high level of stress which is not healthy."*	Most respondents shared being satisfied with their job. Most are not considering changing their job or leaving the professions. However, from those who are considering leaving their job or profession themes are emerging of high demands/stress and lack of resources/not enough staff.

		"I do not think any other Local Authority is better due to lack of government funding."	

Hybrid working model – overall impact

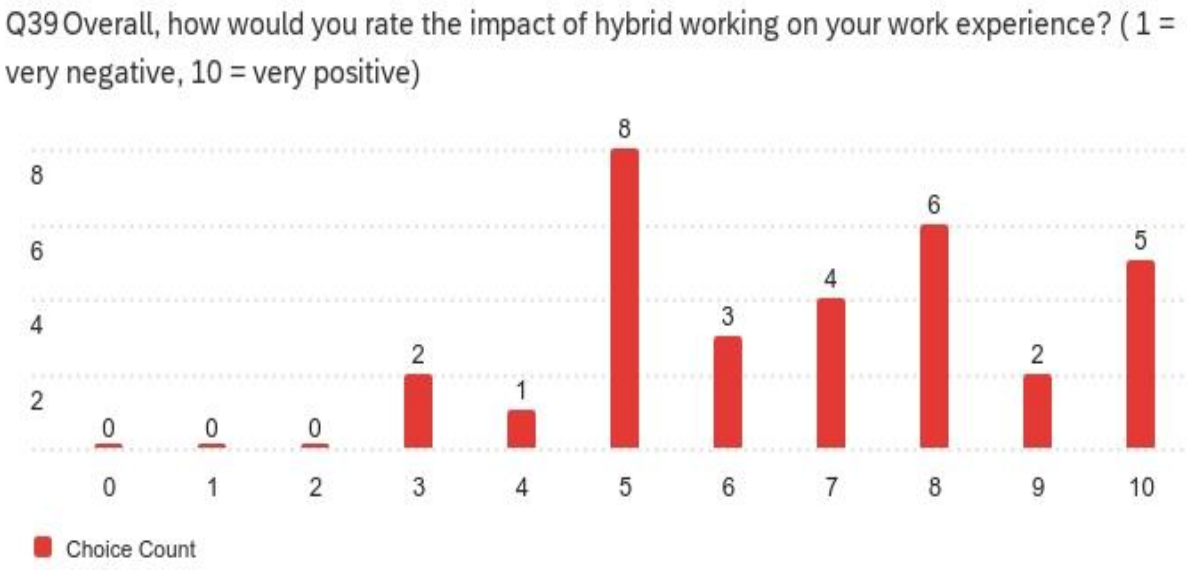


Figure 39. Hybrid working overall impact

Note: 64% of respondents reported hybrid working had a positive impact on their work experience.

Table 13. Themes for hybrid working overall impact

Themes	Qalitative data	Quantitative data Responder's comments	Researcher comments
Hybrid working overall impact	**Hybrid working on work experience:** 64% reporting a positive impact 25% median or neutral 11% reporting negative impact	**Key advantages** "*Better time management, more time for admin, better productivity for meetings, able to eat more healthy and save money on fuel/food, flexibility and less likely to be distracted from tasks by conversations happening around you."* **Key disadvantages** "*Nothing really compares with having informal peer support that you have within an office. Social work can be emotionally exhausted, and you need to be able to talk through situation with colleagues".* **Suggestions for improvement hybrid working models for social workers** *"As workers we need to be aware of our own needs and request the support when and if we need it, similarly managers need to understand that the emotional impact of working alone is different and can have a negative impact particularly on newly qualified staff"* *"Reduce expectations on social workers. There seems to have been a shift towards us 'fitting more in' where there is the option of online meetings"* *"More opportunities to meet with colleagues and desk space available without booking as this adds another barrier and lack of flexibility with day to day arrangements."* *"Designating on day every 3 weeks for the team to all be in the office together to reduce isolation and increase peer support".* *More breaks especially for exercising. It is also a struggle to transition from working out to then back home so more guidance around this"* *"Make sure there is regular, positive and easy access messaging between team members".* *"Honestly, I love it. I am hoping they never return to us being in the office full time."*	A higher proportion of respondents considered hybrid working as having a positive impact on their work experience. **Top themes as advantages** • Productivity • Better time management/money savings (less travelling, more time for meetings online) • Better work-life balance • Flexibility and autonomy **Top themes as disadvantages:** • Lack of support available/no team around • Isolation/working in isolation • Not switching off/working longer hours • Less opportunities to interact with team ad share experiences and practice • Dealing with stress with no peer support • Not enough office space **Top themes as suggestions for improvement**: • having more regular face to face meetings with the team/peers to avoid isolation • have support and being allowed space in the office to do this • social workers/manager awareness of higher emotional impact under hybrid working arrangements particularly for newly qualified social workers • no expectations to fit more in • more breaks for exercising • advice on transitioning from office work to working from home

DISCUSSION

Hybrid working and social workers: analysing changes in working conditions

Introduction

This chapter will answer the research questions and explore the contributions of this study to the academic knowledge in the field of social work working conditions and hybrid work.

Key findings

Research questions:

- What are the perceived barriers and benefits of hybrid working model for social workers?
- How does hybrid working model affect job satisfaction and wellbeing of social workers compared to traditional in – office work model?

Table 14. Key findings

Themes	Key findings
Overall impact	Hybrid working model for social workers has advantages and disadvantages which require further fine tuning to ensure benefits outweigh the risks
Hybrid working benefits	Hybrid working model provides benefits such as flexibility/autonomy, better time management, better work-life balance and having higher productivity when working from home
Hybrid working barriers	Hybrid working model can create barriers in accessing team support, social workers feeling isolated/lone working/dealing with stress with no team around, not being able to switch off and working longer hours, not allowing enough opportunities to interact with team ad share experiences and practice, not having appropriate office space
Productivity	The work demand has increased under hybrid working model, linked to austerity cuts, staff absence, expectations to fit more in, more time needed to coordinate work across different environments and settings
Work demands	
Job satisfaction	Social workers report good job satisfaction, however, those who are considering leaving their job or profession link this to increased demand and high stress
Work related stress/emotional demand	Social workers feel team support has deterioration since hybrid working model due to limited office space, working in isolation, less opportunities to interact with peers, share experience and practice, managing stress without team around
Support	Social workers' wellbeing under a hybrid working model is directly linked to how supported they feel and what is the level of demand at work but also at home, work-life balance being impacted by this
Work-life balance	Social workers report some benefits to managing work related stress under hybrid working, linked to flexibility and autonomy to organise their work, however overall work related stress is high
	Social workers find it harder to switch off when working from home and work longer hours which in turn has an impact on their emotional wellbeing
	The emotional impact of the work has increased under a hybrid working model due to isolation and less readily available support
	Newly qualified social workers require particular attention in terms of peer and manager support, access to team to learn from others and access support
Protective factors	There is a positive culture of peers and managerial support which is valued
Risk factors	Office space is not suitable to accommodate teams being together, as well as quiet spaces for online or confidential meetings

Themes	Key findings
Improvement suggestions	Meeting with team more regularly face to face in appropriate office space Awareness for managers and social workers of emotional impact of hybrid working to improve support Clear channels to access support when needed especially for newly qualified social workers More time for breaks to allow for exercising More advice regarding transition from different working spaces

Findings in relation to the literature review

This research set out to investigate the changes in working conditions for social workers under a hybrid working arrangement.

37 social workers in a small local authority children services completed a nonstandard questionnaire providing quantitative and qualitative data in relation to the research objectives: to identify the perceived benefits and barriers of hybrid working model for social workers working conditions and to analyse the impact of hybrid working model on job satisfaction and wellbeing compared to previous traditional in the office working model.

When considering the key findings presented in table 14, these align with the findings of literature review completed by researcher and presented earlier in this report.

Table 15. Findings in relation to literature review

Literature review themes	Key findings
Social work as relationship - base practice	Team support and being able to access this face-to-face more readily available and in an informal way was identified as something that if balanced can have a very positive impact in social workers feeling emotionally supported, prevent isolation and enables practice learning. (see table 14, key findings 3, 6, 7, 9, 14). This is in line with the findings of the literature review which highlighted social work is a profession which relies on relationship-base practice (Ruch, 2005), adults continue to require a secure base of relationships to manage emotional challenges (Cook et all, 2020), the team provides a secure base to enable processing emotions, manage stress (Pascoe, 2022), informal discussion between colleagues enables emotional containment (Rush, 2007). Other studies showed the remote work is having a negative impact on immediate peer support, especially for newly qualified social workers (Pascoe, 2022). The research findings support this, with social workers reporting that under hybrid working the support from team/peers has decreased, directly linked to not working together in the same space, limited office space and having less opportunities to interact with peers (table 14, key finding 10). One improvement suggested by social workers to improve the hybrid working model is improving all these factors to enable the team time together, the informal interactions, access to the secure base the team can offer without barriers, like limited office space (table 14, key finding 14, 15).
Hybrid working and social work	The literature review showed there is ample evidence regarding hybrid working/remote working being successful in many industries. Furthermore, social workers adapted quickly to working with digital platforms as well as face-to-face, seeing the benefits of remote working such as times saving and offering safety for some service users (e.g teenagers) (Pink et al, 2022). The same research argued that hybrid working was inevitable and necessary however more advice and guidance was needed to ensure this enhances practice and risks are well managed. The study findings support this view, that social workers have adapted and are using the benefits of hybrid working such as better productivity, flexibility and autonomy and

Literature review themes	Key findings
	better work life balance to enhance their practice. However, all these benefits are interlinked with availability of resources, such as office space and impact on wellbeing. (table 14, key findings 2 and 8) The literature review identified that decisions to vacate office spaces was made early on during Covid pandemic for practical considerations and whilst some guidance emerged for Local Authorities regarding hybrid working these had not been time tested and evidence based (Daley, 2023). This research study shows social workers are identifying the limited office space as a barrier to accessing peer support but also being able to work on various platforms and environments, as such, appropriate space for online/confidential meetings is required when working from home or office (table 14, key finding 3, 4, 6, 13). The literature review also identified a high percentage of social workers reporting that working from home impacts on emotional wellbeing, this being directly liked to difficulties in switching off and work and home boundaries are blurred (Taylor et al, 2021). Similarly, the research study identified that under hybrid working there is a higher emotional impact because of similar issues, not being able to switch off, blurred boundaries, working extra hours. In addition, social workers in the study linked this to not enough opportunities to access informal peer support to alleviate the feelings of isolation and provide the advice, guidance, learning from each other (table 14, key finding 3 and 6).
Working conditions and social work	Th literature review showed that working conditions for social workers remain poor compared to other similar professions, this being linked amongst other things to high workloads and lack of resources (Ravalier et al, 2023). Furthermore, same research showed that social workers have the second highest level of stress related sickness absence in UK which leads to job dissatisfaction and a high percentage looking to leave the profession. The research findings confirm social workers feel work demands are high and furthermore have increased under the hybrid working model. This was linked to staff absence, austerity cuts, more complex work and higher demand overall. The qualitative data suggested also social workers being asked to fit more in and needing more time to coordinate working over various platforms and environments (table 14, key findings 4, 5). Within this research however there is no strong evidence that social workers are dissatisfied with their overall working conditions; job satisfaction and managerial support scored high (figure 14, key findings 5, 12). However, for those who considered leaving the job or profession as per the literature review, this was linked to high demand and stress (table 14, key findings 4, 5).

Contribution to academic debate

The literature review identified a gap in the knowledge of how hybrid working is impacting working conditions for social workers. Whilst hybrid working or remote working has been embraced by many businesses across the world as a positive way of working, there is limited guidance in relation to hybrid working in social work. The researcher acknowledges that this is still a fairly new way of working and that this research comes at the right time, with hybrid working having been tried and tested by social workers for a long enough period to provide rich data.

The researcher believes the findings of the study contribute to existing research, by showing the interdependence of key elements within the hybrid working systems, the duality of opportunities/risks and the importance of keeping a fine balance between numerous factors to ensure hybrid working model is enhancing practice without compromising on social workers' wellbeing or threatening team systems, so vital for emotional support.

This research is confirming some of the findings of previous research, with adding more understanding to various aspects. Social workers showed awareness, not only of the benefits and barriers of the hybrid working model, but also of what would improve this working model: having more time as a team for informal support, having better office spaces, better managers' awareness of emotional impact, breaks to allow

physical exercise (vital when working online/front of computer for prolonged hours) and needing advice in relation to changes from various working environments.

The researcher notes around 30% of responders were newly qualified which will have an impact on the overall results. As per literature review, in this study the role of the manager is highlighted as significant in supporting this cohort of social workers, with careful attention to the protective factors required to build professional knowledge and skills but also resilience.

Another contribution to the academia is the finding that office space remains important under a hybrid working arrangement and cannot be compromised for saving purposes. As social workers are being expected to work with more complex tasks and technology, over various platforms and spaces, the office remains the element which provides the safe base of team/colleagues/manager as well as the work space from which they should be able to perform all tasks required for their job. Furthermore, the research identified the lack of office space as a possible factor in causing delays for families and children, as meetings cannot be arranged in a timely manner. More than half of the social workers identified as a barrier having to book a desk/office space, which linked to the idea of causing delays could impact on a high proportion of families and children. Whilst this may be relevant for this particular local authority, the researcher believes, from experience, this is likely to be the case for most local authorities in Wales, as all have been requested to make savings and have reduced their office space.

There is very little data in the current literature in relation to the impact of working over various environments and platforms which this research has shown to require further advice and guidance for social workers. Furthermore, whilst technology saves time and gives easy access to communicating with peers and have multidisciplinary meetings, having to coordinate work takes longer and the continuity of work is impacted, social workers having to consider which task can be done where, what interaction is most suitable, if in person or remote, what space is available. The researcher believes from experience, that there is some element of lack of control over the online diary, with others being able to book meetings or tasks more easily. Furthermore, the level of emails has increased considerably due to trying to coordinate meetings or clarify information which could be easily done if working in the same space. This linked to lack of office space, increases work demand and stress and potentially can lead to delays for service users. One of the improvements suggested by social workers is having more advice around working across various environments.

When comparing hybrid working model with the more traditional in office working model, a high proportion reported no impact on work related stress and emotional demand. The researcher believes when linking this with the qualitative data it is evident social workers believe it is not the hybrid working model as such that is impacting on work related stress and emotional demand, but the increase in workload which most reported as high/overwhelming due to higher complexity, low level of staff due to austerity cuts, less resources, expectation to fit more work in. There is indication that for some the hybrid working model helps with managing the work related stress better through the flexibility and autonomy provided to organise and prioritise work.

Another contribution made to academia is expanding on the idea that hybrid working increases productivity and social workers appreciate having more flexibility, a better work-life balance and the autonomy to organise their work. However, this research shows these benefits could easily change into risks with social workers finding hard to switch off, working additional hours, feeling work-life balance is blurred. This linked to the feeling of having to fit more work in makes it less likely that social workers are able to maintain a strict work-life balance. One respondent commented on these benefits of hybrid working taking their toll on mental load, team cohesiveness and quality of work.

Discussion conclusion

This chapter presented the key findings of the research and the academic thinking in light of existing literature. A simple answer to the research question is that, Hybrid working model for social workers has advantages and disadvantages and would benefit from a specific framework for social care, to guide services, managers, social workers, as well as academia for future practitioners.

CONCLUSION AND RECOMMENDATIONS

Purpose of chapter

The concluding chapter will bring together the key findings from the research as well as present the research reflections and recommendations.

Key findings

The key finding of the study are

1. Hybrid working model for social workers has advantages and disadvantages which require further fine tuning to ensure benefits outweigh the risks
2. Hybrid working model provides benefits such as flexibility/autonomy, better time management, better work-life balance and having higher productivity when working from home
3. Hybrid working model can create barriers in accessing team support, social workers feeling isolated/lone working/dealing with stress with no team around, not being able to switch off and working longer hours, not allowing enough opportunities to interact with team ad share experiences and practice, not having appropriate office space
4. The work demand has increased under hybrid working model, linked to cost cutting exercise, staff absence, expectations to fit more in, more time needed to coordinate work across different environments and settings
5. Social workers report good job satisfaction, however, those who are considering leaving their job or profession link this to increased demand and high stress
6. Social workers feel team support has deterioration since hybrid working model due to limited office space, working in isolation, less opportunities to interact with peers, share experience and practice, managing stress without team around
7. Social workers' wellbeing under a hybrid working model is directly linked to how supported they feel and what is the level of demand at work but also at home, work-life balance being impacted by this
8. Social workers report some benefits to managing work related stress under hybrid working, linked to flexibility and autonomy to organise their work, however overall work related stress is high
9. Social workers find it harder to switch off when working from home and work longer hours which in turn has an impact on their emotional wellbeing
10. The emotional impact of the work has increased under a hybrid working model due to isolation and less readily available support
11. Newly qualified social workers require particular attention in terms of peer and manager support, access to team to learn from others and access support
12. Positive culture of peers and managerial support which is valued
13. Office space is not suitable to accommodate teams being together, as well as quiet spaces for online or confidential meetings
14. Meeting with team more regularly face to face in appropriate office space
15. Awareness for managers and social workers of emotional impact of hybrid working to improve support
16. Clear channels to access support when needed especially for newly qualified social workers
17. More time for breaks to allow for exercising
18. More advice regarding transition from different working spaces

Recommended framework

One comment from the findings resonates: " *Home has become work and vice versa".* The researcher believes this encompasses the highest risk of hybrid working, the technology pushing services to focus on

productivity and efficiency and fitting more in for every hour which is available in the diary. This is at the expense of the human element which lies at the heart of social work. Social workers require time for reflection, analysis, and thoughtful decision-making, all of which are essential in understanding complex situations and providing meaningful support to vulnerable individuals and families. Protective factors are required to prevent promoting bureaucracy and increasing output over the quality of care. Hybrid working should be used to enhance the capacity for deeper engagement, thoughtful interventions, and the well-being of social workers, ensuring that the values of compassion and empathy remain central to the profession. This will ensure a resilient social work workforce, with appropriate support to manage the complexity and emotional demands of the job, in any setting they find themselves in, any working day.

Therefore, the researcher proposes a framework model to enable a better balance between benefits, risks and protective factors, when working under a hybrid working model (figure 40).

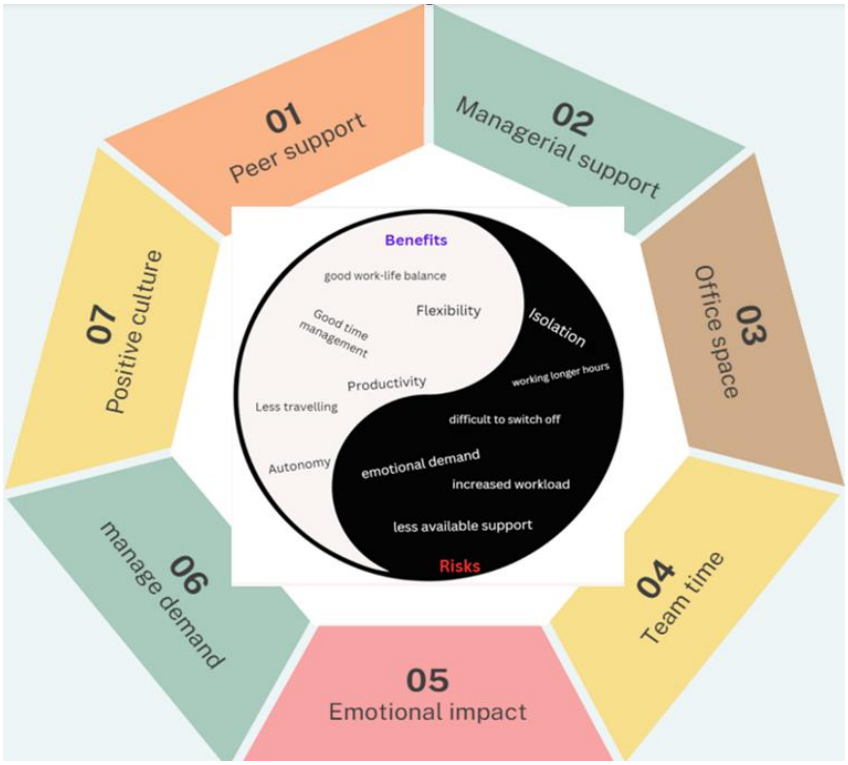


Figure 40. Hybrid working framework. Source: The Researcher (2024)

The middle section of this model represents the benefits and risks for social workers associated with hybrid working model, with social workers fluctuating between the risks and benefits areas depending on the protective factors available to them. The outside elements represent the protective factors which employers and managers should be mindful of when supervising staff, requesting or agreeing resources, proposing savings, designing future services using a hybrid working model. The better the protective factors in place the more likely social workers will shift towards the benefits area of hybrid working model. The model should be developed further in discussions with stakeholders.

Reflections

The researcher offers the following reflections:

- Around 30% of participants qualified post 2020 having only experienced remote or hybrid model of studying and working. On reflection the study could have given a clearer voice to newly qualified social workers.

- The researcher proposed in the initial plan to gather data through a survey followed by a focus group. Due to time restrictions it was not possible to complete a focus group and adjustments were made to enable more rich data to be collated through the questionnaire instead of a focus group.

Future research

The researcher is offering the following suggestions for future research:

- A comparative study is conducted with managers and supervisors
- A similar study is conducted on another area/local authority to explore if the study can be generalise to other/all local authorities/social care settings
- A longitudinal study of hybrid working in social care to identify further findings in relation to benefits and risks as well as protective factors, as things continue to develop and change over time and best practice emerges.

Conclusion

The research study demonstrated that hybrid working is perceived by social workers as having benefits but also potential barriers to working conditions and practice. The key findings align with the literature available and adds additional findings to better understanding how hybrid working model can be best used by social workers to enhance their practice whilst also ensuring well-being is maintained.

The findings inform the development of a framework model proposed by the researcher, which balance benefits and risks dependant on the protective factors identified, such as peer support, regular time with the team, managerial support, office space, managing demand for social workers, being mindful of the emotional impact and continuing to promote a positive culture.

The researcher hopes this will open further conversations in to practical action to improve working conditions for social workers, improve practice, increase job satisfaction and wellbeing, and reduce the numbers of those who leave the profession.

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Appendix H: Ethical Approval

Swansea University
Prifysgol Abertawe

Approval Date: 16/07/2024

Research Ethics Approval Number: 1 2024 10430 9596

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	Hybrid Work and Social Workers: Analysing Changes in Working Conditions
Applicant name	LUIZA BIVOLARU
Submitted by	LUIZA BIVOLARU /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/12531

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 16/07/2024

Rhif Cymeradwyo Moeseg Ymchwil:

Appendix I: Questionnaire

Hybrid Work and Social Workers research

Start of Block: consent

Subject: Hybrid Work and Social Workers: Analysing Changes in Working Conditions

Thank you for participating in this research study.

This survey is for children services social workers (for the purpose of this research this also includes senior social workers) and it aims to gather their views about the impact of hybrid work on working conditions.

Hybrid work within the context of this research is a combination of office and home working. Following the COVID pandemic most teams within social services have had to adapt to hybrid working, however there is little research to show how this is impacting on areas such as job satisfaction, productivity, work-life balance, work demands and support levels for social workers.

Your views are important in helping us gain a picture on the benefits and challenges for social workers/senior social workers. The research aims to provide recommendations based on the findings, to ensure hybrid working is as beneficial as possible for social workers which in turn will have a positive impact on the support they provide to vulnerable children and families.

The survey will take approx. 15-20 minutes.

4.

Consent:

Please read carefully below statements regarding your consent.

I confirm that I have read and understand the Participant Information Sheet for the above study which was attached to the email circulated with this form.

I understand that my participation is voluntary and that I am free to withdraw, without giving any reasons. As the survey is anonymous you will only be able to withdraw before submitting your answers.

I understand what my role will be in this research, and all my questions have been answered to my satisfaction.

I understand that I am free to ask any questions at any time before and during the study.

I have been informed that the information I provide will be safeguarded. Please do not include any names/confidential information in your free answers.

- Yes I consent
- No I do not consent

Skip To: End of Survey If Subject: Hybrid Work and Social Workers: Analysing Changes in Working Conditions This study is be... = No I do not consent

End of Block: consent

Start of Block: demographics

1. What is your age?

- Under 25
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- prefer not to say

2. What is your gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

3. How many years have you been qualified as a social worker?

- less than 1 yr
- 1 - 4 yrs
- 5 - 10 yrs
- more than 10 yrs

4. Which team do you work in?

- Information Advice and Assistance Team
- Locality Teams
- 14+ team
- Statutory assessment team
- Supporting Change Team
- Disability Team
- Fostering Team
- Adoption Team
- IST - Families first
- other _____

End of Block: demographics

Start of Block: Working arrangements

5. What is your current working arrangement?

- Full time home working
- Hybrid (agile/both from home and in the office)
- Full time office based
- other (please add details below) _____

6. If working under a hybrid arrangement how many days/week do you work:

- At the office _____
- At home _____
- Other arrangement _____

7. Which of the options below would you say are beneficial to you when working from the office? (you can select multiple choices)

Collaboration and Team support

Access to resources

Separation of work and family life

Manager support and professional development

Reduced isolation

Networking Opportunities

Immediate access to emergency support

better engagement and communication with clients

other _____

8. When considering working from the office have you experienced any of the barriers below? (you can select multiple choices)

1 Having to book a desk/room in advance

2 Not enough office/desk space available

3 No access to quiet space for online meetings

4 No access to rooms for confidential meetings

5 Not being able to sit in the same area/building as your team

6 Other (please add details) _____

9. Which of the options below would you say are beneficial to you when working from home? (you can select multiple choices)

7 Flexibility/Autonomy

8 Costs savings (e.g no commute)

9 Better work - life balance

10 Enhanced focus and productivity

11 Comfortable environment

12 Health and Wellness (e.g more breaks, access to healthy meals/exercise, more suitable for health needs

13 Quite space for confidential/difficult meetings

14 other _____

10. When working from home have you experienced any of the below difficulties? (you can select multiple choices)

15 Social Isolation

16 Blurring work - life boundaries

17 Reduced collaboration and communication

18 Reduced opportunities for professional growth

19 Lack of suitable workspace

20 Higher emotional and psychological impact

21 Lack of immediate support

22 Difficulties in engaging with clients online

23 other _____

End of Block: Working arrangements

Start of Block: Work demands

11. How would you rate your current workload?

- overwhelming (please add details) _____
- just about right
- high but manageable (please add details) _____
- other _____

12. How do you rate the support you have to meet your job demands?

- low level support
- just about the right level of support
- very good support

13. Please select from below options what you feel is helping to better manage your job demands under a hybrid working arrangement? (you can select multiple choices)

24 Autonomy (e.g flexibility in planning diary for various tasks)

25 Improved time management (e.g no commute, less travelling)

26 Online collaboration with professionals network

27 Easy access to colleagues/manager online

28 Access to global resources online (e.g colleagues from other areas, training)

29 confident in using technology to complete most aspects of my work

30 other _____

14. Please select from below what you are finding difficult in managing your job demands under a hybrid working arrangement?

31 Transition between home and office

32 Managing complex cases/tasks (e.g tasks divided between remote and in-person settings, ensuring continuity of service across different environments)

33 Inconsistent access to resources (e.g working in various offices, lack of rooms for confidential meetings)

34 Inconsistent access to manager/peer support

35 Barriers with client engagement (online vs face-to-face)

36 Blurred work-life balance (harder to "switch-off" when high demands)

37 More coordination needed to arrange face to face meetings, supervisions, team meetings

38 Keeping up with technological changes/managing technological issues

39 other _____

15. If you qualified before 2020, compared to before hybrid working, has your caseload:

- Decreased (please add more details) _____
- Stayed the same
- Increased (please add more details) _____
- I only ever worked hybrid since qualifying

End of Block: Work demands

Start of Block: Productivity

16. What impact would you say hybrid working has on your productivity?

	when working from home	when working in the office
less productivity	40	41
same productivity	42	43
better productivity	44	45

17. If you qualified before 2020, compared to before hybrid working, has your productivity:

- Decreased (please add more details) _____
- Stayed the same
- Increased (please add more details) _____
- I only ever worked hybrid since qualifying

End of Block: Productivity

Start of Block: Stress levels/emotional demands

18. On a scale of 1 to 5 how would you rate your current work related stress levels? (left = very high, right = very low)



12345

19 How is hybrid work impacting on the level of your work related stress?

- increases work related stress (please add details) _____
- no impact
- helps reduce work related stress (please add details) _____

20. How is hybrid work impacting on the emotional demands of your job?

- increase in the emotional demand/impact (please add details) _____
- no impact
- decrease in the emotional demand/impact (please add details) _____

21. If you qualified before 2020, compared to before hybrid working, has your stress level/emotional demands of your job:

- Decreased (please add more details) _____
- Stayed the same
- Increased (please add more details) _____
- I only ever worked hybrid since qualifying

End of Block: Stress levels/emotional demands

Start of Block: Work – Life Balance

22. How would you rate your work - life balance? (left = not very good, right = very good)



12345

23. How is hybrid work affecting your work-life balance?

- negative impact (give examples) _____
- no impact
- positive impact (give example) _____

24. If you qualified before 2020, compared to before hybrid working, has your work - life balance:

- Decreased (please add more details) _____
- Stayed the same
- Increased (please add more details) _____
- I only ever worked hybrid since qualifying

End of Block: Work – Life Balance

Start of Block: Managerial support

25. How would you rate the overall support you receive from your manager? (left = poor, right = excellent)



12345

26. How often do you communicate with your manager?

- daily
- several times a week
- every 2 weeks
- monthly
- other _____

27. How accessible is your manager when you need support and guidance? (1 - never, 5 - always)



12345

28. Please give examples of the benefits and the barriers you have experienced when accessing manager's support under hybrid working arrangements.

46 barriers _____

47 benefits _____

29. If you qualified before 2020, compared to before hybrid working, has the overall support you receive from management:

- Decreased (please add more details) _____
- Stayed the same
- Increased (please add more details) _____
- I only ever worked hybrid since qualifying

30. How does hybrid working is impacting on your opportunities for professional development? (1 - no/little opportunities, 5 - great opportunities)



12345

End of Block: Managerial support

Start of Block: peer support

31. How would you rate the overall support you receive from your team colleagues? (left = very poor, right = excellent)



12345

32. How often do you interact with your team colleagues?

- daily
- weekly
- every 2 weeks
- monthly
- other _____

33. How effective is collaboration and team work among your colleagues?

- Terrible (please add details) _____
- Poor (please add details) _____
- Average (please add details) _____
- Good (please add details) _____
- Excellent (please add details) _____

34. How often do you meet as a team?

	face to face	online
weekly	48	49
monthly	50	51
other	52	53

35. If you qualified before 2020, compared to before hybrid working, has the overall support you receive from your colleagues:

- Decreased (please add more details) _____
- Stayed the same
- Increased (please add more details) _____
- I only ever worked hybrid since qualifying

End of Block: peer support

Start of Block: Job satisfaction

36. How would you rate your job satisfaction currently? (left = very unhappy , right = very happy)



12345

37. Are you considering leaving your current job?

- Yes (please add more details) _____
- Maybe
- No

38. Are you considering leaving the social work profession?

- Yes (please add more details) _____
- Maybe
- No

End of Block: Job satisfaction

Start of Block: Overall impact

39. Overall, how would you rate the impact of hybrid working on your work experience? (1 = very negative, 10 = very positive)



0
1
2
3
4
5
6
7
8
9
10

40. What do you see as the key advantages of hybrid working for social workers?

_____

41. What do you see as the key disadvantages of hybrid working for social workers?

_____

42. Do you have any suggestions of improving hybrid working models for social workers?

_____

End of Block: Overall impact

Acknowledgments

The researcher would like to express her deepest gratitude to everyone who has contributed to the completion of this research project.

About the Author

Luiza Bivolaru is a qualified social worker with over 20 years experience in the field. Luiza moved to UK in 2005 and she has dedicated 19 years of her career to work in adoption services.

Luiza is currently a team manager in an adoption service in Wales and she oversees the delivery of post-adoption support services to all those affected by adoption.

Luiza is passionate about leadership and coaching and as a team manager she aims to support her team to provide good quality services whilst remaining resilient and engaged by using reflection and self-care.

Luiza's extensive experience in the field of social work has given her a deep understanding of the challenges and rewards faced by social workers, who are working with the most vulnerable, managing risk and using themselves as a tool to connect and influence positive change. Luiza is aware this often has a huge emotional toll on the social workers' wellbeing, and therefore she believes they require appropriate working conditions, support and supervision.

This research project reflects Luiza's commitment to shaping a more positive and sustainable future for social workers, with the goal to creating better outcomes for both practitioners and the communities their serve.

Making Meetings Matter: Examining meeting habits, productivity, purpose, outcomes and looking at ways to make meetings more productive.

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Abstract:

This research project explores the impact of meetings within NHS Wales. Meetings play a crucial role in organisational success. They are essential for collaboration, problem-solving, and progress tracking. Productive meetings benefit both organisations and employees. However, their effectiveness varies and globally there is a significant cost of unproductive meetings. This paper examines the literature about meetings, specifically examines the meeting habits of 36 senior managers from two health boards in NHS Wales and assesses whether the introduction of a bespoke training programme on meetings can lead to positive changes. The pre-study analysis revealed that senior managers and directors in NHS Wales spend a significant amount of time in meetings. Some participants spent over 80% of their total contracted work time in meetings. Many participants reported working through lunch breaks or after office hours due to meetings, and many felt that they didn't have enough time during contracted hours to complete their work. Only a minority believed that meetings helped them do their job effectively, helped them work towards departmental or health board objectives. Many meetings lacked clear purposes, timely agendas, or ground rules, and bad habits such as lateness, multitasking, and uncompleted tasks from previous meetings were commonplace. The meeting burden was higher in Betsi Cadwaladr University Health Board (BCUHB) compared to Cardiff and Vale University Health Board (CAVHB). A bespoke training programme was developed and delivered to the senior managers to try and improve meeting habits The sample size was small, however participants reported reduced meeting burden and improved meeting quality. Positive changes included clearer purposes, better alignment with priorities, and increased adherence to start and end times. Organisations should implement policies on meetings and should invest in training their employees to have better meetings to address the waste of resources and human costs caused by unproductive meetings.

Keywords: Meetings, Productivity, Training, NHS Wales,

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Introduction

What is a meeting and what is it for?

We all have meetings. Many of us feel that we are having more meetings than ever before. Is this a real phenomenon or is it imagined? And if it is real, why are we having more meetings? Are they making us more productive? Or are they possibly even making us less productive? Do our meetings have a clear purpose? How many of our meetings achieve some clearly defined outcomes or result in a change in some way? If they don't result in a change or any clear outcomes, do we need to have meetings and are there possibly better alternatives that we can use?

This research project explores some of these questions by examining the meeting habits of a group of senior managers working in two of NHS Wales's largest health boards, then testing the effect of a bespoke educational training programme, designed to try and change attitudes and behaviours to meetings, to explore whether this results in a positive change in meeting habits.

Why is this important?

Meetings take up precious time. A previous survey undertaken within the author's organisation in NHS Wales suggested that most staff spend 6 hours or more of their working week at meetings. Managers and directors spend much more than this, up to 30 hours a week in scheduled meetings. Nearly all responders felt that many of their meetings were lacking any clear purpose, were unproductive and resulted in no clear outcomes.

Every minute spent at an unproductive meeting steals an opportunity to work on something that can improve our productivity. Constant meetings interrupt time to focus and hinder our ability to complete demanding tasks. There are a lot of anecdotal complaints within NHS Wales that there is an increasing burden on meetings, and staff are expected to spend more time in meetings than ever before, yet at the same time NHS Wales is struggling with clinical performance, financial performance and productivity. Overloaded schedules that leave little time to complete our work can leave us feeling overwhelmed and can lead to stress and burnout. NHS Wales is also currently suffering from high levels of stress and burnout amongst staff.

So, are our meetings helping us or harming us?

Literature review

Method

The author undertook a literature search to look at previous work on this topic. The aim of the literature search was to find answers to the following questions:

1. Are we really having more meetings than before?
2. What evidence is there that supports the hypothesis that meeting burden is having a negative impact on productivity or job satisfaction?
3. How do we have better meetings? What does the evidence support?

Papers were limited to those published in the English language in the last 10 years initially. This was then extended to include papers published in the last 20 years. Preference was given to papers published in peer reviewed journals. The literature search was conducted in April 2024 using Google Scholar, Scopus and Research Rabbit, using the search terms Meetings AND (fatigue OR productivity OR habits). The author used the snowballing method to find relevant articles through linked citations.

The literature search resulted in 20 relevant papers that were included. After review of the abstracts, 18 were included in the final review.

Results

Are we really having more meetings than before?

Meetings are an integral part of most organisations. Meetings should provide employees with a forum for creative thinking, debate, discussion and idea generation, resulting in clear action plans and next steps for moving work forward. (Mroz et al., 2018). Meetings are also useful for sensemaking, leadership influence,

relationship building, team dynamics, conflict resolution and shaping attitudes. (Lehmann-Willenbrock et al., 2018). Given the ease in modern times of communicating with other people even when geographically separated it is not surprising that we seem to be having more meetings than ever before. The perception of increasing meeting frequency is not new however. Luong and Rogelberg reviewed literature describing an increase in meeting load over the last five decades. A 1973 study by Mintzberg found that the majority of a managers working day (69%) was taken up by meeting, so perhaps the perception of heavy meeting burden is not a new phenomenon. There are some recent studies however that do suggest that the burden of meetings is increasing. Mosvick and Nelson, 1987 reported that relative to the 1960s, executives were participating in twice as many meetings. Tobia and Becker in 1990 surveyed 1900 business leaders and 72% of them spent more time in meetings than they did 5 years previously.

Mroz et al reviewed the literature of workplace meetings and estimated that in the USA there were between 11 million and 55 million meetings per day. Employees averaged 6 hours per week in meetings whilst managers spend on average 23 hours per week in meetings and up to 80% of their total work time in meetings (Mroz et al., 2018). Estimates suggest that most organisations devote between 7 and 15% of their personnel budgets to meetings. However, as many of half of meetings are rated as poor by attendees, and organisations are wasting approximately $213 billion on ineffective meetings every year(Lehmann-Willenbrock et al., 2018). Doodle State of Meetings report in 2019 estimated the cost of poorly organised meetings in the USA in 2019 to be $399 billion. This evidence is pointing towards a significant global phenomenon of increasing meeting burden, with significant time and resources wasted in unproductive meetings.

In 2020 the COVID-19 global pandemic resulted in a widespread shift towards virtual meetings using videoconferencing software such as Zoom®, FaceTime® or Microsoft Teams®. Although video conferencing was not new, advances in technology and internet bandwidth made video conferencing much more accessible (Reed, 2022). The shift to video conferencing for many was forced relatively abruptly due to the pandemic and not everyone adapted quickly to the new way of working. Karl et al examined virtual work meetings during the COVID-19 pandemic. In December 2019 the daily number of participants on Zoom® meetings was 10 million. In April 2020 it was 300 million per day. Similar increases were seen on Microsoft Teams® and other meeting platforms. After the end of the pandemic, many organisations have continued with increased use of virtual video conferencing meetings which offer many advantages such as the possibility of remote working and multimedia content (e.g. the ability to use polling and chat function)..

One possible disadvantage however is that the ease of organising virtual meetings and no longer having restrictions of travel time and venue capacity means that more employees are being invited to meetings than ever before. There is also a well-documented, growing phenomenon of fatigue from excessive virtual meeting burden. (Bergmann et al., 2023; Hacker et al., 2020; Karl et al., 2022; Knox et al., 2023; Nurmi & Pakarinen, 2023) Many of the complaints about virtual meetings described by Karl et al. are consistent with those experienced by participants of face-to-face meetings, such as starting late, lack of an agenda, too long, participants showing up late or people multi-tasking. (Karl et al., 2022)

Interestingly, meeting load is associated with organisation size, with employees of smaller organisations (employing fewer than ten people) spending 10% of their work time preparing for, attending, leading or concluding meetings, whereas employees of large organisations (employing more than 500 people) spend up to 75% of their time on the same activities.(DigitalCommons et al., 2008)

Overall the evidence is suggestive but not conclusive that overall meeting load in organisations is increasing and there is strong evidence that there has been a sharp increase in the number of virtual meetings. Large organisations seem to have the heaviest meeting load.

What evidence is there that supports the hypothesis that meeting burden is having a negative impact on productivity or job satisfaction?

Luong and Rogelberg (2005) examined the relationship between meeting load and the daily well-being of employees. They compared meetings to previous work that had studied the impact of interruptions and daily hassles (defined as annoying episodes in which daily tasks become more difficult or more demanding than anticipated). The study looked at whether meeting frequency was negatively related to the daily wellbeing of the employee and whether time spent in meetings was negatively related to employee well-being. Their findings concluded that excessive meetings could lead to stress and reduced job satisfaction,

suggesting the need for better meeting management practices to protect employee's well-being. Rogelberg (2006) published another paper showing that excessive meeting time negatively impacted on employee wellbeing and argued that organisations need to balance meeting time with other work demands to maintain employee health, (Rogelberg et al., 2006).

Rogelberg in 2010 explored the relationship between employee satisfaction with meetings and overall job satisfaction. The study concluded that well-conducted meetings are a significant component of job satisfaction, highlighting the importance of effective meeting management.(Rogelberg et al., 2010)

Kauffeld et al 2012 investigated the impact of team meetings on overall team and organisational success. Better meetings were associated with higher team productivity. Constructive meeting interaction processes were related to organisational success 2.5 years after the meeting. Dysfunctional communication, such as criticising others or complaining, showed significant negative relationships with these outcomes. These negative effects were even more pronounced than the positive effects of functional team meeting interaction. The results suggest that team meeting processes shape both team and organisational outcomes. (Kauffeld & Lehmann-Willenbrock, 2012)

In summary there is evidence that excessive meeting burden negatively impacts job satisfaction. The quality of the meetings appears to be a significant factor as well as the time spent in meetings, and poorly conducted meetings were associated with poor productivity and worsened employee satisfaction, whereas well conducted meetings were associated with organisational success, positive team interactions and better job satisfaction.

How do we have better meetings? What does the evidence support?

The literature review resulted in several papers that examined the factors that make meetings more productive. (Allen et al., 2012; Cohen et al., 2011; Kauffeld & Lehmann-Willenbrock, 2012; Leach et al., 2009; Mroz et al., 2018; Richardson et al., 2020; Rogelberg et al., 2010, 2012)

Most of the factors were summarised by Mroz and categorised as planning considerations, in-meeting considerations and follow-up considerations. (Mroz et al., 2018). Table 1 summarises the key considerations:

Table 1. Factors Making Meetings More Productive.

	Factor (reference)
Planning considerations	Only call a meeting when necessary. (Luong & Rogelberg, 2005) Avoid long meetings. (Leach et al., 2009) Keep meeting size small by including only those people whose expertise and knowledge are required. Make sure the meeting is relevant to everyone invited. (Allen et al., 2012) Set clear goals and desired outcomes for the meeting. (Leach et al., 2009) Prepare an agenda that is circulated in advance. (Leach et al., 2009) Come prepared by reviewing the agenda and any documents in advance. (Cohen et al., 2011)
In-meeting considerations	Arrive early (or on time) and start the meeting on time. (Mroz et al., 2018; Rogelberg et al., 2014) Avoid negativity, complaining, or dominating the conversation. (Kauffeld & Lehmann-Willenbrock, 2012) Avoid multi-tasking on unrelated activities or distractions during the meeting. (Mroz et al., 2018) Follow the agenda with clear goals and outcomes for the meeting made explicit at the start. (Leach et al., 2009) Ensure everyone has had an opportunity to participate in the conversation and the decision-making. (Mroz et al., 2018) Intervene when interpersonal communication becomes dysfunctional. (Mroz et al., 2018)

Follow up considerations	Send meeting minutes and action items out immediately following the meeting.(Cohen et al., 2011) Collect feedback from meeting attendees to assess meeting satisfaction and quality. Use this to inform future meeting design.(Rogelberg et al., 2010) Incorporate meeting satisfaction as a component of organisation-wide employee engagement and satisfaction surveys.(Rogelberg et al., 2010) Regularly critically examine routine meetings to determine their necessity and value.(Luong & Rogelberg, 2005)

Conclusion

The literature suggests that meeting burden is increasing, especially since virtual meetings have become more common place, and that the excessive meeting burden is having a negative effect on employee job satisfaction and wellbeing. Many meetings are unproductive, and as well as a large financial cost, there is a significant human cost with unproductive meetings as these are associated with worse job satisfaction. Well conducted meetings can be associated with higher team productivity and organisational success. There are some common themes on the factors that make meetings more productive which can be divided in to planning considerations, in-meeting considerations and follow-up considerations. These are useful to consider for all of us who organise, chair or attend meetings.

Research methodology and design

Title of research project

Making Meetings Matter: Examining meeting habits, productivity, purpose, outcomes. Looking at ways to make meetings more productive.

Aim

To conduct a pilot project by evaluating meeting habits on a group of NHS Wales managers from one University Health board before and after a training programme.

Research Questions

RQ1: How much time do NHS workers in Wales spend in meetings?

RQ2: How many of their meetings are perceived to be a productive use of time?

RQ3: Can we improve meeting habits and productivity by training staff better?

Hypothesis

1. Employees of NHS Wales spend a significant amount of time in unproductive meetings.
2. Delivery of a training programme can improve meeting habits and productivity.

Methods

Employees were from either Betsi Cadwaladr University Health board (BCUHB) or Cardiff and Vale University Health board (CAVHB). To be included in the pilot study participants had to be in a permanent NHS leadership or management role who attended at least four hours of meetings in an average week. A meeting was defined as an arranged assembly of two or more people to discuss work business. It included face to face and virtual meetings. Teaching sessions and educational conferences were excluded from the definition. Senior managers (band 8 and above) and directors were targeted since a previous survey suggested that they had the highest meeting burden, and on the theory that there would be a ripple effect and any successful improvement in their meeting habits was more likely to spread to their teams. Participants were given information about the purpose of the study, the proposed training programme and consented to participation via an electronic consent form.

In total 36 NHS Wales employees were recruited. Table 2 shows the demographics of the participants.

Table 2. Demographics of Recruited Participants.

	BCUHB (n=18)	CAVHB (n=18)	Total (n=36)
Male:Female	3:15	3:15	6:30
Director	4	2	6
Senior Manager (band 8+)	10	7	17
Clinical Director / senior consultant	1	1	2
Band 7	3	6	9
Band 5-6	0	1	1
Band 4	0	1	1

18 participants were recruited for the pilot study from BCUHB. All were managers or directors. Most worked in the hospital management team at Ysbyty Gwynedd, Bangor. One had to withdraw because they were unable to attend the training programme at short notice.

Another 18 participants were recruited from CAVHB. Most were senior managers or directors. The groups were comparable except for some more junior participants in the CAVHB group. There was one band 4 employee and one band 5 secretary who worked as an administrator / assistant to a senior manager. The rest were band 7 or 8 senior managers plus 2 consultants who were clinical directors. All 18 attended the training programme

Ethical approval

Formal ethics committee approval was not required.

Pre study questionnaire

A questionnaire was created on Microsoft Forms®. The questionnaire was completely anonymous; however, respondents were asked to create a unique username so that their pre-study questionnaire results could be matched and compared with their post training questionnaire. The questionnaire was sent to all participants two weeks before the training programme. The questionnaire (Appendix A) collected data on demographics, job role, meeting habits for a two-week period including time spent in face to face and virtual meetings and perception of the quality of the meeting. Participants were taught how to use Microsoft Insights® to look at their scheduled meetings on their work calendar to get accurate data on their meeting schedules. They were also encouraged to keep a diary for the two-week period.

Microsoft Forms® was used because of familiarity and ease of use. The questionnaire was designed to be intuitive and easy to understand without the need for specialised instructions. For questions on number of meetings, or time spent in meetings, respondents were able to answer with any whole number. For questions relating to quality of meetings, we wanted to know what in particular was good or bad about the meetings. However, it was felt to be too burdensome for the participants to rate every quality indicator for meeting attended, and so instead the author chose to ask them to rate what percentage of their meetings met each of the indicators. A Likert scale was used. This method was felt to be more intuitive and easier to use for participants, reproducible and would create some quantitative data from subjective qualitative questions.

Participants were asked whether they had worked through a lunch break or stayed late because of meetings, and were asked about whether they felt they had enough time in their working hours to complete their normal work.

Training Programme

A half day training programme called “Make Meetings Matter” was designed by the author, with some help from colleagues, using evidence on best meeting habits from the literature review. The training programme was delivered as a face-to-face session to the participants. It was designed to be interactive with participants working through a workbook in small groups and then sharing lessons and ideas with the rest of the group.



Figure 2. Make Meetings Matter logo.

Two pilot training sessions were delivered. One to participants from BCUHB and one for those from CAVHB. More details about the training programme can be found in Appendix B.

Post training questionnaire

All participants were sent a link to a follow up questionnaire four weeks after the training programme asking about their meeting burden for a two-week period since the training programme and perception of quality of their recent meetings. The questionnaire was via Microsoft Forms® and in the same format as the pre-study questionnaire. Participants were asked to use the same anonymous username so that pre and post study data could be matched. The post study questionnaire also included extra questions relating to how the training programme had an impact on their meetings, and any suggestions for improving meetings.

- How has the Make Meetings Matter training workshop made a difference to the meetings that you organize or chair?
- How has the Make Meetings Matter training workshop made a difference to the meetings that you attend?
- What thoughts do you have about your meetings and how we can improve meetings?

Participants were given three weeks to complete the post training questionnaire, with reminders sent weekly by email.

Findings

Pre-study Meeting burden

Table 3. Pre-Study Meeting Burden.

Over two weeks	BCUHB (n=18)	CAVHB (n=18)	Total (n=36)
Meetings scheduled: Total (Median)	848 (42.5)	533 (22.5)	1381 (27.5)
Virtual meetings scheduled: Total (Median)	610 (27)	427 (20)	1037 (20)
Meetings attended: Total (Median)	537 (25)	406 (20)	943 (22.5)
Virtual meetings attended: Total (Median)	388 (20)	323 (14.5)	711 (18.5)
Hours in meetings: Total (Median)	702.5 (35)	463.5 (21.7)	1166 (29)
Hours in virtual meetings: Total (Median)	441.5 (18.5)	331.5 (14)	773 (15)
Meetings chaired: Total (Median)	144 (4.5)	123 (4)	267 (4)

Table 3 shows the pre-study meeting burden over a two-week period. Of the 36 participants the total number of meetings scheduled over the two-week period was 1381 meetings (median 46, range 6-158). The number actually attended was 943 (median 22.5, range 2 - 102), taking up a total time of 1166 hours (median 29 hours, range 3 - 102). Four out of the 36 spent more than 80% of their full-time equivalent worktime (>60 hours in two weeks) in meetings (3 directors and 1 band 8c manager). Participants from BCUHB had a higher meeting burden in the two-week study period than CAVHB (848 vs 533 meetings respectively, 702.5 hours vs 463.5 hours). The number of meetings that were scheduled as virtual meetings was 75%. The number of meetings attended that were virtual meetings was also 75%, however virtual meetings made up only 66% of the total hours in meetings suggesting that virtual meetings were shorter. The average length of a virtual meeting was 1.09 hours versus 1.24 hours for all meetings. 28 out of the 36 participants reported that they had worked through a lunch break or stayed after normal office hours because of meetings during the 2-week period.

Table 4. Participant's Perception of Meetings.

	BCUHB					CAVHB				
Number agreeing with the following statements:	**Not at all**	**MD***	**Amb***	**MA***	**Totally agree**	**Not at all**	**MD***	**Amb***	**MA***	**Totally agree**
I have enough time to complete my work during my normal contracted working day	7	5	4	2	0	3	8	2	4	1
I have enough time to prepare for meetings	1	12	1	4	0	1	10	4	2	1
I have enough time to complete the actions and work created by meetings	5	6	4	3	0	2	8	4	3	1
Meetings help me to do my job	2	2	10	4	0	0	3	6	6	3
Meetings increase my enjoyment of my job	3	4	10	1	0	3	5	3	6	1
I don't have time to do my work because of my meetings schedule	2	5	5	5	1	1	3	10	3	1

*MD = Mostly disagree; Amb = Ambivalent; MA = Mostly Agree.

Table 4 shows answers to questions related to how the participants perceived the impact of meetings on their daily work. Overall, the survey suggests a significant meeting burden amongst the cohort, which was heavier in the BCUHB cohort compared to CAVHB. A majority of the cohort felt that they didn't have enough time in their contracted hours to complete their work, with over a quarter of respondents reporting that they didn't have enough time because of their meeting burden, and in particular that they weren't given enough time to complete the actions and work created by meetings. Only a minority of participants (13) felt that the meetings helped them do their job or helped them work towards their department's goals and objectives (n=16), with even fewer reporting that their meetings helped towards their health board objectives (n=11). Overall, there appeared to be a trend towards a more negative perception of meeting burden at BCUHB compared to the CAVHB cohort.

Perceived meeting quality

The results of the questions on perceived meeting quality are shown in figures 2 and 3 using the Microsoft Forms® generated Likert scales.

Despite the very senior level of the participants being surveyed the results suggest there are still a significant number of meetings that are missing some key positive quality indicators or have some negative quality indicators.

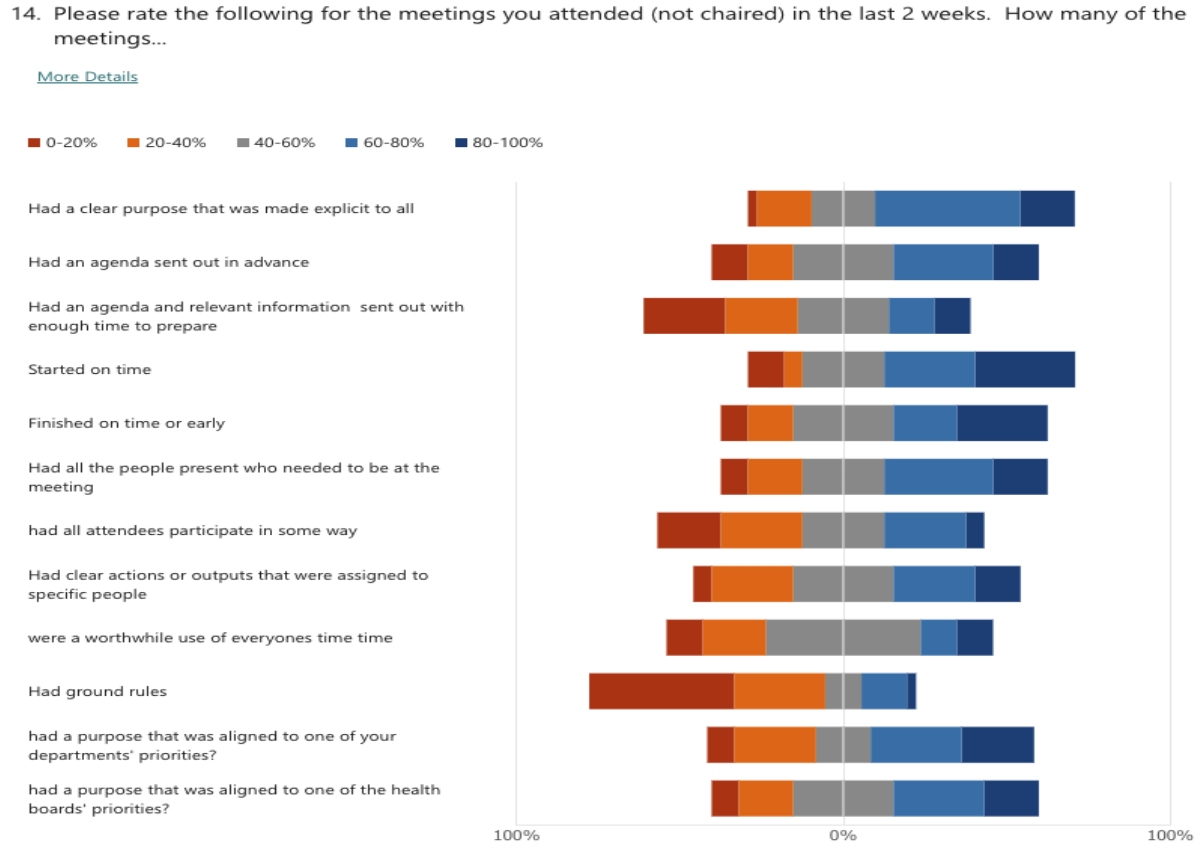


Figure 2. Results – Positive Quality Indicators for Meetings Attended (Microsoft Forms).

Only 6 employees (16.7%) said that at least 80% of their meetings had a clear purpose that was made explicit to all, whilst 7 employees (19.5%) said that fewer than 40% of their meetings had a clear purpose. Most respondents said that the agendas and relevant information for meetings were sent out with enough time to prepare in fewer than half of the meetings. Few of the respondents said that the meetings they attended had ground rules, and only a minority of respondents reported that most of their meetings had all attendees participate in some way.

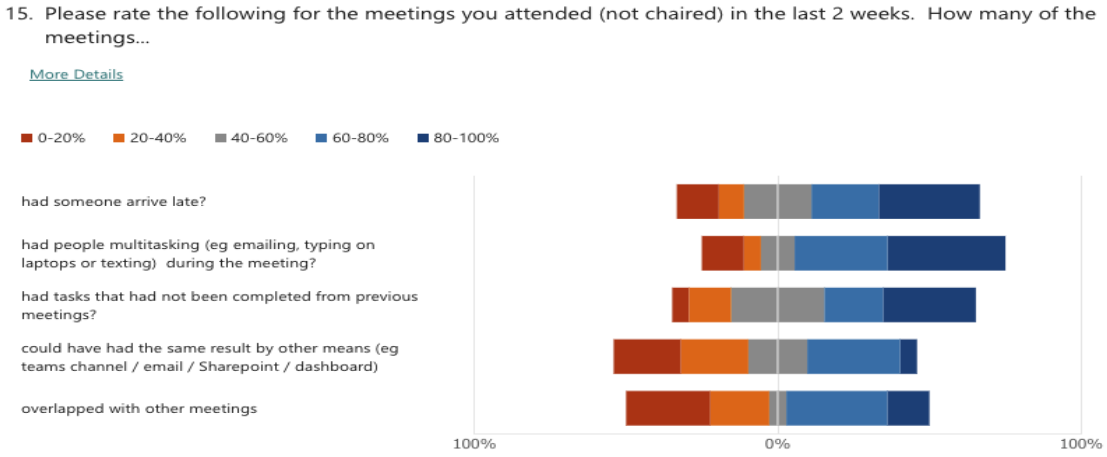


Figure 3. Results – Negative Quality Indicators for Meetings Attended (Microsoft Forms).

From the negative quality indicators, the most common reported were lateness, people multitasking during the meeting and uncompleted tasks remaining from previous meetings which all had a high prevalence. There were also a significant number of meetings that overlapped with other meetings. This was reported to happen in more than 60% of meetings by 17 respondents (48%).

The results of the questions on perceived meeting quality for meetings where the respondent was the chairperson are shown in figures 4 and 5 using the Microsoft Forms® generated Likert scales.

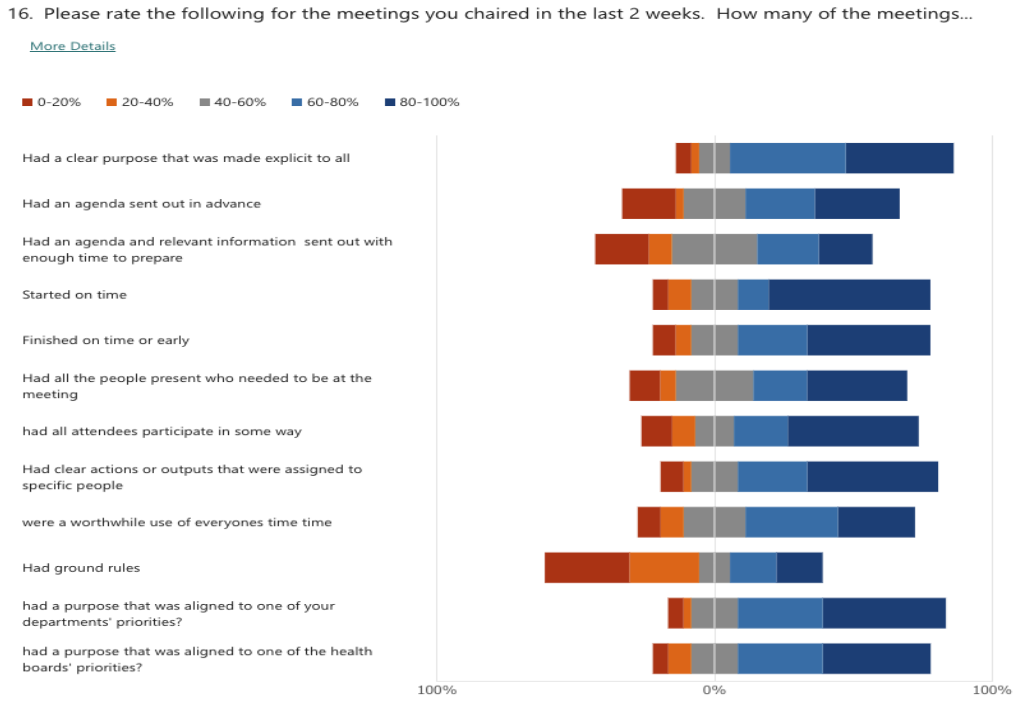


Figure 4. Results – Positive Quality Indicators for Meetings Chaired (Microsoft Forms).

As one would expect from senior experienced managers, the quality of the perceived quality meetings that they chaired was higher. There is obviously potential for bias here, however, as the participants are scoring themselves. Meetings that were chaired by the participants were reported as far more likely to have a clear purpose and agenda, and far more likely to have a purpose that was aligned to departmental priorities and health board priorities.

Only a minority of meetings used ground rules at the start of the meeting, demonstrating one area where there was potentially significant room for improvement.

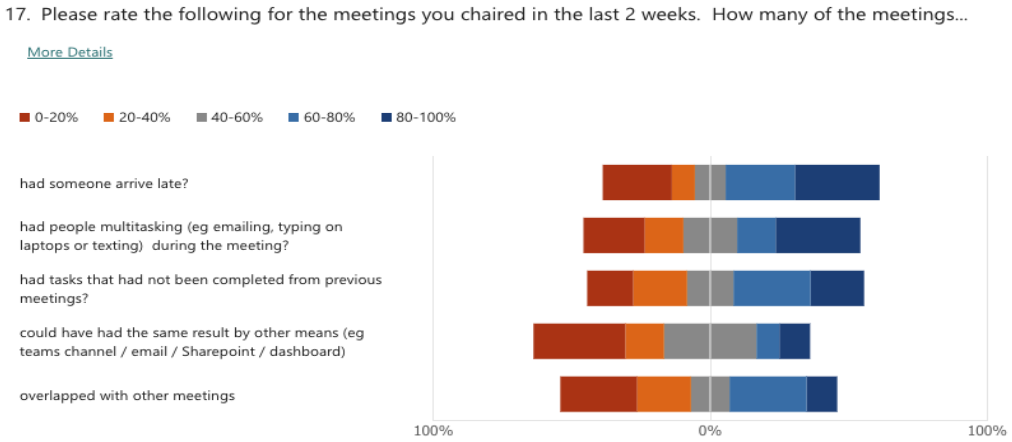


Figure 5. Results – Negative Quality Indicators for Meetings Chaired (Microsoft Forms).

Lateness to meetings and multitasking were significant issues even in the meetings chaired by this cohort of mostly senior managers.

Post training questionnaire

12 of the 35 participants who undertook the training programme completed the post study questionnaire. The post training results of the 12 participants were matched with their pre study questionnaire using their unique usernames. Results were analysed on Microsoft Excel®

Post training meeting burden

Table 5 shows the meeting burden for the 12 participants who completed the post training questionnaire.

Table 5. Post training total meeting burden.

n=12	Pre-study total	Post training total
All Meetings scheduled: Total (Median)	564 (49)	487 (34)
Virtual meetings scheduled: Total (Median)	454 (32.5)	340 (21)
All Meetings attended: Total (Median)	356 (25)	328 (27)
Virtual meetings attended: Total (Median)	293 (20.5)	234 (18.5)
Hours in meetings: Total (Median)	479 (37.5)	420 (37.5)
Hours in virtual meetings: Total (Median)	311 (22)	274 (24.5)
Meetings chaired: Total (Median)	114 (5)	88 (4)

From the matched data of the 12 participants who responded to the post training survey, there was an overall reduction in the total number of meetings (and virtual meetings) scheduled, meetings (and virtual meetings) attended, a reduction in total hours spent in all meetings and a reduction in the total number of meetings that they chaired.

Examining the data in detail shows that 7 of the 12 participants reduced their time spent in meetings by more than 5 hours over a 2 week period. The median change in time spent in meetings was a reduction of 7 hours, however the variability was significant, ranging from 33 hours saved in one case, to 24 hours extra spent in meetings over the two week period in one case.

Post training meeting quality

The results of the post training questions on perceived meeting quality of meetings attended are shown in figures 6 and 7 using the Microsoft Forms® generated Likert scales.

Participants were asked to rate the following for their meetings in the preceding two weeks. How many of the meetings.

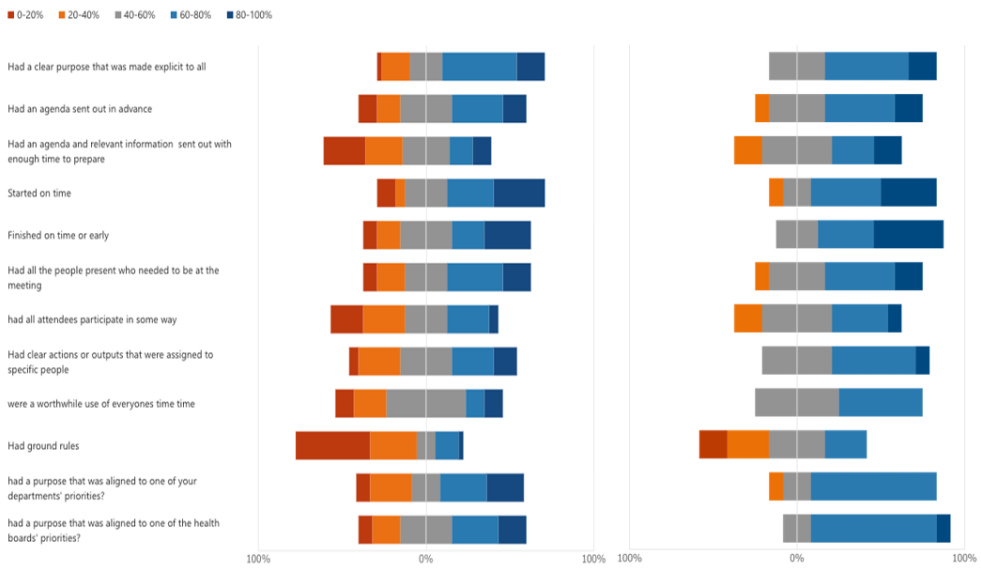


Figure 6. Post Training Results – Positive Quality Indicators for Meetings Attended Pre-Training (Left Side) Versus Post Training (Right Side) (Microsoft Forms).

For meetings attended and meetings chaired there was improvement in positive and negative quality indicators of meetings after the training programme. Notable improvements after training included:

- More meetings had a clear purpose that was made explicit to all attendees
- The purpose was aligned to departmental and / or organisational priorities
- More meetings started on time and finished on time or early
- More meetings had clear outputs or actions assigned to specific people
- More meetings were felt to be worthwhile use of time
- Fewer meetings had uncompleted actions from previous meetings
- Fewer meetings overlapped with other meetings

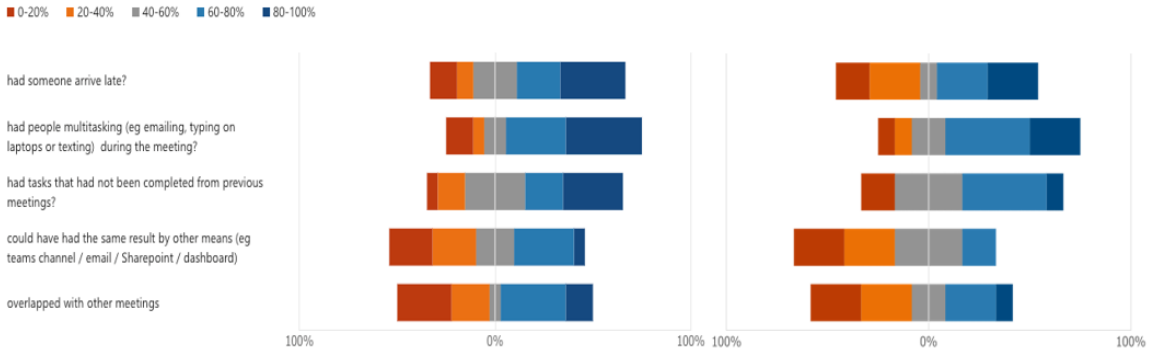


Figure 7. Post Training Results – Negative Quality Indicators for Meetings Attended Pre-Training (Left Side) Versus Post Training (Right Side) (Microsoft Forms).

The results of the post training questions on perceived meeting quality for meetings where the participant was the chairperson are shown in figures 8 and 9 using the Microsoft Forms® generated Likert scales.

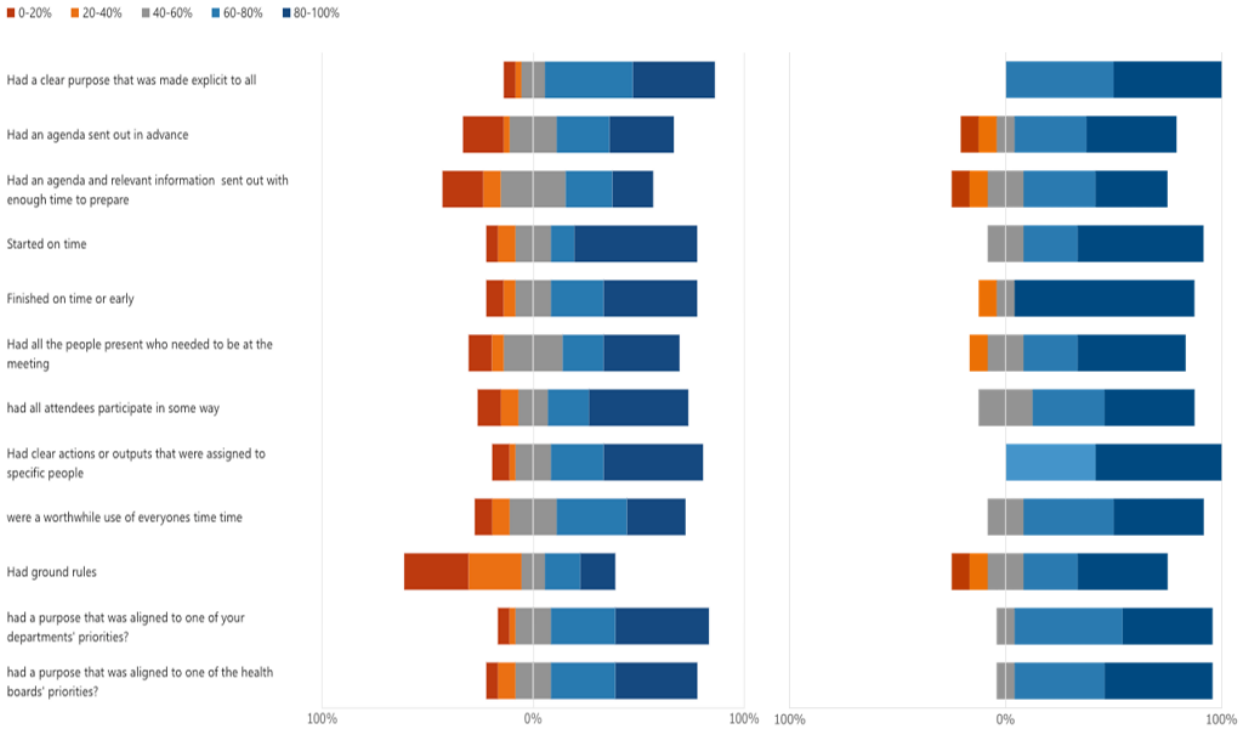


Figure 8. Post Training Results – Positive Quality Indicators for Meetings Chaired Pre-Training (Left Side) Versus Post Training (Right Side) (Microsoft Forms).

There was improvement in all positive quality indicators. Most meetings chaired by the respondents had a clear purpose that aligned to departmental and health board priorities and had clear actions that were assigned to specific people. There was greater use of ground rules at the start of meetings, although still some room for improvement on this.

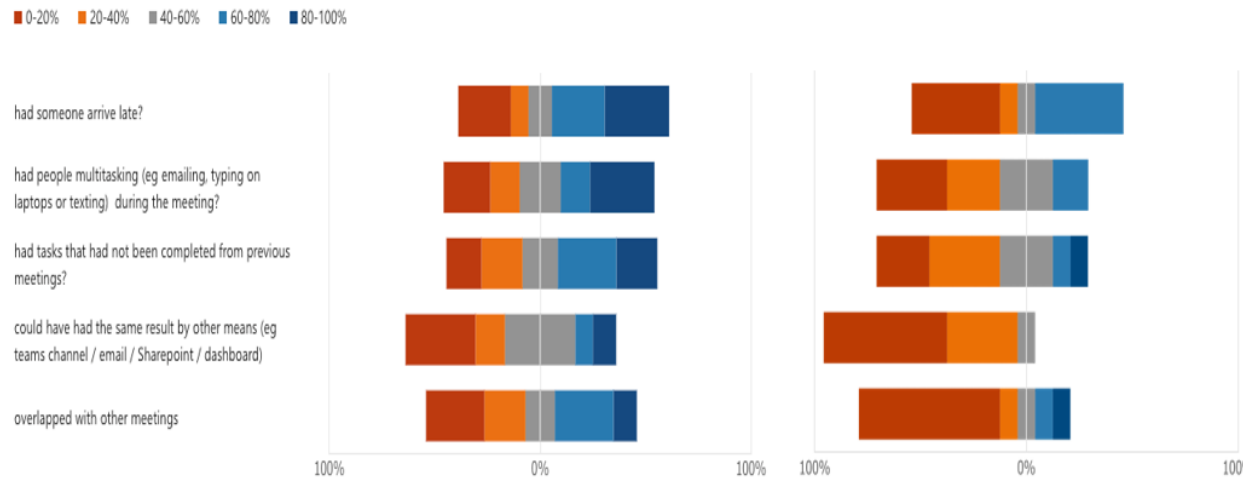


Figure 9. Post Training Results – Negative Quality Indicators for Meetings Chaired Pre-Training (Left Side) Versus Post Training (Right Side) (Microsoft Forms).

There was still a significant number of meetings that had attendees start late or had people multitasking during the meeting. There were fewer meetings that had incomplete tasks, and less overlapping of meetings.

Summary of results.

The results confirm that senior managers and directors at from BCUHB and CAVHB spend a significant amount of time in meetings. Many of the meetings were subjectively of suboptimal quality and were lacking a clear purpose aligned to departmental or health board goals, or they did not have clear actions or outcomes. A training programme was delivered to discuss the importance of focus time, the potential harms of too many meetings and to reaffirm good meeting habits. After the training the perceived self-reported meeting quality had improved as well as a small reduction in meeting load.

Discussion

Meetings are critical to achieving successful outcomes in organisations. High-quality, productive meetings benefit both organisations and their employees. Recent advancements in technology and evolving attitudes toward remote work have led to an increase in the use of virtual meetings. Consequently, and possibly due to pre-existing trends, the meeting burden on employees has intensified. Larger organisations appear to bear a heavier meeting load compared to smaller ones. The literature provides evidence that an excessive meeting burden negatively affects employee job satisfaction and well-being.

NHS Wales employs over 100,000 individuals. This study, which examined the meeting habits of a small group of senior managers and directors in two of the largest health boards within NHS Wales, found a similar meeting burden to that documented in the literature, with a median of 14.5 hours per week spent in meetings. Some very senior managers dedicated over 80% of their contracted work hours to meetings. NHS Wales is already grappling with significant levels of staff stress and burnout, including at the senior management level, and it is possible that the excessive meeting burden contributes to these issues by negatively impacting job satisfaction and well-being.

The literature also suggests that globally, many meetings are unproductive. In addition to the financial costs, unproductive meetings carry a significant human cost, as they are associated with lower job satisfaction. In our study, many participants reported that meetings were not a good use of time, and some lacked clear purpose. This supports my first hypothesis that NHS Wales employees spend a considerable amount of time in unproductive meetings.

Several themes emerge from the literature regarding factors that make meetings more productive. These can be categorized into planning, in-meeting, and follow-up considerations. However, few employees receive training on how to conduct effective meetings. Given the substantial amount of time spent in meetings and the costs associated with unproductive ones, it is surprising that organisations do not invest more in training their staff to conduct better meetings. This observation prompted my second hypothesis: “Delivering a training program can improve meeting habits and productivity.”

At the time of this study, neither BCUHB nor CAVHB had a formal training programme for conducting meetings. To address this gap, my colleagues and I developed a half-day training programme titled “Make Meetings Matter” as part of this pilot project. The programme aimed to raise awareness among senior managers of the two largest health boards in NHS Wales. This interactive training was designed to reinforce key factors that promote productive meetings, highlight alternatives to meetings, and encourage not only individual change but also a shift in team and organisational culture around meetings. The training programme was well received.

Following the training, there was a reduction in the meeting burden and an improvement in meeting quality indicators among some attendees, lending support to my second hypothesis. However, due to the small sample size and limited scope of this pilot study, it is not possible to draw definitive conclusions about whether the training had a significant and lasting impact on meeting quality across the wider teams. Additionally, measuring productivity is inherently challenging, so this study primarily captured participants’ subjective perceptions of changes in meeting quality.

The free-text responses provided valuable insights into exactly how the training changed behaviours. Specific changes included reviewing meeting invite lists to ensure only essential participants were invited, introducing ground rules at the start of meetings to prevent multitasking, allocating time to each agenda item to keep meetings on track, and focusing on meeting outcomes. Other strategies such as aiming to finish meetings 10 minutes before the hour to allow time for transitions and incorporating breaks for

meetings longer than an hour were also mentioned. These are practical lessons that organisations could incorporate into meeting templates, along with suggested ground rules, breaks, and agenda item timing.

Some participants reported that the training programme left them feeling more empowered to decline meeting invitations when they believed they had little to contribute. Organisations could adopt a "permission to opt out" policy, allowing employees to excuse themselves from meetings when they believe their time would be better spent elsewhere, provided they have a valid reason.

A future study could explore how often and thoroughly meeting minutes are read. One participant suggested prioritising action and key decision trackers over meeting minutes, as the latter can be time-consuming and resource intensive. This alternative approach would be to record only key decisions made during the meeting and use an action tracker to assign tasks to individuals, complete with deadlines. This is another potential area for research.

One participant suggested that we should conclude each meeting with a review, providing immediate feedback to the chairperson. This could help hold meeting leaders accountable for the meeting's effectiveness and lead to continuous improvements in meeting standards. This would also be a potential avenue for future research into organisational meeting effectiveness.

Concluding remarks

This study contributes to the existing body of literature on meetings, which highlights the substantial financial and human costs associated with poorly conducted meetings. NHS Wales appears to face similar challenges. While meeting with colleagues has never been easier, this convenience seems to come with an increasing meeting burden. Despite well-recognised strategies for improving meeting satisfaction and productivity, many organisations, including NHS Wales, do not provide formal training for their senior managers on how to run effective meetings.

Chief executives and policymakers should be concerned by the evidence in the literature and the findings of this study, which suggest a significant waste of financial and human resources due to unproductive meetings. Although the problem is complex and the solution is unlikely to be simple, a good starting point would be for all organisations to implement meeting policies and provide training on how to conduct effective meetings.

For NHS Wales, it is recommended that a sustained training programme be implemented on a larger scale, incorporating some of the suggestions outlined here. A more extensive study should also be conducted to assess the effects of such training on meeting quality, meeting burden, employee job satisfaction, and organisational performance. Let us truly "Make Meetings Matter!

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Appendix A: Questionnaire

1.Your project username (known only to you)

2.Organisation
Betsi Cadwaladr University Health Board
Cardiff and Vale University Health Board
Other

3.Gender
Woman
Man
Non-binary
Prefer not to say

4.Main Job role
Director
Manager
Clinical (Doctor / nurse / AHP / etc)
Admin support
Other

5.Banding / Seniority
Band 5
Band 6
Band 7
Band 8a
Band 8b
Band 8c
Band 9
Consultant
Clinical / Medical director
Other

6.How many meetings did you have scheduled in the last 2 weeks?

7.How many of these scheduled meetings in the last 2 weeks were virtual meetings?

8.How many meetings in total did you actually attend in the last 2 weeks?

9.Of these, how many virtual meetings did you attend in the last 2 weeks?

10.How many hours did you spend in total in all meetings in the last 2 weeks?

11.Of these, how many hours were in virtual meetings in the last 2 weeks?

12.How many meetings did you chair in the last 2 weeks?

13.How many meetings did you decline to attend in the last 2 weeks?

14.Please rate the following for the meetings you attended (not chaired) in the last 2 weeks. How many of the meetings...

- Had a clear purpose that was made explicit to all
- Had an agenda sent out in advance
- Had an agenda and relevant information sent out with enough time to prepare
- Started on time
- Finished on time or early
- Had all the people present who needed to be at the meeting
- had all attendees participate in some way
- Had clear actions or outputs that were assigned to specific people
- were a worthwhile use of everyone's time
- Had ground rules
- had a purpose that was aligned to one of your departments' priorities?
- had a purpose that was aligned to one of the health boards' priorities?

15.Please rate the following for the meetings you attended (not chaired) in the last 2 weeks. How many of the meetings...

- had someone arrive late?
- had people multitasking (e.g. emailing, typing on laptops or texting) during the meeting?
- had tasks that had not been completed from previous meetings?
- could have had the same result by other means (e.g. teams channel / email / SharePoint / dashboard)
- overlapped with other meetings

16.Please rate the following for the meetings you chaired in the last 2 weeks. How many of the meetings...

(as Q14 above)

17.Please rate the following for the meetings you chaired in the last 2 weeks. How many of the meetings...

(as Q15)

18.Did any of your meetings in the last 2 weeks span across lunch time or past 5pm?

Yes

No

19.Please score how much you agree with the following statements

- I have enough time to complete my work during my normal contracted working day
- I have enough time to prepare for meetings
- I have enough time to complete the actions and work created by meetings
- Meetings help me to do my job
- Meetings increase my enjoyment of my job
- I don't have time to do my work because of my meetings schedule
- Meetings help me work towards our departmental goals and objectives
- Meetings help me work towards our health board priorities

20.What did you like least about meetings that you attend?

21.What did you like most about meetings that you attend?

22.Please share ideas and any other thoughts you have about your meeting experience and how we can improve meetings.

Appendix B: Training programme details



Figure 30. Make Meetings Matter logo

The programme lasted 3.5 hours and was delivered face to face to participants in groups of 4-6.

Learning objectives were set as:

- Understand the impact of meeting overload
- Recognise the signs of meeting overload in your own work context
- Increase your awareness of how frequent meetings can disrupt concentration and hinder productivity.
- Understand our six key principles of effective meetings
- Increased awareness of the alternatives to meetings
- Understand the importance of the cultural shift needed to Make Meetings Matter
- Make a pledge to improve meeting culture

The programme had 6 short modules:

3. The problem of meeting burden
4. The importance of dedicated time to focus on work
5. What does good look like?
6. Alternatives to meetings.
7. Managing challenging meeting scenarios.
8. Changing team and organisational culture

A printed booklet was provided for participants to work through together, facilitated by the two faculty. Each module had a group exercise to discuss within their small groups and then report back to the larger group. Conclusions were recorded in the booklet.

The training programme ended with each participant making a personal pledge on what actions they were going to take personally to reduce their meeting burden, improve the quality of meetings they attend, and improve the culture of meetings within their team. Each pledge had to be signed by themselves and a witness who was tasked with holding them accountable to their pledge. Pledges were also written out on postcards which were delivered to participants 4 weeks after the training programme as a reminder. Feedback was collected on the training content and delivery for the purposes of improving future courses.

For more information go to https://dragonsheart.org/learn/make-meetings-matter/

Acknowledgments

This paper is dedicated to the late Mrs. Catrin Macey, Primary Care nurse manager at BCUHB. A dear colleague, friend, wife and a loving mother. Catrin was passionate about reducing waste at work and in particular reducing time wasted in meetings. It was her work on this that inspired Make Meetings Matter. Catrin sadly died in January 2024. Many thanks also to the Make Meetings Matter team – Dr Linda Warnock, Dr Nikki Sommers, Paul Andrew, Tomos McFarlane, Jo Harrel and Bryn Kentish who have helped with the ideas behind the pilot project, the design of the training programme, branding and delivery of the training programme. Also, thanks to the amazing Becky Margiotta of the Billions institute (https://www.billionsinstitute.com/) who delivered the Spread and Scale course which inspired this pilot study.

Set up a Family liaison service to give a voice to the bereaved

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Abstract:

There is lack of feedback to families about concerns regarding death of their loved one. A number of patient safety studies and publications from NHS England in 2015 have highlighted this deficiency. The NHS Learning from Death Provider policy (NHS England 2017) has laid down the guidelines for interaction with the bereaved. This research addresses what these changes mean for health practitioners, patients and the wider health care systems and it considers what is needed to develop the Family liaison service (FLS).This work is aimed at providing a practical and achievable vision of how this service enhancement can be achieved by using and re-designating existing NHS resources, personnel and expertise. The aim is also to reduce the pressures on concerns and legal teams which currently deal with formal complaints. Currently, these formal complaints use up time, resources and incur legal expense for the health boards The ultimate aim is to bring closure to the bereaved, avoid further distress for families and carers and achieve early resolution with avoidance of formal complaints.

Keywords: Family Liaison service, Learning from death, concerns about care, Duty of candor.

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INTRODUCTION

BACKGROUND AND CONTEXT

A number of patient safety studies and publications have highlighted the deficiencies of the NHS looking into and learning from deaths. The NHS Learning from Death Provider policy has laid down the guidelines for interaction with the bereaved. (NHS England 2017)

> …… engage meaningfully and compassionately with bereaved families and carers
>
> ……offer guidance, where appropriate, on obtaining legal advice for families.

There are no consistent frameworks that require boards to keep deaths in their care under review and share learning from these deaths.

> …..After death in hospital or community, many families have unanswered questions about the care provided or diagnosis. Too often the NHS exacerbates the distress felt by families and carers of patients who die

Currently, there is no overriding policy for Wales. The Medical Examiner service is a new and welcome initiative in providing the scrutiny of all deaths. Most secondary care deaths in England and Wales are reviewed by ME service since 2020. From 9th September 2024 all deaths including Community/ Primary care setting are also being reviewed and have achieved statutory status. It is likely that at some point, every family within Wales will have contact with this service. (MES)

As part of the scrutiny process, the officers in the ME service speak with the family and explain the agreed cause of death. They specifically ask about concerns. They address what they can from review the last admission records, but many concerns are directed back to the health board. Within the health board, the mortality review teams are supposed to look at these concerns and respond accordingly. Across Wales, the composition of such teams is variable or non-existent and often poorly funded.

At present there is no requirement for feedback to the family. There is no facility to interact with the family to explain the findings. The only way families have of getting a written/verbal response is to raise a formal complaint. This obviously carries resource and legal costs for the health board with extensive delays and is distressing for families. Not many people will choose to go down this route.

PERSONAL MOTIVATION OF THE RESEARCHER

The researcher is employed as a Consultant Orthopaedic surgeon in Cwm Taff health board. He has taken on the role of clinical mortality reviewer for the trust since 2014. The researcher has developed and enjoyed this role, which in turn has helped to his appointment as a Medical Examiner in Wales. His work in these areas and his personal experience has stimulated a passion for care for the bereaved. His roles in the clinical field, clinical mortality reviewer and as a medical examiner gives him a unique insight into how these services interact with each other and the bereaved.

Within the Cwm Taf Morgannwg health board, the researcher is part of a core mortality review team within the audit department. The team have established new initiatives such as setting up a screening panel, set up of a mortality dashboard, monthly teaching and quarterly newsletter.

OBJECTIVES OF THE RESEARCH

- Explore the model of the Family Liaison service as an outreach arm of mortality or concerns teams with the aim of addressing concerns of the bereaved.
- Propose the appointment of Nurse practitioners, who will require training and will be expected to deliver the responses to the family, address any concerns, liaise with clinical/nursing teams, set up family meetings etc...
- Use statistics generated from the mortality database within the trust for analysis in this project.
- Use a voice from the bereaved as an example to create an emotional perspective.

CONCLUSIONS AND THE STRUCTURE OF THE THESIS

This chapter has introduced the ongoing development of Mortality review teams in the health board and the independent Medical Examiner service in scrutiny of deaths and its implied changes to interaction with the bereaved. These strategic changes are wide-ranging with the recent Duty of Candour legislation GMC. (2020) and statutory recognition of the Medical Examiner service and death certification reforms (Gov.UK.2024).

Chapter 2 will provide a review of the existing literature in this field of study before outlining the chosen research design in Chapter 3. Chapter 4 will present the findings of the research and Chapter 5 will discuss the findings in relation to the literature. The final chapter will then provide the conclusions, implications, and recommendations of the research study.

LITTERATURE REVIEW

INTRODUCTION

A consistent theme in NHS literature is the need for organisations to evolve and to fit the new dynamic environment of changing death certification, increased profile of mortality review/medical examiner service and the persisting deficiency in interaction with the bereaved.

Sudden unexpected changes in the life of a family create many different emotions in various family members. Here is the emotional void that is felt by her partner, parents, sisters, brothers, and extended family. This extreme stress leads to questions about the death that need to be addressed by the health care providers. If the anger that is part of the grieving process is not adequately resolved, healing cannot occur. It is then that the family may pursue the legal process to help obtain answers about what happened and, more importantly, why it happened to their loved one. Elliott, J. P., MD. (2012).

Morbidity and mortality associated with bereavement is an important public health issue, yet economic and resource investments to effectively implement and sustain integrated bereavement services are sorely lacking at national and global levels. We build on available evidence and previous recommendations to propose a model for transitional care, firmly establishing bereavement care services within health-care institutions, while respecting their finite resources and the need to ultimately transition grieving families to supports within their communities. Key to the transitional bereavement care model is the bolstering of community-based supports through development of compassionate communities and upskilling of professional services for those with more substantial bereavement support needs. To achieve this goal, interprofessional health workers, institutions, and systems must shift bereavement care from an afterthought to a public health priority. The time is right to invest research and practice resources in both institutional and community-based models that re-humanise care and, ultimately, create safe and supportive settings for those who grieve (Lichtenthal, W. G. R., Kailey E ; Donovan, Leigh A ; Breen, Lauren J ; Aoun, Samar M ; Connor, Stephen R ; Rosa, William E. (2024)

Garstang et al. BMC Pediatrics 2014 did systematic review and found parents would like follow-up appointments from health care professionals after the death; this is to enable them to obtain further information as they may have been too distraught at the time of the death to ask appropriate questions or comprehend the answers. Parents also value the emotional support provided by continuing contact with health-care professionals. Bereaved parents have described, in interviews, how the lack of information has led them to assume that it is being deliberately withheld

Hospital staff should be trained to support parents at the time of child death and policies put in place to ensure families are able to say goodbye to their child in a dignified way. Clinical staff should ensure that contact is maintained with bereaved parents and they are invited back for follow-up appointments to discuss their child's death as a matter of routine; no parent should be left with unanswered questions about their child's death.

A CQC review in December 2016, 'Learning, candour and accountability: a review of the way trusts review and investigate the deaths of patients in England' found some providers were not giving learning from deaths sufficient priority and so were missing valuable opportunities to identify and make improvements in quality of care.(NHS England,. (2015).)

In March 2017, the National Quality Board (NQB) introduced new guidance for NHS providers on how they should learn from the deaths of people in their care. We are now helping trusts to meet the requirements of the new guidance. National guidance on learning from deaths – A framework to help standardise and improve how NHS providers identify, report, investigate and learn from deaths. We support providers to give patients safe, high quality, compassionate care within local health systems that are financially sustainable.(NHS. England (July 2017).)

CQC (2019) published a review of the first year of NHS trusts implementing the national guidance. They noted variation in how trusts are implementing the new guidance. While awareness of the guidance is high, some trusts are finding it more difficult than others to make the changes they need. There learning points outlined were:

- values and behaviours that encourage engagement with families and carers
- clear and consistent leadership
- a positive, open and learning culture
- staff with resources, training and support
- positive working relationships with other organisations

Through engagement with families, HSIB has witnessed the effectiveness of giving families informed choices, continuity of contact, meaningful involvement in investigations and open and honest communication. HSIB continues to believe that families are vital to investigations, and an investigation is not complete without their voices being heard. In the past decade, the healthcare sector has recognised the need to ensure it works with patients and families, highlighted by the many reports published nationally about patient safety investigation and learning from deaths. However, it is also recognised that undertaking family engagement of a high quality can be challenging, particularly when the guidance on how to do it is limited.(Investigation report: Giving families a voice - HSIB's approach to patient and family engagement during investigations)

Health and Social Care Act 2008 (Regulated Activities) Regulations 2014: Regulation 20As interpreted by the GMC under code of professional standards states:

If something has gone wrong that causes a patient's death or such severe harm that the patient is unlikely to regain consciousness or capacity, you must be open and honest with those close to the patient. Take time to convey the information in a compassionate way, giving them the opportunity to ask questions at the time and afterwards.

You must show respect for, and respond sensitively to, the wishes and needs of bereaved people. You must take into account what you know of the patient's wishes about what should happen after their death, including their views about sharing information. You should be prepared to offer support and assistance to bereaved people – for example by explaining where they can get information about, and help with, administrative and practical tasks following a death; or by involving other members of the team, such as chaplaincy or bereavement care staff.

You should make sure, as far as possible, that those close to the patient have been offered appropriate support, and that they have a specific point of contact in case they have concerns or questions at a later date. GMC. (2020)

The Medical Examiner Service for Wales has been operational and covering all areas of Wales since 1st January 2021, scrutinizing deaths that have occurred both in hospital and in the community.(https://nwssp.nhs.wales/ourservices/medical-examiner-service/)

Regulations for the Death Certification Reforms were laid in parliament, including the introduction of a statutory Medical Examiner system on the 15th of April 2024. The legislation has into force on Monday 9 September 2024 meaning independent scrutiny by a Medical Examiner has become a statutory requirement prior to the registration of all non-coronial deaths in England and Wales from this date. {Gov.UK, 2024 #13}

The introduction of the Medical Examiner Service means that the bereaved will have the opportunity to speak to someone who wasn't involved in the care of their loved one but who is able to listen to any concerns there may be about the care provided and to explain in more detail the cause of death and the circumstances that led up to it.

Where the Medical Examiner believes that a more thorough and in-depth investigation into a death is needed, they will be able to ensure that this happens and that the results of that investigation are fed back to the bereaved. This has not always been the case before and has sometimes led to people believing that either their concerns have not been listened to at all, or that they have been listened to but have been ignored or covered up in some way.

The Medical Examiner Service is hosted by NWSSP (shared services) in Wales and will provide an independent scrutiny of all deaths that are not investigated by the coroner. Scrutiny is undertaken by a Medical Examiner, who is an experienced doctor with additional training in death certification and the review of documented circumstances of death. They ensure that an accurate cause of death of recorded, identify any concerns surrounding the death itself which can then be further investigated by the care provider or coroner if required, and take the views of the bereaved into consideration

Scrutiny consists of:

- Reviewing the medical records and any supporting diagnostic information
- Agreeing the clinical teams proposed cause of death and the overall accuracy of the medical certificate cause of death
- Discussing the cause of death with the next of kin/informant and establishing if they have any concerns with care that could have impacted/led to death and take the views of the bereaved into consideration.

Where concerns are identified the Medical Examiner Service will:

- Inform clinical governance systems to highlight deceased patients who may require further review by the care provider so any formal learning can be identified
- Ensure that patterns and concerns about care are raised appropriately
- Notify the coroner in cases that meet the notification to inform the coroner

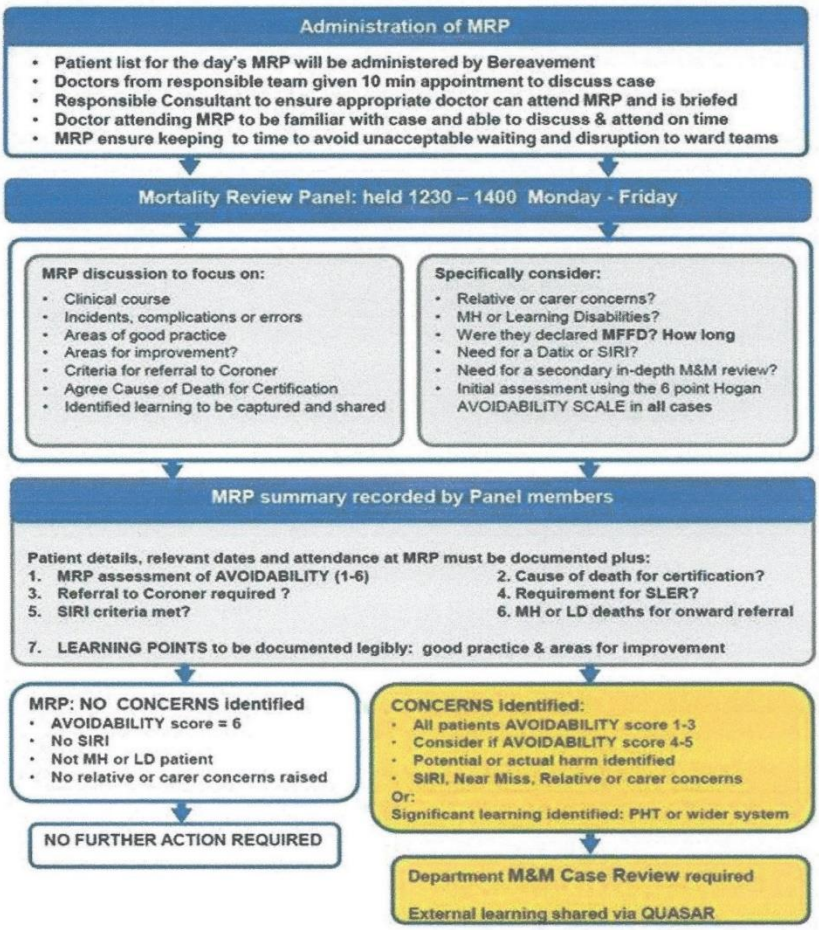
The final step of scrutiny is the interaction with the bereaved (or informant if there are no bereaved persons).This is undertaken in cases that are not investigated by a coroner and under delegated authority by an appropriately trained MEO(medical examiner officer) who must have sufficient expertise to discuss medical terminology.

As with all steps of scrutiny, the interaction with the bereaved may identify a new matter that requires coroner referral or notification of clinical governance concern. In these circumstances, the rationale and process must be explained to the bereaved. When concerns about care are detected, ME service must pass these on to the appropriate quality lead at the organisation, ensuring this person is of sufficient seniority to ensure that appropriate action is taken.

The introduction of the medical Examiner service has resulted in a large number of referrals to the health board. The reaction of the health board has been to set up or raise the profile of existing mortality review panels.

Role of the Mortality review panel: Mortality review (Knighton, D. J. (2017) the Plymouth trust is committed to monitoring, understanding and learning from its mortality outcomes (See Figure1). Learning points were

- Regular MRP meetings increase oversight of factors involved in patient deaths.
- The Learning from Deaths policy needs to be tied to the trust's existing governance arrangements.
- Learning from reviews must be shared effectively across the organisation and the wider health system, and actions to address the findings must be implemented effectively



The mortality processes and data are overseen by the trust's newly established mortality review group, chaired by the medical director, which meets monthly. This committee reports into the trust's governance and quality committee, a subcommittee of the board.

Fig1: Role of the mortality review panel (Source: http://www.porthosp.nhs.uk)

ACADEMIC MODELS OF FAMILY INTERACTION SERVICES

If we look at models of family liaison service/family interactive services. Bethan Collins, N. A. M. a. S. M. (2023) Families of children with disabilities experience many challenges, which Sparkle's Family Liaison Service (FLS) aims to alleviate. The purpose of this study was to evaluate the impact of the service. National Institute for Health and Care Excellence (NICE) (2022) guidance for supporting children and young people with complex disabilities encourages health, social care and education services to work together to provide coordinated support for children and their families.

The service is multifaceted, including emotional support, liaison between families and professionals, information and advice, training and education and either offers or is able to signpost to all nine domains of support defined by Tetreault et al. (2014) under its key objectives (Figure 3).Families valued an accessible service and a neutral individual who could empathise with them. Professionals highlighted the FLS relieving pressure they felt to provide informal support for families they work with, resulting in considerable time saving. At a time of increasing pressure on health, social care and educational professionals to deliver their service, ensuring the voice of families is heard in a neutral way, while saving professionals time, is clearly beneficial to all concerned.

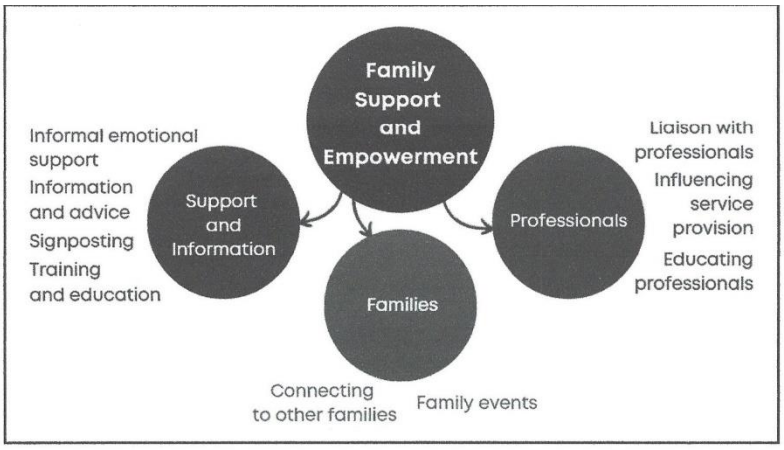
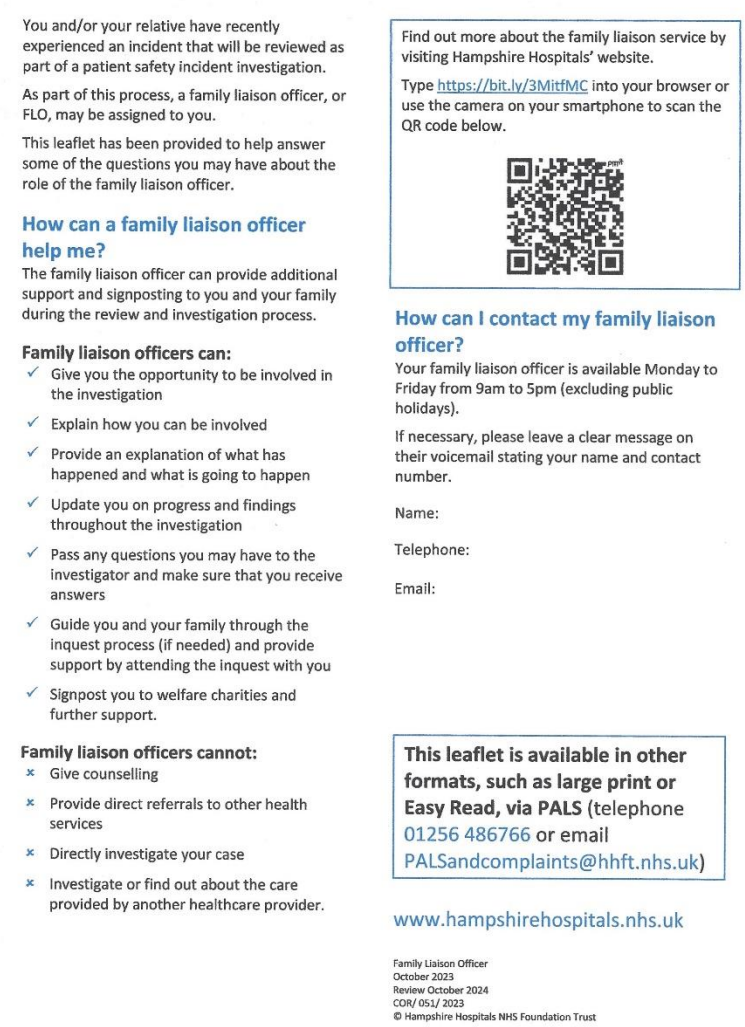


Fig 2 Components of the FLS (source: Tizard learning disability review J VOL. 28 NO. 1/2 2023)

Family Liaison in the UK is a process through which the Police and COPFS work together to provide victims and bereaved relatives with information and support during certain major investigations which may lead to criminal or other proceedings. In the NHS, there is an equivalent service. The main aim of the family liaison officer (FLO) is to support patients and families through the potentially difficult process of an investigation for a serious incident.(see fig.2)



You and/or your relative have recently experienced an incident that will be reviewed as part of a patient safety incident investigation.

As part of this process, a family liaison officer, or FLO, may be assigned to you.

This leaflet has been provided to help answer some of the questions you may have about the role of the family liaison officer.

How can a family liaison officer help me?

The family liaison officer can provide additional support and signposting to you and your family during the review and investigation process.

Family liaison officers can:

- ✓ Give you the opportunity to be involved in the investigation
- ✓ Explain how you can be involved
- ✓ Provide an explanation of what has happened and what is going to happen
- ✓ Update you on progress and findings throughout the investigation
- ✓ Pass any questions you may have to the investigator and make sure that you receive answers
- ✓ Guide you and your family through the inquest process (if needed) and provide support by attending the inquest with you
- ✓ Signpost you to welfare charities and further support.

Family liaison officers cannot:

- × Give counselling
- × Provide direct referrals to other health services
- × Directly investigate your case
- × Investigate or find out about the care provided by another healthcare provider.

Find out more about the family liaison service by visiting Hampshire Hospitals' website.

Type https://bit.ly/3MitfMC into your browser or use the camera on your smartphone to scan the QR code below.

How can I contact my family liaison officer?

Your family liaison officer is available Monday to Friday from 9am to 5pm (excluding public holidays).

If necessary, please leave a clear message on their voicemail stating your name and contact number.

Name:

Telephone:

Email:

This leaflet is available in other formats, such as large print or Easy Read, via PALS (telephone 01256 486766 or email PALSandcomplaints@hhft.nhs.uk)

www.hampshirehospitals.nhs.uk

Family Liaison Officer
October 2023
Review October 2024
COR/ 051/ 2023
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Fig3: Role of the family liaison officer (Source: Hampshire hospitals)

A recently introduced service in the NHS dealing with family interaction is the PALS (Patient Advice and Liaison Service). These teams fulfil their core responsibilities by acting as a point of contact for patients, providing information and resolving a variety of recurrent problems. The remit and responsibilities of each PALS have often broadened considerably over time. Senior healthcare management had widely differing views on how the PALS should operate and viewed complaints as having a much higher priority. Few PALS teams carried out any analysis of collected data or shared data within their organisations. The role of PALS teams, with their focus on early resolution of concerns and potential problems, could be enhanced to potentially increase patient satisfaction and reduce the need for patients to make formal complaints. Shepard K, & Buivydaite R, Vincent C. (2021).

Their lack of independence makes it particularly important that PALS staff are clear about the difference between information, advice and advocacy. In common with other advisors, they must maintain a clear framework of what they are trying to achieve and work to stated objectives, although service users may not fully understand such distinctions.

There is currently no requirement for PALS teams to collect data or any guidance for them on how this might be done. Yet, concerns data represent a rich source of information, potentially timelier and more sensitive to patient experience than data from complaints.1 It would be relatively straightforward to produce a national framework for the recording and classification of patient concerns, which should have a strong emphasis on recording actions taken and outcomes.25 26 The existing framework for complaints could also be modified for less serious problems.27 This would allow organisations to learn from concerns and, equally important, allow wards and hospital services to monitor patient concerns near real time.1 14 This is particularly useful for detecting clusters of problems or a sudden escalation of problems in a particular area, which would be revealed much more quickly in PALS data than in complaints systems.

The location of PALS within trusts may therefore be a key asset which independent organizations such as ICAS (or, formerly, CHCs) lack. But PALS will only influence their host organizations if, as research participants pointed out, they are taken seriously by senior managers.

ACADEMIC VIEW OF INNOVATION AND CHANGE

Innovation often flourishes in organizational pockets but then fails to diffuse more widely. Currie and Spyridonidis (2018) This represents a particular global challenge in healthcare where demands of an ageing population with increasing long-term conditions need to be addressed in the face of financial constraints. Shared leadership to support diffusion of innovation may offer a panacea for the challenge. Our study shows how changing configurations of shared leadership support diffusion and adaptation of innovation. Managers remain important actors for the mandate and resourcing of innovation but, over time, powerful professionals, specifically doctors, come to the fore, to engage their peers and influence resource allocation. Nurses complement doctors' leadership efforts around engagement of frontline professionals and in adapting innovation to local context. Significant contingencies in shaping shared leadership for diffusion and adaptation of innovation are: organizational financial performance; whether nurses enact hybrid leadership roles; and whether organization is hierarchical or collaborative. Theoretically, by focusing upon leadership configuration in the process of diffusion of innovation, our study renders visible practices of shared leadership, interdependency of hierarchical managerial or professional influence, its effect upon innovation diffusion, and contingencies that underpin this.

Participation of clinical leaders, both in formal positions and exerting informal influence, alongside managers, is essential, otherwise innovation does not diffuse outwards to practice.

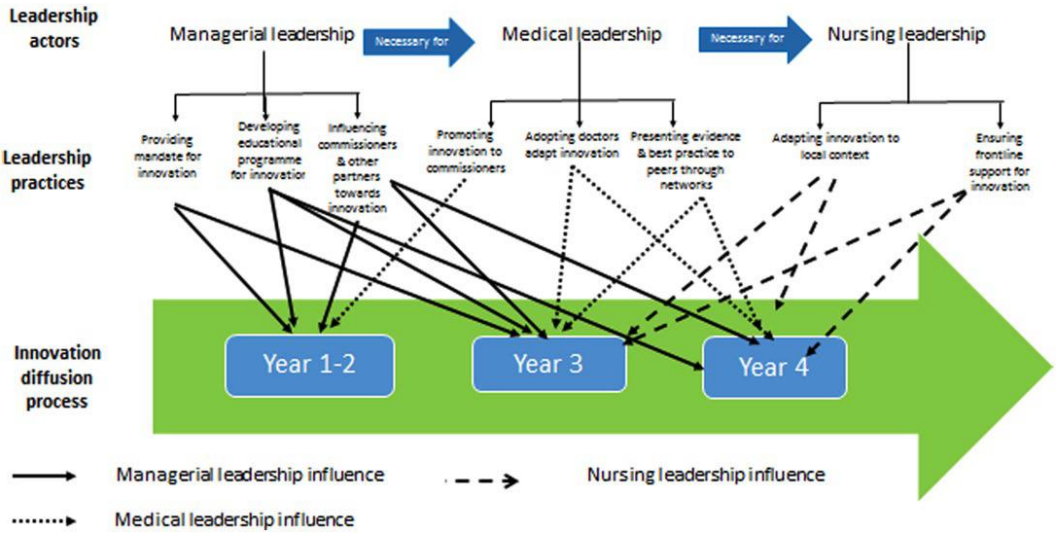


Figure 4. Configuration of leadership in innovation diffusion. (Source: Sage Publications)

We recognize that the healthcare setting is rather distinctive in terms of plural organizational objectives shaped by professional and organizational goals and the myriads of professions arranged in a hierarchical relationship

From a practice perspective, improvement efforts would benefit from considering the potential for spread, scale-up, and sustainability early on, rather than as an afterthought. There is a need to move beyond a narrow focus on specific interventions to consider the system in which they will be embedded and the people who will be involved, directly or indirectly, in the improvement process. A commitment to adaptations that fulfil the same purpose in different settings, rather than interventions implemented rigidly without local tailoring, is likely to be valuable. Enabling conditions such as distributed leadership, adequate management support, and an environment receptive to improvement effort and iterative change all require constant cultivation and an organic growth mind-set that prioritises negotiation, dialogue, and relationships rather than mechanistic approaches.

From a research perspective, there is a need for robust, longitudinal and mixed methods evaluations of spread, scale-up, and sustainability efforts, including ethnographic and narrative approaches that surface emergence and interdependencies. Currently emphasis is placed primarily on spread and scale-up of single improvement interventions, with little attention paid to organisational life playing out in the midst of several improvement initiatives occurring in parallel. Further research is needed to better understand spread and scale-up of combinatorial approaches (i.e. multiple competing or reinforcing initiatives), and to tease out interactions between improvement efforts, understand how to support improvers with managing multiple improvement opportunities, and consider how best to de-implement widespread routinised practices. Chrysanthi Papoutsi, Trisha Greenhalgh, & Marjanovic. (2024)

When considering providing information in formats that people can understand, we also need to be mindful that just providing written information may not be enough. 12% of adults in Wales are 'functionally illiterate' (can understand short straightforward text but written information on unfamiliar topics will be hard to understand) so 1 in 8 of our patients may be unable to access leaflets, letters and other written information we provide them. (Adult literacy | National Literacy Trust)

IN SUMMARY

The literature outlines the growing concern about lack of interaction with the bereaved. Various studies and legislation both underline the importance of achieving this objective. The medical examiner service is a new and welcome initiative to scrutinise deaths and interact with the families. However, the onus then falls onto the health boards to look at concerns identified by the medical examiner service. Mortality review panels have been set up by most health board in Wales to address this. However, interaction with the bereaved remains deficient or non-existent .There are existing models of family liaison service in the literature. There is guidance from a number of academic studies looking at innovation, spread and sustainability of

organisation change in the NHS. This study will review what the mortality data in one health board in Wales reveals and will propose an aspirational model of family liaison service.

RESEARCH METHODOLOGY AND DESIGN

INTRODUCTION AND PURPOSE

The purpose of this section is to present and defend the chosen research methodology and show how this design effectively answers the guiding research questions. The contemporary nature of how the future family liaison service will be enacted has not been explored in detail before and requires a theory building and contextually rich approach.

LITERATURE REVIEW

A traditional literature review was undertaken to frame and guide any study in terms of the current knowledge of academic researchers. The literature review was guided by the 6 elements of the 'New Prescription'.

Table 1. Literature Review - Activity and Purpose.

Activity	Purpose
Literature Search Criteria	Key word searches using the following terms; Family Liaison service, Learning from death, concerns about care ,duty of candor
Repositories used	I-Find, Medline
Search Criteria 2	All Publications since 2010 sorted by quality of journal, English and exclusion criteria

The exclusion criteria used were deaths under the age of 18, maternal deaths, deaths under the mental health act and deaths in the community.

COLLECTION OF DATA

The audit department in CTM health board in Wales have developed a separate unit dealing with mortality. The mortality review team work closely with the Medical Examiner service and have developed a Datix online system that links both services. The mortality death database collects details of all deaths in the health board, details the cause of death and referral to coroner/post-mortems and results of these outcomes. In addition, a separate database collates the number of deaths discussed at the screening panel and outcomes achieved. The secondary data for purposes of this project was obtained from these sources.

ANALYSIS OF DATA

To analyse the extent of mortality we firstly did a historical analysis of mortality data in 2022. Our data showed that the impact of Medical Examiner service had resulted in 1030 referrals to our health board since 1st April 2022 (up until 10/1/23). This was 43% of all in-hospital deaths. All these were scrutinised to determine if further investigation is required, and if so the most proportionate route of action. 32% of all deaths referred by the ME service required consideration of some degree of further review. Around 15% to 20% of cases required in depth Hospital Mortality Review (HMR).

This initial analysis outlined the benefits of the ME service to our health board. The key findings were

- Deaths are reviewed much more promptly
- Reviewed in greater detail with far more information available to Level 2 Reviewers
- NOK (Next of kin) discussions - no information regarding this previously when reviewing at any level, The ME service was able to engage with bereaved and provide explanation of cause of death and about reasons for referral of issues referred back to health board
- Enables a more focused review – Lead to Review of an amendment of Hospital Mortality Review to focus on the issues raised
- Themes/trends and potential "hot spots" are spotted much earlier
- Family concerns about communication from the Medical/Nursing teams are common

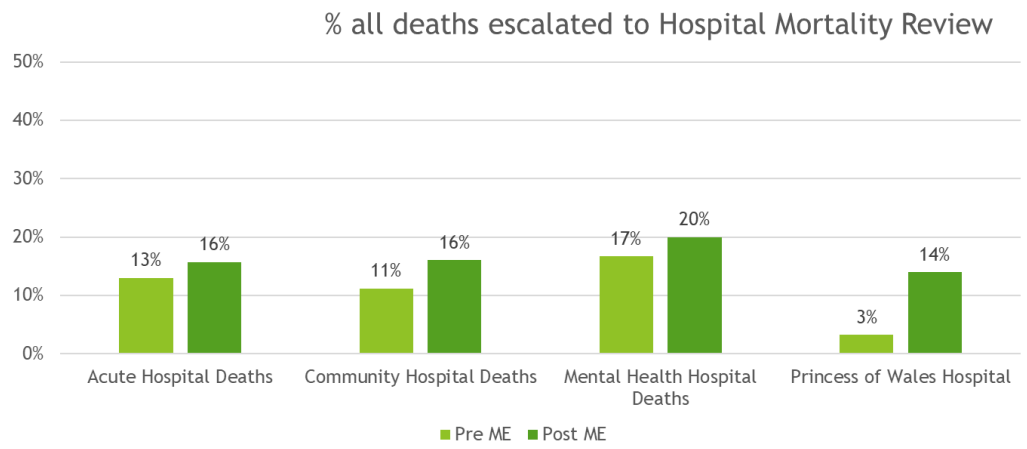


Figure 5: Percentage of all deaths escalated to Mortality review in 2022

A second and more recent data review was carried out for the purposes of this report. All deaths reported back for consideration from the ME service were analysed. All deaths in the period of 6 months from January 2024 till end June 2024 were analysed. Total number of hospital deaths in the health board was 1678. Number of ME Referrals were 619 (37%). The reasons for referral are outlined in Table2 with the timeline in figure 6.

Table 2 Reason for Health board Referral by ME service

	General Care Issues	Nosocomial Covid	DNACPR Issues	Communication Issues	Issues prior to this Admission	Other
Jan-24	47	29	32	16	10	23
Feb-24	13	13	14	5	4	7
Mar-24	12	9	9	1	5	7
Apr-24	18	6	8	1	5	17
May-24	10	12	11	4	4	12
Jun-24	44	7	17	8	7	17

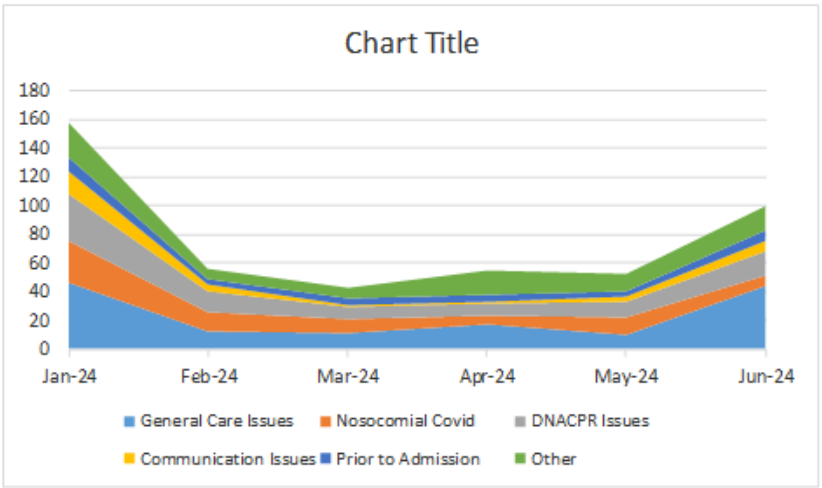


Figure 6: Timeline of ME Referrals to HB

From the data in table above table 3 below gives further analysis and the breakdown of the issues specifically raised by the next of kin/Family. The number of concerns were 114/1678=6.78% of all deaths and 114/619= 18.4% of all ME referrals

Table3 Issues specifically raised by bereaved

	General Care Issues	Nosocomial Covid	DNACPR Issues	Communication Issues	Issues Prior to this Admission	Other
Jan-24	25	0	2	14	3	2
Feb-24	6	0	0	5	0	2
Mar-24	5	0	0	1	0	1
Apr-24	6	0	0	1	1	2
May-24	4	0	0	2	1	5
Jun-24	10	0	0	8	4	4

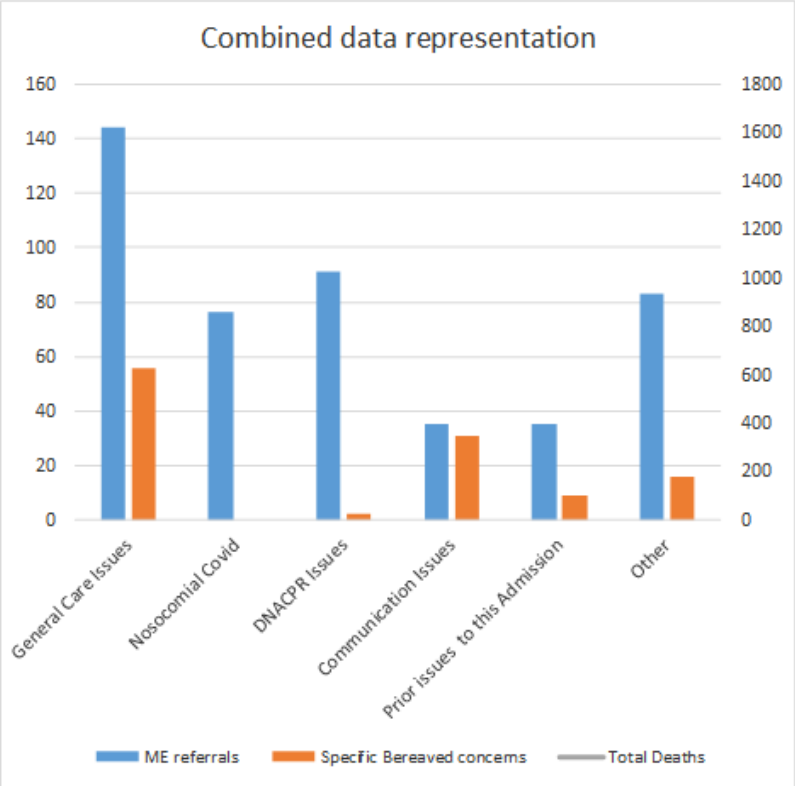


Figure 7 Combined data representation

This sub analysis shows that a high proportion of bereaved concerns were relating to communication, general care and issues relating to prior admissions/care.

Following receipt of the ME referral these were reviewed by a screening panel. Table 4 gives the breakdown of actions taken following screening. This is visually depicted in Figure 8 .

Table 4: Actions Following Screening panel review (Data available Jan to March 2024)

Decision	Numbers	Percentage
Hospital Mortality Review	89	26%
Existing Process (e.g. Datix)	29	9%

Re-direct to Concerns Team	2	0.6%
Nursing Review	2	0.6%
Clinical Team Review	22	7%
Service Group Review -	1	0.3%
Learning Only –	59	18%
RADAR panel (DNACPR issues)	49	15%
Positive Feedback	5	1%
WAST (Ambulance) Issue Only	16	5%
GP/Primary Care	2	0.6%
Other HB Issue	1	0.3%
Closed	35	10%
Pending Screening	2	0.6%
Awaiting Post mortem-	5	1%

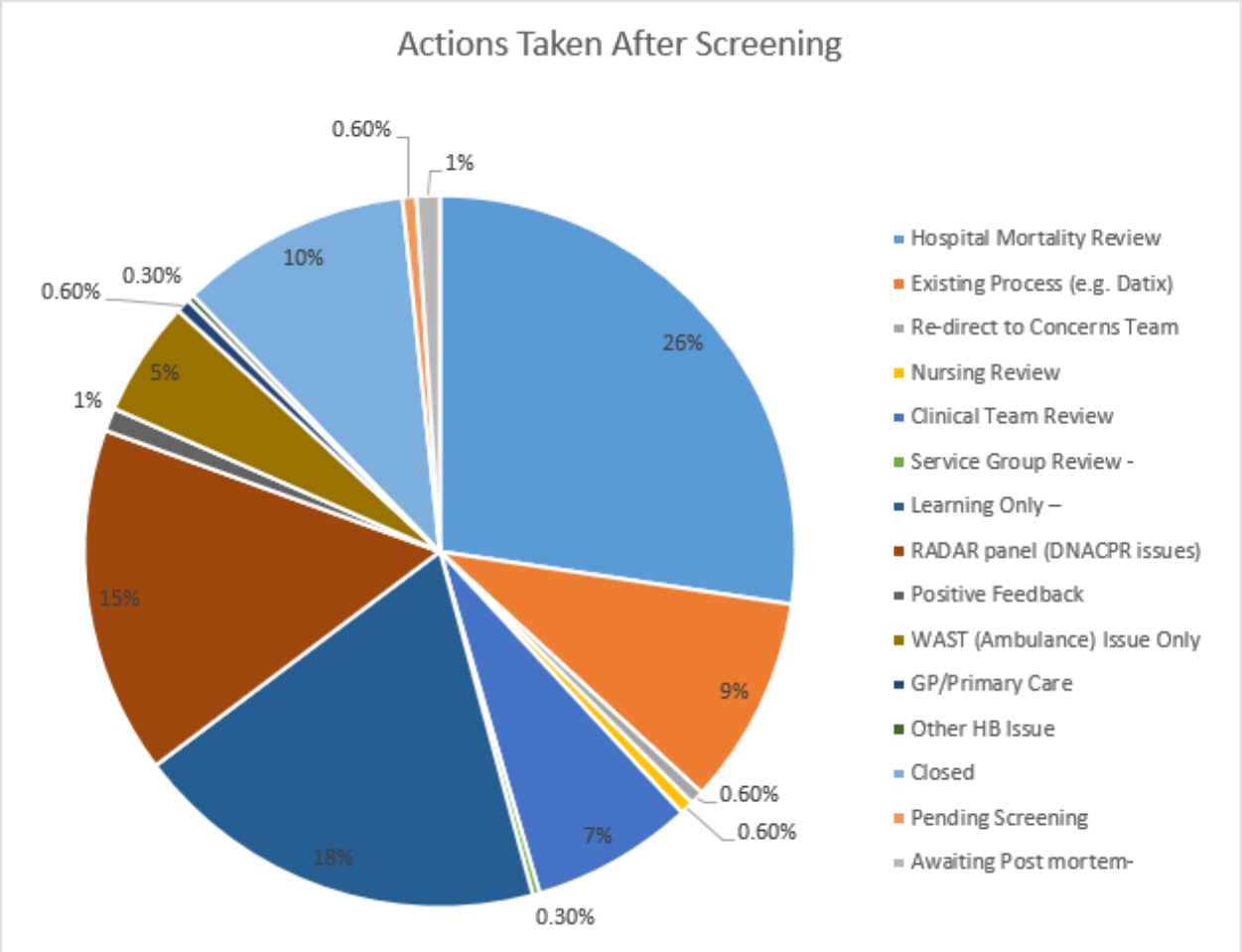


Figure 8 Actions taken after screening

This implies an efficient system (under the Putting things right framework) in getting a multidisciplinary response based on the concerns raised in the ME referral. We note there is no channel for communication with the bereaved

We reproduce some examples of concerns from families encountered frequently by the ME service:

- *Why did my dad/mum not leave in dignity?*

- *Why did anyone not explain what was happening?*
- *Why despite our wishes resuscitation was performed?*
- *Why we were not informed about the death in time and in a dignified manner?*

ETHICAL CONSIDERATIONS

Preliminary MRC result was obtained.

Research ethical approval for the research study was acquired through Swansea University School of

Management Research Ethics Board in June 2024

Letter of support from the concerned person in the health board for procurement of secondary data is attached. (Refer appendix).

FINDINGS

KEY FINDINGS

Our data from 2022 has shown the growing impact the Medical Examiner service in terms of family interaction and subsequent referrals relating to ongoing concerns back to the health board.

Our updated data from 2024 further breaks this down into the reasons for family concerns. 6.78% of all deaths and .18.4% of all ME referrals had a family concern. A high proportion of bereaved concerns related to communication, general care and issues relating to prior admissions

The screening panel in our mortality review department was able to redirect these concerns to the relevant health board processes. Despite conclusion of these processes including mortality review in 26% and derived learning in 18% there was no provision for feedback to the families through a written/verbal format

THE FUTURE OF FAMILY LIASON SERVICE

We propose the introduction of the model of Family Liaison service as an outreach arm of the mortality or concerns team. We propose appointment of Nurse practitioners, who will require training and will be expected to deliver the responses to the family, address any concerns, liaise with clinical/nursing teams, set up family meetings etc...

The advantage of these over similar initiatives like PALS will be ownership, clinical mind set, access to records and clinical teams, engagement with mortality review and concerns teams. The aim would be to engage the multiple teams with overriding concern of delivering response to the bereaved.

DISCUSSION

INTRODUCTION

This chapter will answer the guiding research question and explore the contribution of this study to current academic knowledge in the field of Family Liaison Service models in Wales

CONTRIBUTION TO ACADEMIC DEBATE

The only service module presently identified in the NHS which has a degree of family interaction is the patient advisory and liaison service (PALS). The service has not been universally implemented across Wales. It does not exclusively deal with the bereaved. It is staffed by non-clinical persons with a degree of interaction with clinical teams. Management awareness and acceptance of the PALS teams is variable. Its overwhelming objective of dealing effectively with low-level family concerns to prevent legal complaints is similar to what our model is hoping to achieve.

Our model of family liaison service aims to avoid these pitfalls. As an outreach arm of the mortality service, it will have ready access to the mortality database, medical examiner service and clinical team. Appointment of nurse practitioner roles will ensure a clinical understanding, access to the records and acceptability by other practitioners/concerns team as well as management oversight. This will involve organisational change, management acceptance and funding. The main enabler and barrier to clinical service delivery in Wales was identified as funding.

DISCUSSION CONCLUSION

This chapter has highlighted how the study findings extend academic thinking in terms of a new model of family liaison with the bereaved. It has demonstrated some of the key benefits in comparison to existing models in England and Wales.

A simple answer to the research question is skills development and other benefits are perceived advantages of the new system which is currently constrained by issues concerning funding, training, and integration.

CONCLUSIONS & RECOMMENDATIONS

THE PURPOSE OF THIS CHAPTER

The concluding chapter will bring together the findings and contribution of this study and provide a final

answer to the study questions

KEY FINDINGS

- The proposed family liaison service model offers many benefits to multiple stakeholders.
- The model is developed around the bereaved and will provide effective communication
- In addressing low level concerns, it will mitigate against legal complaints with cost savings for the

  health board.
- There are challenges to develop the skills required in nurse practitioners and protected time for learning and adequate pay scale
- The key challenge is to convince the hospital executive and management boards and to allow the service to be funded

REFLECTIONS

Our innovative model involves organisational change. This will need in the future to involve a number of stakeholders including doctors, nurses, audit department personnel and managers. The lessons of spread and scale/ sustainability will be required to be applied for this change to become effective.

We are aware that our proposed setup is a single improvement intervention in a single health board in Wales. We are proposing a service redesign with a renewed focus on communication with the bereaved.

FUTURE RESEARCH

It is expected any research study would offer new avenues for academic research. The following are offered by the researcher as vital next stages in this process:

- A research study to be conducted across all health boards in Wales and in another country of similar type to Wales (such as England or Scotland) to see if the model and study can be generalised nationally and to other countries and nations. This will overcome the acknowledged methodological limitation of studying only one health board in Wales in this study.
- A longitudinal research study should be undertaken to see how successful and less successful mortality review panels and concerns departments in health boards engage with the new FLS model and what has enabled or inhibited a successful implementation through the process

CONCLUSION

It is universally acknowledged that the NHS is deficient in engaging with the bereaved. Our study has shown that there is lack of engagement in communicating with the families and failure to offer an explanation of the sequence of events leading up to death of their loved one.

Some of the reasons are documented in the literature. Challenging staffing levels, bed and time pressures and lack of empathy/awareness by healthcare professionals and management.

Our aim is to provide a clear, honest and sensitive response to bereavement in a sympathetic environment (NHS England 2017)

Our ambition is to give a voice to the bereaved family and answer the critical question 'did a problem in care contribute to the death?'

Our study outlines the urgent need of setting up a family liaison service for the bereaved. We believe the existing services like PALS are not structured accordingly and are failing to address this concern.

We propose the model of Family Liaison service as an outreach arm of the mortality or concerns team. We propose the appointment of Nurse practitioners, who will require training and will be expected to deliver the responses to the family, address any concerns, liaise with clinical/nursing teams, set up family meetings etc... The advantage of these over similar initiatives like PALS will be ownership, access to records and clinical teams, engagement with mortality review and concerns teams. The aim would be to engage the multiple teams with overriding concern of delivering response to the bereaved.

The family liaison service will give the bereaved:

- An opportunity to be heard
- Immediate assurances
- Independent opinion from care provider (ME service)
- Signposting to further options like contacting concerns
- Sense of control
- Closure and mitigate distress

Our aim is for management to understand this activity is required under the duty of candour legislation and will prove to be cost effective and will improve public confidence. Management will need to understand, fund and allow set up of this new initiative. Our analysis of mortality data clearly outlines the deficiencies.

A robust process of feedback to the bereaved needs to be established as a priority and keeping them at the centre of our work.

Learning from deaths of people in their care can help providers improve the quality of the care they provide to patients and their families, and identify where they could do more (NHS England2017)

Our overriding aim to close the loop and bring closure to the families which is conceptually the last part of the patient journey. '*What you miss in life, you miss in death'*

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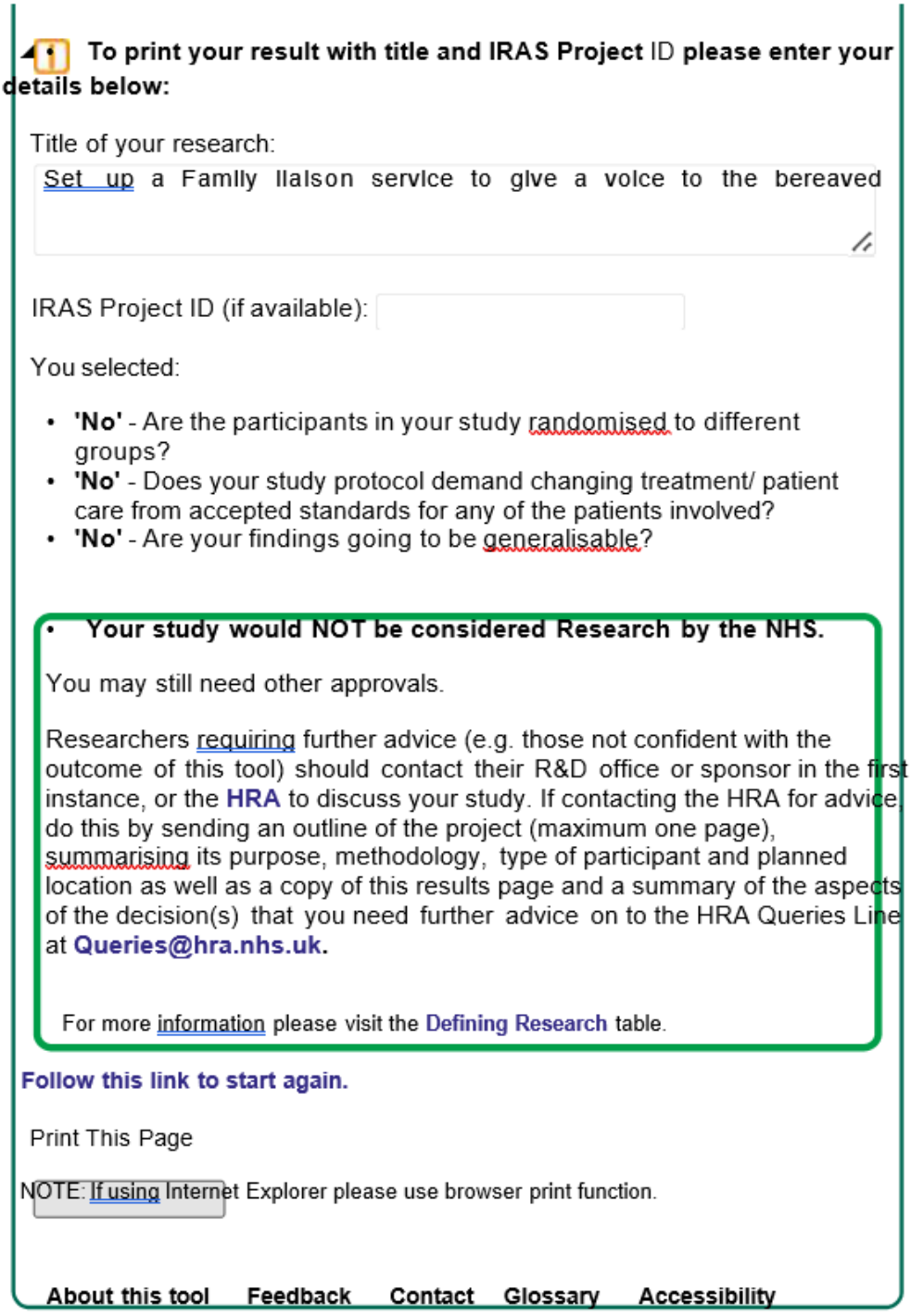
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Appendix A: MRC result



To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

Set up a Family liaison service to give a voice to the bereaved

IRAS Project ID (if available):

You selected:

- **'No'** - Are the participants in your study randomised to different groups?
- **'No'** - Does your study protocol demand changing treatment/ patient care from accepted standards for any of the patients involved?
- **'No'** - Are your findings going to be generalisable?

- **Your study would NOT be considered Research by the NHS.**

You may still need other approvals.

Researchers requiring further advice (e.g. those not confident with the outcome of this tool) should contact their R&D office or sponsor in the first instance, or the **HRA** to discuss your study. If contacting the HRA for advice, do this by sending an outline of the project (maximum one page), summarising its purpose, methodology, type of participant and planned location as well as a copy of this results page and a summary of the aspects of the decision(s) that you need further advice on to the HRA Queries Line at **Queries@hra.nhs.uk.**

For more information please visit the **Defining Research** table.

Follow this link to start again.

Print This Page

NOTE: If using Internet Explorer please use browser print function.

About this tool **Feedback** **Contact** **Glossary** **Accessibility**

Appendix B: Letter of support



Our Ref/Ein Cyf: N/A
Date/Dyddiad: 17/4/24
Tel/Ffon: 01685 728159
Email/E-bost: matthew.smith@wales.nhs.uk
Dept/Adran: Mortality Review Team

Cwm Taf Morgannwg University Health Board
Mortality Review Team

Mr Rakesh Kumar
Consultant T&O
Cwm Taf Morgannwg UHB

Dear Mr Kumar

Thanks you for contacting me with regards to your project to develop, evaluate and validate a Family liaison service to give a voice to the bereaved.

As part of this you state you will need to look at secondary data e.g mortality figures etc. This information is held by the Mortality Review (MR) Team within CTMUHB.

I am happy to support you in any way we can with regards to this project and for you to use an anonymised version of this data to support your project. I will arrange for the MR team to make this data available as and when you require it

Yours sincerely,

Matthew Smith
Mortality Review & Learning Manager
Cwm Taf Morgannwg University Health Board

Appendix C: Ethics approval Letter

Swansea University
Prifysgol Abertawe

Approval Date: 28/06/2024

Research Ethics Approval Number: 1 2024 9608 9247

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title Set up a Family liaison service to give a voice to the bereaved Applicant name RAKESH KUMAR
Submitted by RAKESH KUMAR /
Full application form link https://swansea.forms.ethicalreviewmanager.com/Project/Index/11656

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

1. **Approval conditions**

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

2. **Specific conditions in respect of this application:**

The application has been classified as Low

Risk to the University. No additional

conditions.

3. **Statement of compliance**

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research

and Ethics Chair Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 28/06/2024

4. **Rhif Cymeradwyo Moeseg Ymchwil:**

Diolch am gwblhau cais moeseg ymchwil am gymeradwyaeth foesegol ac am gyflwyno'r ddogfennaeth ofynnol drwy'r platfform ar-lein.

Teitl y Prosiect Set up a Family liaison service to give a voice to the bereaved Enw'r YmgeisyddRAKESH KUMAR
Cyflwynwyd gan RAKESH KUMAR /
Dolen i'r ffurflen gais lawn https://swansea.forms.ethicalreviewmanager.com/Project/Index/11656

Appendix D: Voices of the Bereaved

Referral 1

•… treatment by the consultant in the A&E was upsetting for the family. xxx was being told that what she had was chronic pain, however this transpired to be much worse. xxx was told that there are people in her dying and they don't routinely scan for chronic pain. xxx's mother asked for a second opinion as was told to expect the same answer, so didn't pursue this. xxxx understands that this would not have changed the outcome but this treatment was awful.

Referral 2

xxx (son) stated he accepts that his father was very ill and that he trusts the doctors who were looking after him. However, he states had concerns with regards to their experience in accident and emergency. Xxx felt staff did not listen to his concerns regarding his father's chest infection and they tried to discharge him when he feels he was still unwell. Feels he needed to push and that he wonders if antibiotics had been commenced in A&E like he asked perhaps his father's infection could have been treated. States he knows that his father was unwell and this probably did not contribute to his passing.

Medical examiner Feedback - Initial diagnosis of fractured clavicle not made, ED monitoring & handover inadequate, subsequent discharge attempts dis-satisfying to NOK

Referral 3

However he did say that when he was called to say his mother had passed away, he was unable to come immediately he asked if her body would be able to remain in the bed until he could arrive and he was told that this would be the case. However, when he arrived he was told she had already been taken to the mortuary. He was upset about this as he had arrived as early in the morning as could. He wanted to feedback this back as it was very upsetting.

Referral 4

She had no real concerns about the care and treatment however she did raise that he had fallen out of his chair and she felt that he should have been nursed in bed and not sitting out slumped.

Referral 5

Medical examiner Feedback - I note patient appears to die 10min after arriving to xxxx. Was the transfer in her best interest? This lady was clearly actively dying prior to transfer. Please refer back to HB for consideration of potential learning.

Referral 6

Granddaughter stated communication from the hospital was very poor, her nan was moved twice and they weren't informed and was in a room without a working buzzer. Granddaughter states they were told the hospital was under staffed and because her nan refused resuscitation she was not a priority.

Referral 7

She went on to discuss her mother's care in the hospital. She feels the care was lacking consistency and was never able to speak to the same medical staff and often spoke with doctors who had never met her mother before. She tells me she waited 4 hours to speak to a doctor who only knew her mother from reading her notes. She says often members of the medical team would discuss important issues like care/treatment and DNACPR status without a family member present and that she felt this was inappropriate given her mother's failing cognition. She reports raising concerns regarding her mother's capacity that were not heard.

She said there was never an opportunity to have a meeting with the family and the clinical team. She reports leaving notes in the medical notes regarding her mother's care that were not seen or considered. Her mother was temporarily in a side room where she felt she was abandoned and rarely interacted with. Her mother unfortunately passed away on a 5 bed Dementia ward with other patients family members present. She was not allowed to close the curtains for privacy around her mother's bed which she further felt was inappropriate and distressing. She said there were no side rooms or beds in xxxx available. She feels a lot of these issues were down to lack of staff and resources but she also acknowledges that there were some very good staff members alongside some displaying no bed side manner. She is understanding that none of these issues would have altered the outcome for her mother. She does not wish to consider a formal complaint but has asked for her concerns to go to the health board. She has asked for them to contact her.

BIOGRAPHY

I am a consultant orthopaedic surgeon in Cwm Taff trust. I was appointed to the post in 2007 and have a special interest in Trauma reconstructive surgery. 'Out of the box' thinking over the last decade has lead me to be involved in various projects including digital innovations with the aim of improving patient care, setting up a Fracture liaison service etc..

Over the last decade I have become increasingly involved in Mortality reviews for the trust and am now the lead clinician and involved in teaching .This interest in turn helped me to successfully train for and be appointed by Shared services wales as a Medical Examiner in 2020. I enjoys this work and have been part of development of a successful and independent All Wales service.

My trust mortality team was selected for the 'Spread and Scale' leadership summit 2023 which prompted the idea of setting up a family liaison service for the bereaved. I was able to refine this idea in the CLIMB leadership program and my talk in the Summit meeting in June 2024 is part of my submissions for this course.

The blended online and in-person workshops allowed me to fit my studies around my demanding roles and the course has increased my knowledge and given me the skills and confidence to drive value-driven changes that are desperately required in today's healthcare system.

RESEARCH IMPACT

The NHS Learning from Death Provider policy has laid down the guidelines for interaction with the bereaved. (NHS England 2017)

…… engage meaningfully and compassionately with bereaved families and carers

……offer guidance, where appropriate, on obtaining legal advice for families.

There are no consistent frameworks in Wales that require boards to keep deaths in their care under review and share learning from these deaths.

…..After death in hospital or community, many families have unanswered questions about the care provided or diagnosis. Too often the NHS exacerbates the distress felt by families and carers of patients who die

Analysis of the trust mortality data over six months in 2024 for this project helped me to highlight the volume of concerns raised by the bereaved which remain unanswered. This is the key finding of this study.

'What you miss in life, you miss in death'

A review of existing NHS models of family interaction helped in proposing the structure of our model of Family liaison service. I was able to explore the strengths and weaknesses of other models. A key recommendation is appointment of nurse practitioners to run the new service.

Our innovative model involves organisational change. This will need in the future to involve a number of stakeholders. Funding is expected to be the main hurdle.

Implementing Evidence-Based Practices for Persistent Pain: A Mixed Methods Study in Primary Care.

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Director, Red Kite Health Solutions CIC

Abstract:

The economic burden of chronic or persistent pain is a growing problem in modern society that requires urgent and proactive measures to improve management and reduce the growing issues around opioid dependence. With the majority of patients with, or at-risk of developing the condition managed in primary care settings, the opportunity to reduce the burden of this chronic disease seems apparent, however, the impact and burden on patients and their families continues to grow with management primarily focused on secondary or tertiary care services and minimal focus on early-intervention measures or innovations in primary care research. This study seeks to demonstrate the potential benefits and impact of access to specialist pain management expertise and self-management techniques through a primary care led intervention, delivered by an MSc Pharmacy Technician and General practitioner in South Wales.

Keywords: Pain Management: Primary Care: Opioid dependance: Chronic Pain: Persistent Pain: Mixed Methods

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Introduction

Background/Rationale

Chronic or persistent pain is a major health issue that affects between one-third to one-half of the UK population (Fayaz et al., 2016). Consultation for pain accounts for 22% of attendances in general practice and is listed as one of the main reasons patients seek support from their general practitioner (Mills et al., 2016). Historically, medications have been used as first-line treatment for patients with chronic/persistent pain, contributing to the increases in the overuse and misuse of opioid and gabapentinoids, such as tramadol and gabapentin (Evoy, Morison and Saklad, 2017). In 2019, the UK had the highest rate of opioid consumption in the world, with an increase in opiate-related deaths of 388% across England and Wales from 1993 (Roberts and Richards, 2023). Demand is also on the rise due to an ageing population and has been further exacerbated by the impact of the COVID-19 pandemic (Shanthanna, Nelson and Nerouze, 2022). It is predicted that chronic/persistent pain will see an incidence growth of 32% by 2040, driven by patients living longer but with multiple health conditions (Britishpainsociety.org, 2024). Chronic/persistent pain results in a significant socioeconomic cost to the UK economy and in comparison, to other long-term chronic illnesses, patients with the condition have significantly lower quality of life scores across physical, social and emotional functions, increasing the complexity in managing this multifaceted condition (Hadi, McHugh and Closs., 2019; Dey et al., 2024).

With an estimated 70% of patients with chronic/persistent pain managed in primary care and no known cure, the provision of adequate resource in general practice has the potential to revolutionise the management of these patients, to live well with the condition and reduce the economic burden (Mills, Torrent and Smith, 2016; Becker et al., 2018). However, successful management of chronic/persistent pain requires a multidisciplinary and holistic approach to minimise effects and educate patients on how to maximise their quality of life (Mills. Torrent and Smith., 2016). Currently, the ability to meet the demands and appropriate treatment recommendations of this debilitating condition is hindered by several constraints within the general practice model, including, capacity issues, inconsistent knowledge and a lack of primary care training, all factors that limit the feasibility of providing care that meets the current guidance and best supports patients (Johnson, Collett and Castro-lopes, 2018; Abdul Hadi et al., 2017). There is little acknowledgment to the deepening general practice crisis in the UK when looking to implement improvements, with the BMA reporting that 80% of GPs are concerned they are unable to provide safe, high-quality care due to rising demand, workload pressures and a diminishing workforce (bma.org.uk 2023). Pressure to provide an immediate fix to the problem of chronic pain in primary care has seen opioid prescribing in Wales rise by 30% in the 10 years from 2008–2009 to 2018–2019 (Awttc.nhs.wales, 2022).

This study reports on the process of pain management in Wales and is encompassed in the question:

> *"Does a focused primary care pain service have a positive impact on the management and associated outcomes of patients with chronic/persistent pain?"*

Personal Motivations for the Study

The researcher is a senior innovation manager in the field of primary health care with an interest in pain management and evidence-based practice. She wanted to investigate if the poor outcomes accosiated with patients living with pain could be improved at an earlier stage in the patient journey and what would be required to support primary care and partients to adopt and improve pain management expertise and maximise evidence-based, best practice. The next section will present a review of the current body of knowledge in the form of a literature review of journal articles and 'grey' literatures.

Literature Review

The International Association for the Study of Pain (IASP) classifies chronic/persistent pain as pain that persists or recurs for more than 3 months (Iasp.pain.org. 2024). Globally, it is estimated that 1 in 5 adults suffer with this condition and a further 1 in 10 are diagnosed each year (Goldberg and McGee, 2011). Although representing a major healthcare problem, the prevalence of chronic/persistent pain in the UK population has historically been difficult to determine due to the diverse criteria and definitions used (Mills, Nicolson and Smith, 2019; Nice.org.uk 2024). A 2016 meta-analysis based on data included in 1,737 articles, estimated that just under 28 million people (43.5%) in the UK are affected by chronic or persistent

pain (Fayez et al., 2016). Meta-analysis studies can face criticism due to the differences in comparing diverse studies, however, NICE provides this figure in an overview summary of pain prevalence in the UK (Cks.nice.org., 2024). Comparatively, a health survey for England found a prevalence of 35%, increasing to 53% in patients that were 75 years or older, although it is noted that structured healthcare data collection, often reliant on prescription medication counts, shows lower prevalence than community surveys (Gov.uk, 2017; Hafezparast et al., 2023). Study criteria are also important to note when assessing the prevalence of pain, with some studies focused on the primary chronic pain cohort and other studies focused on those with moderate to significant pain. Despite these variances, the impact of chronic or persistent pain on both the individual and the economy is unanimously agreed within the literature (Cohen, Vase and Mooten, 2021, Nijs et al., 2021; Stubhaug et al., 2024). The condition has serious implications on the function and quality of life for patients, including physical limitations, social isolation and mental wellbeing deterioration (Dydyk and Conermann, 2024, Aminde at al., 2020).). In 2019, a mixed-methods study highlighted the poor QOL of the majority of patients living with pain and a complex 2-way relationship between pain and depression, with one condition exacerbating the other (Hadi, McHugh and Closs, 2019). Additionally, Clauw et al. (2020) discuss the impact of the COVID-19 pandemic, creating rises in chronic pain, mental health deterioration and long-term deterioration in quality of life for those affected by serious illness. Chronic/persistent pain has a higher prevalence in patients identifying as female and is statistically more likely to be reported by individuals who are not in employment, so in terms of the economy, chronic/persistent pain is associated with disability, reductions in productivity and exit from the job market (Mills, Nicolson and Smith, 2019). The office of national statistics (ONS) reports that 23.4 million working days were lost in the UK in 2022 due to musculoskeletal issues and 41% of patients with chronic back pain say they are unable to work due to their condition (Ons.gov.uk, 2022; Fpm.ac.uk, 2021). A cost-of-illness study determined the direct cost in the UK to be 10 billion pounds (Maniadakis and Gray, 2000). The costs to the National health service for back pain alone total 4.7 billion per annum (Yeowell, Greenhalgh and Selfe, 2020). Patients with the condition are 5 times more likely to frequent their general practitioner, resulting in a large demand for primary care appointments and increases in medication use to try and manage symptoms (Fpm.org.uk, 2020). To date, pharmacological treatment has been, and remains, highly prevalent in the treatment of patients presenting in primary care, resulting in increasing misuse and overuse of medication with little evidence regarding the long-term benefit and a growing body of evidence regarding the risks (Clarke et al.2014; Kleijn et al., 2022) Opioid-related deaths make up the largest proportion of drug-related deaths in the UK, with an average of 40 deaths per week and in 2022, 60% of drug misuse deaths involving opioids were registered in Wales (Gov.uk, 2024)

The evidence base for appropriate interventions in the management of chronic/persistent pain is substantial, recently underpinned by guidelines that now identify chronic pain as a classified disease state, requiring an hollistic and biopsychosocial approach to management (Who.int, 2023; Nice.org.uk,2021; Awttc.nhs,wales, 2022). Management should involve general practitioners having adequate access to education, access to evidence-based strategies and agreed criteria for appropriate onward referral to specialist services, none of which are generally in place (Smith et al., 2014). The Welsh government in the UK recognised the gravity of this condition in a 2019 document, Living with Persistent Pain in Wales (gov.wales, 2019). This guidance emphasises the importance of timely access to patient education and well-being support to manage this often-debilitating condition, highlighting the need for early intervention and recommendations for support at a primary care level (gov.wales, 2023). There has never been a more prevalent time to address the management of pain in Wales, with the directive from the Welsh government now holding health boards responsible for compliance in improving the management of pain (Fpm.ac.uk, 2021). The recommended intervention for chronic/persistent pain focuses primarily on supported self-management and despite studies outlining the barriers faced by primary care, recommendations for an accepted model of care by primary care practitioners remain elusive (Nuseir, Kassab and Almomani, 2016). Previous studies have recommended some potential frameworks for general practice management, however, there are limited UK studies that have examined the effectiveness of a tailored primary care intevention due to a lack of a standardised care model, inconsisent knowledge and the need for a redesign of primary care management (Shivji et al., 2022; Hadi, 2017; Gordon et al., 2017). The first NICE guidline,specifically addressing chronic pain was published in 2021 (Nice.org.uk, 2021). Despite the increases in guidance, much of the evidence-base to date, relates to information garnered in specialist services, resulting in a lack of quality evidence and transferable management plans to primary care, other than pain medication guidelines (Smith et al. 2014, Awttc.nhs.wales, 2022).

When we examine the UK general practice setting, patients presenting to their general practitioner, receive just a 10-minute appointment, allowing little time to holistically assess, enable continuity of care, or co-produce solutions (Mills, Torrance and Smith, 2016). The British Medical Association (BMA) has desribed general practice in Wales as, 'hanging by a precipice' and 'starved of investment', outlining a 33% increase in patients, a reduction in full time general practitioners of 24% and practices reducing staff hours or stopping recruitment altogether in order to mitigate rising costs (BMA, 2024) In addition, there are variances in the knowldege of pain management amongst clinicians, with 84% of clincians finding chronic/persistent pain one of the most challenging conditions to treat and one of the lowest priorities within healthcare systems (Johnson, Collett and Castro-Lopes, 2013). Undergraduate training in chronic/persientent pain accounts for <1% of programme hours, despite the higlighted impact and disease prevalance (Briggs, Carr and Whittaker, 2011). In addtion, the multidisciplinary approach to care required for these patients requires a significant shift in primary care management under the current model and the increasing burdens facing general practice (Smith et al., 2014) . Treatment requires the involvment of clinical, huministic and economic factors and practitioners note that opioid prescribing education and patient education around non-pharmacological treatments could help to support some of the challenges around management (Provenzano, Kamal and Giannetti, 2018). Patients have also reported barriers to receiving optimal treatment at a primary care level, including, discussions around self management coming too late, if at all, organisational contraints, such as long waiting times and overmedicalisation (Gordon et al.,2017). Another issue, surrounds the demonstrated postive impact of continutiy of care, which is in decline across primary care and is noted to have a detrimental effect on patient mortality when lacking (Baker et al., 2020). Creating a paradigm shift from the pharmacological/biomedical treatment of chronic or persistent pain to incorporate an hollistic and biopsycosocial approach is also a challenge for primary care practitioners, who lack access to the interdisciplinary team expertise and can be driven less by guidelines and more by personal beliefs or tradition (Varrassi et al., 2010; Shivji et al., 2022).

Despite advances in guidelines, chronic/persistent pain continues to burden both patients and clincians, in a system that is not designed to manage the multifacted nature of this disease (Tosas, 2021; Goldberg and McGee, 2011). These issues have resulted in variable management, a lack of focused primary care management and suboptimal care for patients (Hadi et al. 2017). With the expected increases in prevalence, calls to action require immediate efforts to ensure the management of pain can be optimised and the burden of this chronic disease reduced (Hadi et al.; Gordon et al., 2017; Dorflinger et al., 2014). At the heart of family-medicine and with established patient relationships, there is a unique opportunity to redesign the management of chronic/persistent pain at a primary care level, supporting patients to maximise their quality of life and reduce the burden of chronic disease (Dorflinger et. al., 2014, Parchman et al., 2017).

Therefore, this study will aim to educate and validate the implementation of an MSc pain practitioner service based in a primary care setting in South Wales to provide evidence for a potential framework for primary care management.

Research Strategy

To conduct effective scientific research, a methodology is required to ensure work is conducted reliably and ethically. The decisions in this process of declaring and defending the methods used will follow the Saunders et al. (2016) research onion'. The approach shows a series of rings from outer to inner which declare the core decisions at each stage of the determination of methods.

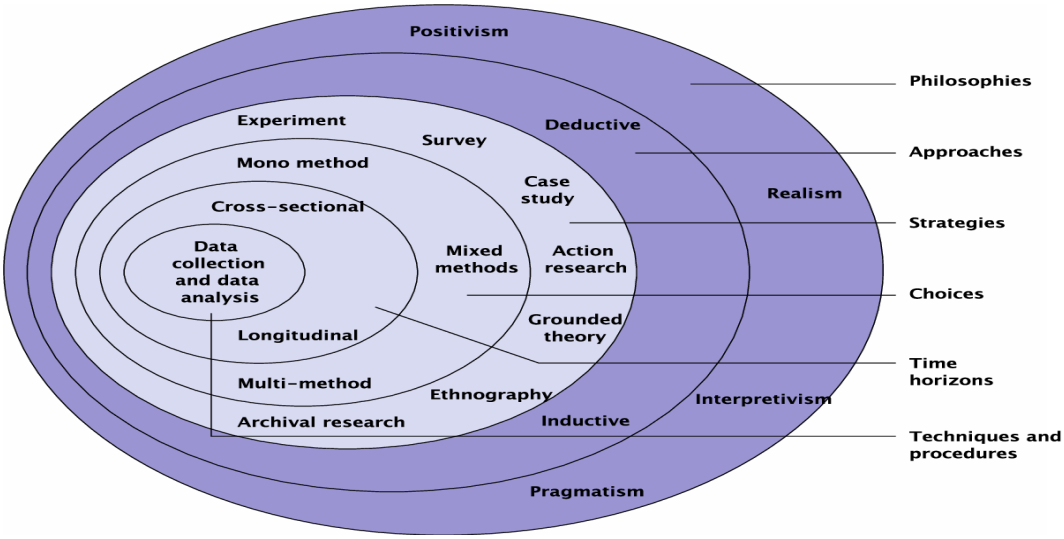


Figure 4. Research Onion, Saunders.et al. 2016

A summary of the methodology design process commenced with the determination that professional practice was an important constituent of any study, and a pragmatist approach was needed for this newly evolving subject where gaps/variations exist in the professional practice of pain management (Allemang et al., 2021). The need for a context-rich contribution necessitated an inductive approach and theory building rather than deductive hypothesis generation when surveying a diverse population in a region (Locke,2016). A case study of a region of Wales was determined to offer good access and insight into pain management and mixed methods were selected to contrast findings and result in a robust answer to the guiding research question (Creswell, 2021).

Objectives/Methods

The sample will cover a population of 12,441 registered patients across general practice in Wales between March 2023 to March 2024. The design will include service outcomes for identified patient cohorts in their registered practice, consisting of patients with primary persistent pain, on opioid medications and those at risk of developing persistent pain. The team will be led by a development and research manager, an MSc pain practitioner and a GP mentor to ensure clinical governance.

The overarching aim will be to evaluate the benefits of a primary care-led pain management service, led by an MSc Pharmacy Technician focused on improving the management of any individual living with, or at risk of developing, persistent pain. The study will have the following objectives:

- Measure the impact on function and quality of life for patients with persistent pain
- Assess changes to opioid/gabapentinoid prescribing culture
- Evaluate any effects on waste of resources and value-based healthcare
- Identify the educational gaps for patients and clinicians
- Assess the need for a newly developed MDT role to aid workforce, recruitment and retention
- Report on the significance of an improved partnership approach on the patient journey

Method

The research topic lends itself to a mixed methods approach that can effectively evaluate a multifaceted intervention and is considered a significant contribution to providing a more complete picture of health

interventions (Creswell, 2021). The study will use the application of methodological triangulation to enable a comprehensive analysis that balances out the limitations of each method and will provide valuable insight into the effectiveness of primary care-based service provision for organisations and the public (Bekhet and Zauszniewski, 2012). Investigator triangulation will also be applied, mitigating the risk of observer bias and increasing validity (Archibald, 2016).

Data collection methods will include a phenomenological approach to capturing data, experiences and descriptive statistics and will include:

- Comparative clinical system outcome data (CASPA, EMIS Web),
- Clinical template data (EMIS Web)
- Field notes – following the method of, notes, description, learning and reflection
- Patient/ clinician rating questionnaires, pre and post intervention
- Patient/clinician experiences will also be collated to allow service-users to freely record their experience without prompt

Ethical Considerations

Ethical considerations for research in health include data access, confidentiality and consent (Hra.nhs.uk, 2024). The collation of statistical data ensuring exclusion of patient identifiable data and the collation of general practice statistical data follows the control of patient information guidance and service review. Formal written approval was granted by the participating practices. To mitigate potential risk, supervision will be provided by the Caldicott Guardian in-line with the General Data Protection Regulations (Ico.org.uk, 2024). This will be inclusive of confidentiality agreements, risk assessment and data access agreements with the data controllers. The Research Ethics Committee review process was followed, and approval was also granted by the ethics committee in Swansea University, April 2024 (Hra.org.uk, 2024; Swansea. ac.uk, 2024)

To ensure autonomy and freedom to participate, ethical conduct in relation to participants will be observed through informed consent and voluntary participation agreements, underpinned by on-going risk assessment, anonymity feedback assurances and transparency (Grant, Wolf and Nebeker, 2019; Barrow, Brannan and Khandhar, 2022).

The Research Project Process and Key Milestones

The project life cycle will follow 5 stages to include implementation and data collection over a 12-month period.

Table 2. Research Project Phases

Stage	Theme	Activities
1	Project initiation (Month 1)	Defining the project idea and resource requirements, Ethical considerations, authorisation, charter and stakeholder register.
2	Planning (Month 1/2)	Identify key team member requirements, Tasks, timelines, budget and actions, Formalisation of educational materials, Identification of sample cohorts and baseline data, Set-up of clinical service, IT, template and data collection methods, and educational sessions. Field notes
3	Implementation (Month 2)	Pharmacy-technician led clinic initiation (Month 2/3), Pre intervention data collated, educational sessions implemented, and monthly review. Field notes
4	Monitoring and control (Month 2-12)	Collation of ongoing data. Note any emergent patterns, monitor project progress, ensure adherence to research aims, and address any unidentified issues. Field notes, ongoing review (RTA)
5	Project closure and Reflections (Month 12)	Collate remaining post-intervention data – technical phase, merge data, review and analyse project deliverables, Evaluation and learning – learning phase, debrief and thank project team. Complete project report, evaluation and share with stakeholders.

Project Challenges

The main barrier to entry will be the acceptance of the study by the wider practice team and partner organisations. This will be addressed through transparent and open communication and the building of trust with relevant service partners. Additionally, mixed methods of research can be complex and time-consuming, particularly in sequential design studies however, this study will involve a convergent and iterative design with allocated project time to fully evaluate any emergent contradictions in the data (Creswell, 2014). It will also be important to ensure that the research team has the appropriate skill set to undertake a mixed method approach, so that additional personnel are not required (Halcomb, 2018).

Findings

Analysis of Opioid Prescribing Culture in Primary Care

The project focused on two main drugs, gabapentin and tramadol. Analysis included collation of CASPA data which could demonstrate any impact on prescribing costs and number of items prescribed in the pilot practice. The Gabapentin graph shows a significant upward trend prior to the pain service implementation in March 2023. Evaluation of the data during the pilot revealed a 61.5% reduction in the prescribing costs of this drug in the host practice during the project phase March 2023 – March 2024. The second graph demonstrates the impact of the project on the number of Tramadol items prescribed by the host practice. Here we have included both pre and post pilot data to incorporate preliminary work in this area and extension work to June 2024. The practice was brought in line with the national prescribing trend and now sits 8% lower than the Wales average. This is a reduction in the number of items prescribed by the practice of 32.8% (126 items less per quarter year).

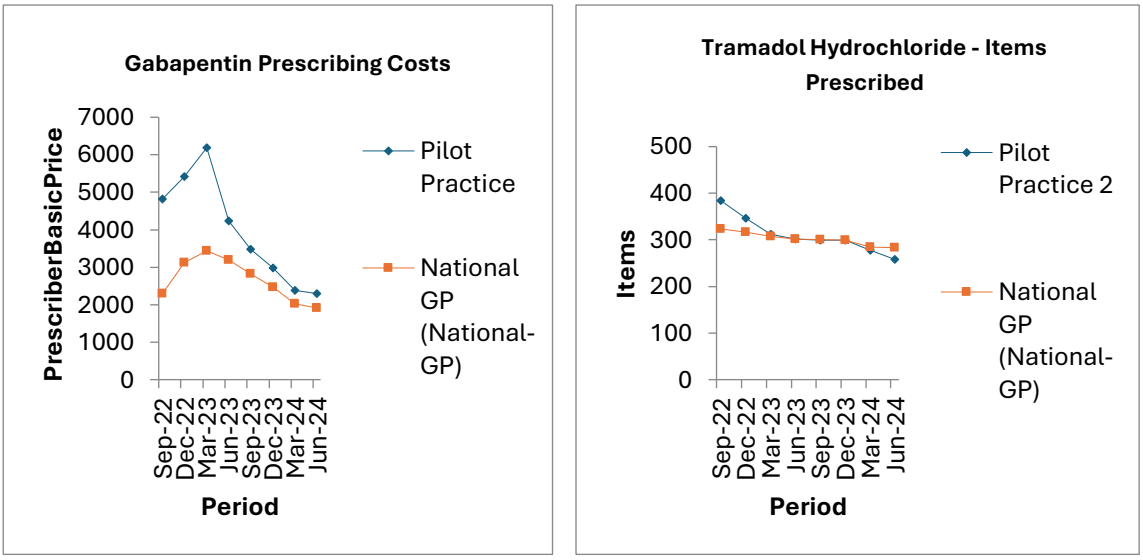


Figure 5. Drug prescribing data extracted from National Prescribing Indicators/ CASPA 2023/24

From the drug pricing, a projected annual saving of £9,382 on tramadol and gabapentin medications can be made in practice from the above collated data. On the 31st of March 2024, there were 374 active general practices in Wales (gov.wales, 2024). 50% of these savings in an average practice would equate to 1.7 million pounds across Wales.

In addition to the statistical data analysis, field notes were taken. This included journal notes during educational sessions and practice discussions. These were reviewed to highlight any changes implemented by the practice that could demonstrate a culture shift in prescribing and future patient management. Practice-based decisions resulting from the increased education included:

- A practice agreement that Tramadol is no longer prescribed as a first-choice medication
- Review of newly started patients on any opioid medication

- Agreement to implement opioid contracts with patients - an agreement between the GP and patient regarding the use of opioid medication and a commitment to engaging with support
- Letter sent to newly registered patients with Tramadol on their medication lists regarding the practice prescribing stance and review of their medication
- Practice referral to the pain management practitioner for review and/or to manage expectations prior to onward referral to secondary care
- Protocol now used by all prescribers regarding a review of kidney function for Gabapentin and Pregabalin as part of the patient consultation

Impact on Quality and Function of Life for Patients with Persistent Pain

Anonymous feedback was collated via online Microsoft teams surveys to capture the function and quality of life, pre- and post-interventions. 50 randomised and anonymised invitations were sent from the service post intervention. 34 complete responses were reviewed, with 100% of individuals reporting improvements in their function and quality of life across all areas.

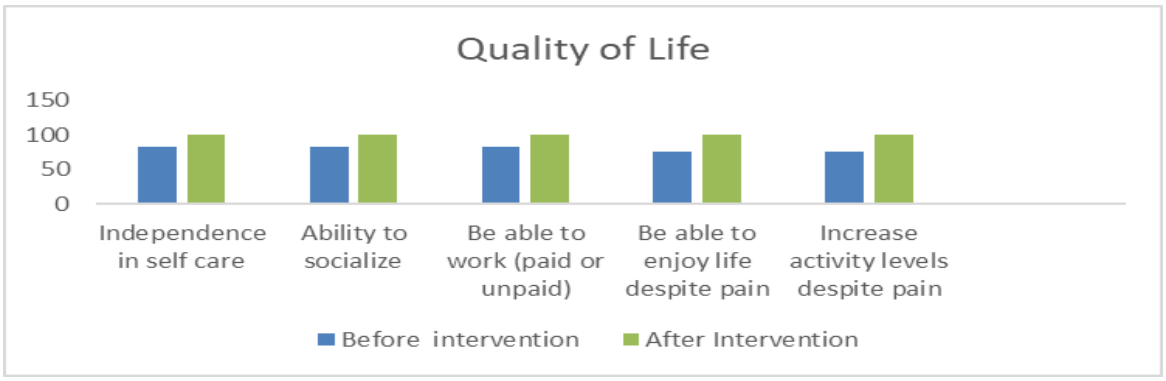


Figure 6. QOL Questionnaire 2023-2024

98% of patients who responded to a satisfaction survey stated they were very satisfied with the service, with 2% somewhat satisfied. Anonymised user stories collated from the service review regarding experiences of the service identified positive themes and included:

' Having access to this service has made a huge difference to my life', Mar 24.

'I have been in and out of the NHS with pain for more than 15 years and only now do I understand and I can see light at the end of the tunnel', Apr 24.

'I never felt as if anyone had time for me until now. I have learnt so much about self-management', Jul 24.

'I have realised that my pain may never go but I can learn to live with it', Jun 24

'My life was changed enormously by this approach to the treatment of pain. Whereas the doctors before had considered only the possibility of surgery or physical treatment, I have been introduced to a completely different approach based on the latest developments in pain management', Nov 23.

Clinician Feedback

Feedback from clinicians also identified positive themes and included:

'The service has been of huge benefit to service users and has educated us as clinicians about prescribing and management', Jun 24

'We simply cannot increase capacity to give users the time they need. This service does that', Aug 24.

'A sensible approach to pain management, reduced prescribing and reduced workload for GPs', Aug 24.

'Every practice needs access to this expertise; my patients have really benefitted', March 24.

'If we are ever going to get a grip of persistent pain, then a service like this will be invaluable', April 24.

Reducing Waste of Resources and Value-Based Healthcare

To meet the requirements of the national pain guidance, a full holistic pain review required an average of 30 minutes in the service, with an average of 15-minutes for follow-up appointments. Clinical system data has identified that each patient requiring ongoing management had an average of 5 contacts with the service across a 12 month period. This equates to a minimum of 90 minutes (1.5 hours) per patient (including initial review).

A recent study estimates the average cost of a GP appointment to be £56.00 (Kingsfund.org.uk, 2024) We have used this calculation in the GP practice and the 115 patients under the service within 1 year (12/12).

- Based on 115 patients, the cost is £57,960 in clinician time, if a GP were to provide the level of intervention required to meet current guidance and ongoing support needs
- The avoidance of GP appointments equates to a saving of 1.5 hours per patient in GP time, or nine, 10-minute GP appointments per patient
- From the 115 patients under the service, this represents a potential saving of up to 1,035 primary care GP contacts across a period of 12 months (practice size 12,444)
- We were also keen to establish the potential for cost-avoidance to other services if there was no access available for patients in pain at a primary care level. Service users were asked which organisation they would contact if the pain service was not available. 66% of patients said they would have contacted their GP, with 25% reporting they would consider A&E if they had poorly controlled pain and could not access support.

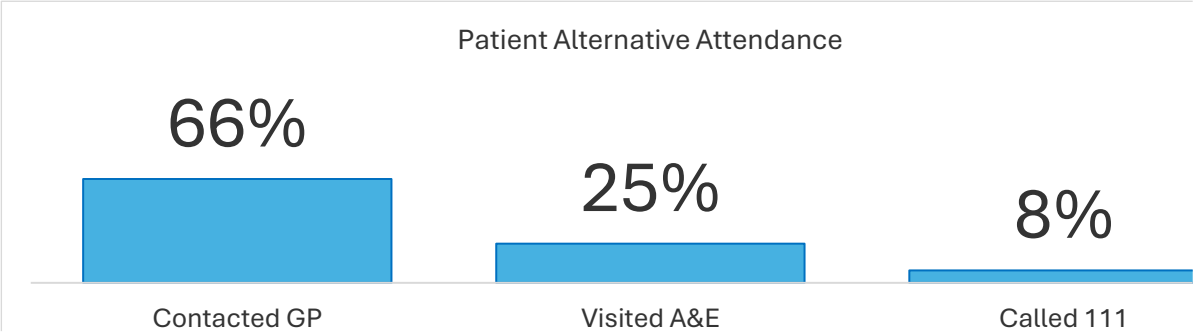


Figure 7. Patient Alt Attendance Feedback 2024

The cost of an Accident and Emergency (A&E) attendance is variable depending on the pathway of a patient, however, for 2024/25 the reported cost of attendance at an urgent-care centre receiving the lowest level of investigation and treatment is £91.00 per patient (Kingsfund.org.uk, 2024).

Cost savings could also be achieved by reducing unnecessary referrals, investigations and procedures. During review for example, one spinal injection referral was cancelled due to the results obtained within the service. The study would benefit from further research in this area.

Identifying Educational Gaps for Patients and Clinicians

During the project it became apparent that in addition to reports of limited capacity at a primary care level, there is a significant, unmet educational need across the pilot population regarding the management and treatment of persistent pain. This includes the patient population and workforce across both primary, secondary and community services. Examples of where this has been highlighted in the notes include:

Patient Themes

- A lack of readily available information for the patients about opioids, risks and long-term use
- Little to no understanding of ‘persistent pain’ despite years of interactions with services
- High expectation of GPs or other services having the ability to ‘fix’ their pain

- Inconsistent knowledge on the role of medication. Few patients understand the role of medication and many patients continue and/or look to increase medication use, despite having little to no relief of symptoms
- Lack of support services at a primary care level if a patient is unsuitable for, or after discharge from secondary care services. Discharged patients often remain well for a time and may deteriorate due to life changes/stresses etc. At this point, the only option is to re-engage with their GP, often reigniting the cycle of medication uses and associated risks.

Professional Themes

- A lack of pain management expertise and knowledge that can manage patient expectations, particularly around referrals and the potential outcomes that can be achieved by secondary care services. For example, patients may believe that onward referrals to other services, will 'fix' their pain, rather than help them manage it and maximise their function
- Inconsistent knowledge across the primary care workforce
- Differential prescribing patterns
- Pressure to prescribe a 10-minute appointment
- Referrals for medical interventions such as injections, despite a history of little response
- Feedback from clinicians regarding a lack of options of 'where to go next' with the patient when all options have been exhausted
- Difficulties with continuity of care due to the constraints of and lack of primary care appointments
- Requests from other services for information and guidance, particularly in relation to deprescribing
- Lack of accessible easy-read educational materials available for clinicians

Clinicians were asked to consider their knowledge prior to and after the implementation of the primary care pain service. 94% of clinicians in the practice reported that their knowledge of pain management was improved and they had felt benefit to their clinical practice. In addition, 75% of patients agreed that their knowledge of pain and management was improved after their experience with the pain service in primary care.

Improved Partnership Approach

A number of improved outcomes were noted from the cohesive working relationship between the MSc Pain Practitioner, General Practitioner and associated services. This approach resulted in several positive improvements to care delivery and the patient journey. These included:

- The development of a primary care pathway for patients with chronic/persistent pain
- Regular meetings with secondary and tertiary care services to support with deprescribing and community support of discharged patients
- Opportunity to develop the service in-line with the health board's Living Well Service
- GP support to implement prescribing changes and educational materials for practice staff
- A newly developed green prescribing programme specifically targeted at the patient cohort, linking the service, primary care and community care into a partnership offering for patients

Analysis and Discussion

This paper encompassed the question, *'Does a focused primary care pain service have a positive impact on the management and associated outcomes of patients with chronic/persistent pain?'*. The report contributes to the current literature by providing empirical and anecdotal evidence of the positive impact of a primary care-based management programme for persistent pain. It also adds valuable insight to the evidence-base for appropriate intervention and a previous lack of transferable primary care frameworks, adding to the knowledge gaps on the management of chronic/persistent pain within a primary care setting (Smith et al., 2014;AWMSG, 2022; Shivji et al., 2022). Previous research has highlighted the need for a significant shift in primary care management under the current model and the outcomes in this paper demonstrate the impact that can be achieved through investment in the primary care setting. Our evidence also supports the benefits of continuity of care, improved partnership working and supports a paradigm shift

in the pharmacological/biomedical treatment of patients to a more holistic and biopsychosocial approach to care through the availability of pain management expertise in a patient-facing environment (Varrassi et al., 2010; Shivji et al., 2022).

The outcomes demonstrate that a general practice-based approach to the management of pain had a significant impact on the prescribing of opioid medications, evidencing a 61.5% reduction in Gabapentin expenditure and a 32.8% reduction in the number of Tramadol items prescribed by the practice. This is in contrast to the overall prescribing rate rises reported in Wales of 30% in 10 years and demonstrates potential for significant prescribing savings across Wales, if management can be optimised in primary care (AWTCC, 2022). In addition, the provision of educational tools suited pressurized primary care establishments and access to practice-based expertise for patients and primary care clinicians resulted in a significant paradigm shift within the host practice. This resulted in the introduction of opioid contracts, primary care management plans and changes to prescribing. Prior to the implementation, clinicians reported difficulties with management due to educational gaps, inconsistent knowledge, limited capacity and difficulties with continuity of care under the current demands, all themes in keeping within the current literature (Johnson, Collett and Castro-Lopes, 2013; Briggs, Walker and Carr, 2014). These findings were mirrored by patient themes, reporting a lack of information regarding opioid use and misuse, little to no understanding of their persistent pain and a lack of available support services (Gordon et al., 2017).

Whan analysing the impact on the function and quality of life for patients, 100% of patients reported improvements across 5 health and wellbeing areas. Although the number of completed questionnaires is small and would benefit more longitudinal research, it highlights a potential to improve wellbeing and a shift in increased awareness and improved self-management of patients within primary care for those who have responded. This has patients access to early intervention, education and advice, all details previously highlighted as lacking (Gordon et al., 2017).

The burdens on primary care, including limited capacity, workforce issues and rising demand are well documented in the literature and this was echoed by the practice and clinicians throughout the study in a large and busy practice (Abdul Hadi et al., 2017; BMA, 2023). Due to this burden, the approach was to provide additional capacity for this cohort of patients via an MDT role being created for an MSc pain practitioner, which facilitated the creation of the service and the improvements to patient care in a collaborative effort. When we look at reducing waste of resources and increasing capacity, the study outlines the potential saving of up to 9 GP appointments per patient if a primary care practitioner for pain is available. This is a total of 1,035 GP appointments in a large practice across a 12-month period that could be utilised for other medical appointments. Additionally, 25% of patients said they would consider attending A&E for poorly controlled pain prior to the introduction of the service, highlighting the potential cost-avoidance for secondary care services.

This paper has reported on the outcomes of a primary care-based pain management service, providing evidence.

- Reductions in prescribing and associated costs
- Increased capacity for complex patients
- Increased capacity for other medical issues
- Improvements in patient care and their quality of life
- Improved access to education for patients and clinicians
- Potential cost-avoidance for secondary and tertiary care attendances

This approach has improved pain management in a primary care setting, has significantly improved the quality of life for this cohort of patients in the practice and has resulted in a paradigm shift in the culture of prescribing and managing persistent pain.

Conclusion

The introduction of a primary care service for patients with chronic/persistent pain has demonstrated a potential untapped opportunity to meet the growing need for the improved management of patients with chronic/persistent pain, posing a foundational concept for the development of a primary care framework and adds to the limited knowledge of pain management in general practice in Wales. The provision and

access of pain management expertise at a primary care level has improved opioid prescribing culture, reduced reliance on secondary care services and equipped individuals with knowledge to co-produce care plans and improve their health and wellbeing. In addition, clinicians are better prepared to manage these patients, reduce the increasing reliance of opioid prescribing and increase capacity in primary care.

These outcomes have implications for professionals and professional bodies within the field of pain management, providing insight into the opportunities for service delivery improvements in primary care. It also creates opportunities for the development of a new MDT role and could address the educational requirements within the primary care model. This poses an interesting question for employers around opportunities for the development of staff and potential for dual roles within the workforce. It also implies health boards in Wales, who are held responsible for compliance in improving the management of pain.

The study also has implications for the Welsh government by evidencing opportunities to increase capacity in primary care, reduce prescribing costs and meet the current guidance and policy recommendations for the management of chronic/persistent pain.

Limitations and Directions for Future Research

This study was a case-study across one general practice in Wales; therefore, results cannot be generalised across a broader population, however, it enabled a flexible and detailed analysis of the impact of a primary-care led service that was implemented in Wales with a Pharmacy Technician and forms a basis for further study design in the future. It has also been demonstrated that a guided intervention can have significant results on the management of patients presenting to their primary care practitioners. A framework for the management of patients with chronic/persistent pain in primary care is required to improve management and address the poor outcomes associated with opioid reliance and the poorer quality of life for people living with this condition as well as potential avoidance of disease deterioration that requires secondary/tertiary input. This study adds to the limited primary care literature in the UK, providing a basis for future research and a new insight into the management of pain in the primary care setting in Wales.

In order to increase validity of the study, methodological and investigator triangulation was used to mitigate research bias, generate comprehensive data and enhance understanding of the outcomes (Creswell, 2021). A mixed methodology can be time-consuming and can lead to conflicting findings; however, this was considered in the research design, and the findings were enriched by the mixed methods approach to data collection, allowing for comparisons of the statistical data, feedback and field note observations.

The study incorporated the project implementation and service delivery over a 12-month period and would benefit from a longitudinal study of patients undergoing treatment and any potential changes to ongoing prescribing habits within the general practice. It would also benefit from further research in primary care establishments and other settings across the UK. There is also scope for a comparative study of the Wales and Nordic models of holistic pain management and the associated outcomes (Europeanpainfederation.eu, 2023).

Closing remarks

Pain management is a key activity with heavy burdens on individuals and their quality of life, as well as the efficiency of primary care services. The purpose of this study was to investigate if a focused primary care service can improve the management of pain and has answered the question positively by evidencing the improved outcomes associated with the service that was provided in a general practice setting. Ultimately, providing access to pain management expertise at a primary care level could be an essential component in reducing the poor outcomes associated with patients and would allow for a new framework that could be utilised to greatly reduce the chronic disease burden of persistent pain for patients, their families and society as a whole.

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Appendix A - Gatekeeper Consent Form

Title of Project: Implementing Evidence-Based Practices for Persistent Pain in Primary Care- A Mixed Methods Study

Name of Researcher and School/Faculty: Sian Jones MBA, Red Kite Health Solutions CIC, Faculty of Humanities and Social Science, Swansea University

What is the reason for this letter?

My name is Sian Jones, and I am the business development manager for Red Kite Health Solutions CIC based in South Powys. I am currently undertaking a PGCert in Advanced Management (Innovation) at Swansea University. I would like to invite you to assist me in conducting a service-review study of the pain-management service currently operating in your practice from March 23-24. Before you decide, you need to understand why the study is being done and what it would involve for you and for the participants. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information.

What is the purpose of the study/rationale for the project?

Chronic/persistent pain is a major health issue, affecting between one-third and one-half of the UK population and also accounts for 22% of attendances in primary care. With an estimated 70% of patients with chronic/persistent pain managed in primary care settings, the provision of adequate resource in general practice has the potential to revolutionise the management of these patients. However, the ability to meet the rising demands and national guidance of this condition is hindered by several constraints within the general practice model, including capacity issues, inconsistent knowledge and a lack of primary care training. With the BMA reporting that 80% of GPs are concerned they are unable to provide safe, high-quality care due to rising demand, workload pressures and a diminishing workforce, pressure to provide an immediate fix to the problem of chronic pain has seen opioid prescribing in Wales rise by 30% in the 10 years from 2008–2009 to 2018–2019.

This study aims to validate the implementation of your primary care-led, pain management service.

The study will have the following objectives:

1. Examine the impact on the function and quality of life for patients.
2. Demonstrate impact on opioid/gabapentoid prescribing culture in primary care.
3. Analyse effects on reducing waste of resources through value-based healthcare.
4. Determine knowledge gaps in the primary care workforce and assess the impact of population education

What are we asking you to do?

In order to evaluate the impact of a primary care-led service, we are asking for GP supervision and researcher access to non-identifiable data held on your EMIS Web Clinical systems and practice drives to include;

9. > Anonymised practice prescribing data
10. > Anonymised service outcomes

11. >Anonymised clinician feedback (prior voluntary and informed consent)

12. >Anonymised patient feedback (prior voluntary and informed consent)

13.

The data will be used to complete a report that will be published within the university and wider.

Why do we need access to your facilities/staff?

To our knowledge there are limited tailored pain management services in primary care and little is known about the reality of providing specialist care at an entry-level to the NHS. Evaluating the impact of your implementation on outcomes and experiences will help to inform key stakeholders and policymakers to the benefits and challenges of introducing effective pain management programmes in general practice and the barriers to providing effective care within the current primary care model. It is hoped this will inform decision makers for the planning of primary care services in the future. This study also relates to the expertise in the school of management department in Swansea University, by playing a key role in examining the transformation of innovative health and care systems in the UK In addition there is an opportunity to publish the management report both within Swansea University and wider, as well as my own personal growth and expertise. This information is scarcely held information on pain management in primary care in Wales and will be a topic of interest for my PGCert in Advanced Management (Applied Innovation) at Swansea University.

If you are willing to assist in the study what happens next?

If you are happy to participate, arrangements will be made to ensure documentation is in place. This may include an NHS REC review. Data sharing agreements, collation processes, confidentiality and any required risk assessments in line with GDPR and informed by the ICO will be shared and agreed prior to the start date, including meeting with the lead GP and researchers to formalise the process.

How will we use the Information?

We will utilise the anonymised information to evaluate the impact of the service on your outcomes against the nationally known outcomes for patients with pain management, presenting data outcomes as anonymised entries within a written report. This will inform you of the impact and any recommendations for the management of pain services in primary care**.**

Will the name of my organisation taking part in the study be kept confidential?'

Confidentiality will be paramount at all times. The organisation names will be confidential, and identifiers removed during the analysis and production of any written reports both during and after the study. Any reference to a particular practice will be in numerical terms.

What will taking part involve? What should I do now?

- Data collection and study will involve the research team accessing the practice and discussion with the nominated lead GP for queries etc. The completed report will be circulated to the organisational business owners prior to submission for approval. There should be no impact on staff during the period of study
- Sign and return the Gatekeeper Consent Form provided.

Should you have any comments or questions regarding this research, you may contact the researcher: Sian Jones sian.jones10@wales.nhs.uk

This study is subject to ethical approval from the Faculty of Humanity and Social Science Research Ethics & Governance Subcommittee.

Contact Details of Researcher *Sian Jones sian.jones10@wales.nhs.uk*

Contact Details of Academic Supervisor *Prof Nick Rich N.L.Rich@swansea.ac.uk*

If you have any concerns regarding your involvement in this research, please discuss these with the researcher in the first instance. If you wish to make a complaint, please contact researchintegrity@swansea.ac.uk and your communication will be re-directed to an independent person as appropriate.

GATEKEEPER CONSENT FORM

This consent form gives approval for a service review of the pain management clinic running in our GP practice in line with the aforementioned requirements to access to the practice held data included in the information sheet between March 2023-March 2024

Please tick to confirm your understanding of the study and that you are happy for your organisation to take part and your facilities to be used to host parts of the project.

Organisation:

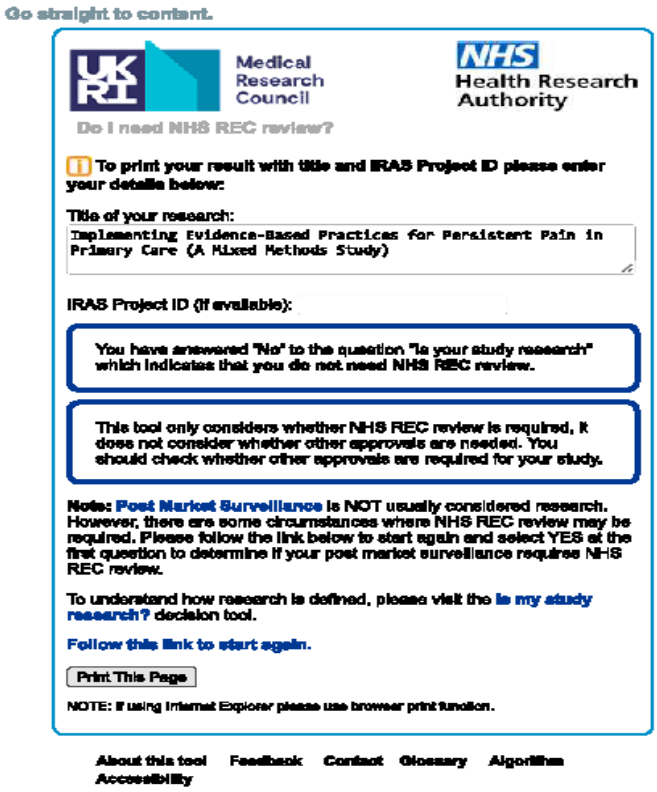
Lead Signatory:

1. I confirm that I have read and understand the information provided for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that the participation of our organisation and students/members in the research is voluntary and that they are free to withdraw at any time, without giving a reason and that this will not affect legal rights. ☐
3. I understand that any personal information collected during the study will be anonymised and remain confidential. ☐
4. I agree for our organisation and students/members to take part in the above study. ☐
5. I agree to conform to the data protection act ☐

Name of Gatekeeper: Date: Signature:

Name of Researcher: Date: Signature:

Appendix B - Research Ethics Committee Review



Go straight to content.

Medical Research Council

NHS Health Research Authority

Do I need NHS REC review?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

Implementing Evidence-Based Practices for Persistent Pain in Primary Care (A Mixed Methods Study)

IRAS Project ID (if available):

You have answered "No" to the question "Is your study research" which indicates that you do not need NHS REC review.

This tool only considers whether NHS REC review is required, it does not consider whether other approvals are needed. You should check whether other approvals are required for your study.

Note: Post Market Surveillance is NOT usually considered research. However, there are some circumstances where NHS REC review may be required. Please follow the link below to start again and select YES at the first question to determine if your post market surveillance requires NHS REC review.

To understand how research is defined, please visit the Is my study research? decision tool.

Follow this link to start again.

Print This Page

NOTE: If using Internet Explorer please use browser print function.

About this tool Feedback Contact Glossary Algorithm Accessibility

Appendix C - Swansea University Ethics Committee

Swansea University
Prifysgol Abertawe

Approval Date: 17/04/2024

Research Ethics Approval Number: 1 2024 9554 8528

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	Implementing Evidence-Based Practices for Persistent Pain in Primary Care: A Mixed Methods Study
Applicant name	SIÂN JONES
Submitted by	SIÂN JONES /

Full application form link https://swansea.forms.ethicalreviewmanager.com/Project/Index/11594

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 17/04/2024

Rhif Cymeradwyo Moeseg Ymchwil:

Diolch am gwblhau cais moeseg ymchwil am gymeradwyaeth foesegol ac am gyflwyno'r ddogfennaeth ofynnol drwy'r platfform ar-lein.

Teitl y Prosiect	Implementing Evidence-Based Practices for Persistent Pain in Primary Care: A Mixed Methods Study
Enwr Ymgeisydd	SIÂN JONES
Cyflwynwyd gan	SIÂN JONES /

Dolen ir ffurflen gais lawn https://swansea.forms.ethicalreviewmanager.com/Project/Index/11594

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Appendix D - Quality of Life Questionnaire and Consent

On a scale of 1-5, please rate the impact your pain has on the following areas (1 being low impact and 5 being high impact)

1. Independence in self-care (dressing, washing, household duties etc.) 1 2 3 4 5
2. Ability to Socialise 1 2 3 4 5
3. Be able to work 1 2 3 4 5
4. Enjoy life despite your pain 1 2 3 4 5
5. Increase activity levels despite pain 1 2 3 4 5

We are asking service users to complete this online form regarding their experience of the pain management service. This information will be collated anonymously to help us review and improve your experience. The results will also be collated as part of a post-Graduate certificate at Swansea University from the service provider Red Kite, with the aim of publishing the results of the service. We will not collect any patient identifiable data and your answers will remain anonymous. If you are happy for your answers to be used for the purpose of the study and inclusion in journal papers, please tick the box below.

☐

Appendix E - Clinician Feedback Questions and Consent

Pre- education.

On a scale of 1-5, please rate your current level of pain management knowledge prior to the service

1 2 3 4 5

Post education

On a scale of 1-5, please rate your level of pain management knowledge after your experience with the pain service

1 2 3 4 5

We are asking service users to complete this online form regarding their experience of the pain management service. This information will be collated anonymously to help us review and improve your experience. The results will also be collated as part of a post-Graduate certificate at Swansea University from the service provider Red Kite, with the aim of publishing the results of the service. We will not collect any patient identifiable data and your answers will remain anonymous. If you are happy for your answers to be used for the purpose of the study and inclusion in journal papers, please tick the box below.



Appendix F - Patient Feedback and Consent

You have recently been seen by the pain management service in your local GP surgery. Overall, how satisfied are you with the service you have received. This form required anonymous feedback, please ensure if you are commenting in the comment section, do not include your name or any identifiable data)

Very satisfied

Somewhat Satisfied

Not satisfied

Additional Comments -

We are asking service users to complete this online form regarding their experience of the pain management service. This information will be collated anonymously to help us review and improve your experience. The results will also be collated as part of a post-Graduate certificate at Swansea University from the service provider Red Kite, with the aim of publishing the results of the service. We will not collect any patient identifiable data and your answers will remain anonymous. If you are happy for your answers to be used for the purpose of the study and inclusion in journal papers, please tick the box below.



Acknowledgements

Thanks are given to the research team for their assistance with data collection and review, the GP collaborative team, patient population and GP practice staff for their contribution to the research and their willingness to provide the facilities for this project. In addition, thanks go to the teaching Health Board for facilitating and supporting the project. Thanks, are also given to the School of Management at Swansea University, Professor Roderick Thomas and my supervisor Professor Nicholas Rich who's support, care and guidance have enriched the rigour of the study.

A retrospective baseline of transition care in cystic fibrosis benchmarked against NICE (2016) quality standards

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Abstract:

Failure to deliver effective transitional care between paediatric and adult services can have significant implications, ultimately leading to increased morbidity and mortality. Due to advances in cystic fibrosis (CF) care, it is estimated there will be a 75% increase in patients transitioning between paediatric and adult care in Europe between 2015 – 2025. This paper sought to establish a baseline of the quality of transitional care in CF in Wales by benchmarking against NICE (2016) national guidelines. This was achieved by undertaking a retrospective clinical audit, using a medical records review methodology, to ascertain the extent to which the care of patients who were transferred to adult care between January and December 2022 met the NICE quality standards using the NICE (2016) audit tool. The results indicate that, given service constraints, the performance of the service was overall positive in meeting many of the standards. However, there are also areas which indicate a need for service improvement initiatives. The author presents the baseline data of the service, as well as laying out an action plan for driving service improvement prior to a re-audit cycle.

Keywords: cystic fibrosis, transition, paediatric, adolescence.

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Introduction

Cystic fibrosis (CF) is a multi-system genetic, life-limiting condition that is caused by a defective CF transmembrane conductance regulator (CFTR) gene. CF is typically diagnosed shortly following birth in counties that operate a new-born screening programme. There is an approximate incidence of 1 in 2,500 new-born babies (CF Trust, 2019) and although can affects people from a range of racial and ethnic backgrounds (Taylor-Cousar, 2020), predominantly effects people from European lineage (Cutting, 2015).

CF-causing mutations in the CFTR gene lead to a build-up of mucous in a range of organs, most notably the lungs and airways, gut, pancreas and reproductive system (Zaher et al., 2021). The largest effect is in the lungs, where excess mucous builds up and is hard to clear, and this creates an environment that facilitates micro-bacterial and fungal growth (Petrocheilou et al., 2022). Subsequently, patients have recurrent cycles of infection, inflammation, and often scaring of the lungs referred to as bronchiectasis. Over time, this can lead to progressive lung damage, reduced lung function and reduced quality of life (Fraser-Pitt & O'Neil, 2015).

Historically, CF has been associated with early mortality and has been referred to as a life limiting disease (Fraser-Pitt & O'Neil, 2015), and a high treatment burden (Sawicki et al., 2009). Management of CF requires a lot from a patient and involves taking daily tablets (sometimes over 50 a day), nebulised medications and airway clearance techniques. Combined, these treatments can take up to several hours/day for some patients (Sawicki et al., 2009). Furthermore, patients frequently have to undergo medical procedures as part of their routine care that can be painful and distressing and have regular inpatient admissions to hospital for intravenous antibiotics (Quittner et al., 2014).

The role of transitional care

Given the way that health services are structured, it is an inevitability that paediatric patients living with cystic fibrosis in Wales will have to have their care transferred to an adult service by the time they turn 18 years of age. There are lots of data that indicate transfer to adult care is associated with progressive deterioration in health status, loss of follow-up, reduced treatment adherence, increased hospital admissions, and more broadly increased morbidity and mortality (Brydon et al., 2003; Mazur et al., 2017; Sharma et al., 2014).

There is a stage of care that encompasses the transfer of care from paediatric to adult health services, which targets the adolescent and young adult stages of development, referred to as transitional care. A widely accepted definition both in the literature and health services is "'the purposeful, planned process that addresses the medical, psychosocial and educational/vocational needs of adolescents and young adults with chronic physical and medical conditions as they move from child-centred to adult-oriented health care systems" (Blum et al., 1993; Rosen et al., 2003).

During early childhood, caregivers take responsibility for ensuring that this often-arduous treatment regime is managed. As the child develops, there is a gradual shift of responsibility from the caregiver to the child. Transitional care refers to a gradual process, beginning from the age of 13 years, that aims to empower young people and ensure that they were equipped with the relevant knowledge and skills to manage their health condition (Nagra, McGinnity, Davis & Salmon, 2015).

Owing to significant developments in the understanding and treatment of cystic fibrosis over the past five decades, there is a growing need to invest in developing services to facilitate a good quality transfer of care to adult services. It is reported that due to these advances, there could be up to a 75% increase in patients transitioning between paediatric and adult care in CF, across Europe, between 2015 and 2025 (Burgel et al., 2015).

It has been demonstrated that good quality transitional care can mitigate the risks associated with a bad transfer of care noted previously (Dugueperoux et al., 2008; Harden et al., 2012; Prestidge et al., 2012) as well as improve patient experience (Shaw et al., 2014). Developing a good quality transitional care between paediatric and adult services is a current priority for Welsh Government, in-line with the recent publication of their 'Transition and Handover Guidance' (2022) which closely aligns to the NICE (2016) guidelines on transitional care. The paediatric and adult CF services in Wales are aiming to develop and improve the quality of transition for people living with CF in Wales.

Service structure

The South Wales Paediatric Cystic Fibrosis Centre is a specialist, regional service hosted within Cardiff and Vale University Health Board. The centre provides a service for young people living with CF across south Wales and Hereford, and services approximately 180 patients. The service operates to meet the CF Standards of Care (2024). Patients living in the region of Cardiff and the Vale receive their full care within the centre, i.e. all of their clinical care happens in Cardiff. For patients living outside of the region of Cardiff and the Vale, they are considered shared care patients. They will continue to have a lead medical consultant from Cardiff but receive the majority of their care local to home via their local district general hospital respiratory consultant. The proportions of full/half care are approximately 50:50.

The spread of shared care clinics is represented in Figure 1.

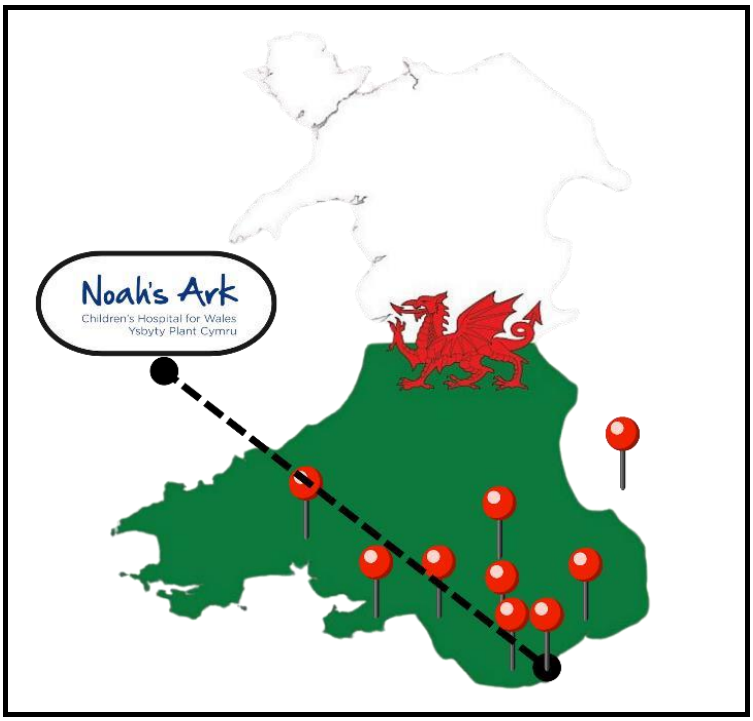


Figure 1. Geographical representation of shared care clinic locations across south Wales and Hereford. The full care centre is represented by the Noah's Ark Children's Hospital logo.

The significance of considering these service contexts is due to the varying nature of transitional care across Wales. For full care patients, there is a clear transitional care process that embeds various service initiatives. An important initiative is regarding the adolescent clinic protocol. The purpose of this is to deliver a developmentally appropriate service for young people with CF aged 13 years and over, in-line with NICE (2016) guidelines. The function of this clinic is to facilitate the development of greater independence for young people, encouraging them to take more of a lead in clinic consultations, questions being directed towards the young people and them being supported to make decisions about their care, appointment and clinic letters being addressed to the young person (with a copy to their parent/caregiver), and to more easily embed frameworks into routine clinical delivery that are aimed at supporting preparation for transition. The most common framework that is used within this clinic is the 'Ready Steady Go' (Nagra et al., 2015). This is a way of standardising delivery to ensure that every young person is engaged in conversations about transition from a young age, and most importantly provides a tool for which to collaborate with young people and support them to take a lead in their care.

The challenge is that with shared care clinics across Wales, the service context is largely different. The clinics care for a significantly smaller number of patients and subsequently have few patients in the adolescent age bracket and also smaller clinical resource. It is therefore harder to establish standardised practices for adolescents that are easy to maintain.

The All-Wales Adult CF Centre, where paediatric patients' care is eventually transferred, operates differently. The adult centre is hosted within CAVUHB but hosts all of the care here for patients all across south Wales and Hereford, which is different to the shared care model in paediatric CF care in Wales. This is an important distinction because it brings a layer of complexity to the transition process from paediatric to adult care.

An important contextual factor when considering the quality of transitional care is the staffing resource of the service. The CF Trust publish national standards of care for which CF services are audited against and required to meet. These standards also set out the expected staffing ratio relative to the number of patients cared for within the service. Table 1 below sets out the recommended staffing within the CF Trust (2024) standards of care, relative to the staffing ratios of the service at the time the audit was undertaken.

Table 1. Whole time equivilant (WTE) of multi-disciplinary staffing recommended by the CF Trust (2024) standards of care relative to satffing resource at the time of audit.

	Recommended WTE based on 180 patients	WTE in the service at time of audit
Overall WTE	16.65	7.7
Medical staff	2.7	3
Nursing	3.15	1.4
Physiotherapy	3.6	.8
Dietician	1.8	1
Psychology	1.35	.5
Sociak work	1.35	0
Pharmacy	1.35	1

Project Aims

To undertake a clinical audit in order to benchmark the transition process in CF care against NICE (2016) guidance, and to develop a subsequent action plan to further develop the process of transition for people living with CF in Wales. This was completed following the Plan Do Study Act (PDSA) model for quality improvement (Deming, 2018; NHS England, 2019). This is a model that follows a systematic process to ensuring that clinical audit meaningfully leads to quality improvement and service change. Details of the PDSA model can be found below in Figure 2.

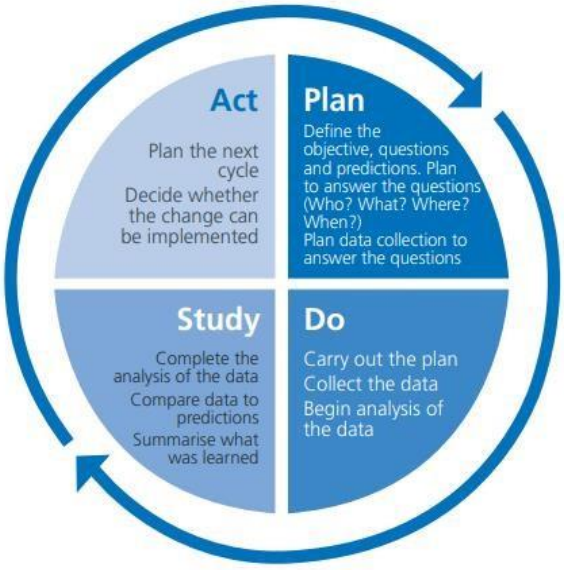


Figure 2. Details of the Plan, Do, Study, Act service improvement model.

Methodology

Study Design

A medical file review methodology was adopted in order to retrospectively audit the patient journey throughout the transitional care period (aged 13-18 years) for a defined sample of patients. In order to establish the audit parameters, the author chaired a multi-disciplinary task and finish group with clinicians representing both paediatric and adult CF services in Wales (including professionals from nursing, medics, youth worker, psychology, physiotherapy, pharmacy, dietetics). It was agreed through the task and finish group that the audit period would cover January to December 2022. This rationale for this was that: (a) it covers the period that highly effective modulator therapies were introduced for patients with CF; and (b) it was the first clear year after the COVID-19 pandemic whereby there were no restrictions for patients with CF (who were previously classed as 'highly vulnerable').

Research governance and ethics

Routine clinical audit does not typically require ethical approval via the NHS Research Ethics Committee's and instead is registered internally within the health board under the umbrella of clinical audit. The Health Research Authority (HRA) decision tool was used to confirm this in this instance.

The project was registered internally with Cardiff and Vale University Health Board as a clinical audit. This required registration of the project on the internal clinical audit system called 'Audit Management and Tracking' (AMaT). Authorisation to use the data for submission for this project was granted by the head of department (see Appendix A).

For completeness given this project is being submitted as an academic piece of work, the study also gained ethical approval via Swansea University (Appendix B).

As per standard practice, health services undertake routine clinical audit to ensure that practice is of sufficient quality and that governance standards are met. In most circumstances, and as is such for a medical records review, patient/caregiver consent is not required for audit purposes (e.g. HSE, 2023).

Sample

The audit included young people that transferred to adult CF services in Wales in 2022, which included 11 young people. These young people transferred from a range of localities, both full care (Cardiff) and shared care (outside Cardiff): Cardiff (n = 3), Swansea (n = 3), Bridgend (n = 1), Hereford (n = 2), Merthyr (n = 1), and Carmarthen (n = 1). This represents a 27%/73% full care/shared care split, and this is important to understand in the context of the findings because each region have their own transition processes, as described previously. Given the limited number of young people that transfer in any given year (and subsequently included in this audit), the data here are reported overall and do not consider the different regional processes.

Study procedure

NICE (2016) have developed an audit tool in order for services to benchmark their transitional care against the national best practice standards (which are described below in section 2.4.1). The author reviewed the medical records for the sample of patients covering the years in which transitional care should have taken place (13-18 years of age). A random sub-sample were cross-checked with another Clinical Psychology colleague to mitigate any undue bias.

The audit tool enables researchers/clinicians to benchmark the individual patient journey against each standard, and to determine whether the standard is satisfied scoring as 'yes', 'partially' or 'no'. Some items were scored as 'not applicable' in this audit because the standards are generic to ensure they apply across the range of paediatric specialties, and so some were not applicable to CF care. These scores were entered into an Excel spreadsheet ready for analysis. On an individual level, some standards were also scored as not applicable depending on the circumstances of each patient included in the audit.

Details of the relevant NICE (2016) standards audited against are detailed in section 2.4.1 below.

NICE (2016) standards of care

The NICE (2016) guidance is made up of five over-arching recommendations, each of which is broken down into further detailed guidance. Not all of these were deemed to be applicable to this audit by the multi-disciplinary task and finish group, given the audit aims. The recommendations considered to be appropriate by the paediatric and adult CF multi-disciplinary team (MDT) members include:

Quality Standard 1.2: Transition planning

- Planning for transition to adult services should start from age 13
- Should utilise a range of tools to involve the young person in the process, and help them to build independence
- Consider parents/carers and young person expectations of the transition process, and level of involvement needed/required from parents/carers
- Preparation for transition should be developmentally appropriate and needs-led
- Include an annual meeting for all professionals and relevant family/carers involved with young person to develop and inform a documented transition plan
- Have a named worker/practitioner to coordinate transition care and support before and after transfer to adult services
- Support should cover overall wellbeing, including health and wellbeing, education and employment, community inclusion, developing independence, appropriate signposting

Quality Standard 1.3: Support before transfer

- Offering opportunities for young people to meet and familiarise themselves with adult services
- Provision of information about the adult service in advance of the transfer to adult care
- Development of a young person's 'personal folder' that will go with them to adult services
- Contingency planning for if the named worker leaves their position

Quality Standard 1.4: Support after transfer

- Follow up procedures for scenarios where young people do not attend appointments in adult services to facilitate engagement
- Ensure the young person sees the same healthcare practitioners and social worker for at least the first two attended appointments in adult services
- Care delivery is young person focused and developmentally appropriate

Results

There are no published benchmarks for transitional care in CF for which to measure against. Instead, results reflect a point-in-time baseline for CF services in Wales in order to measure their adherence to NICE (2016) quality standards, and to guide quality improvement programmes.

Results are broken down into individual NICE (2016) quality standards. Quantitative results can be found in Table 2 below and represented graphically in Figure 3 below. Some standards were not applicable on an individual patient level, and so some responses are reflected as 'N/A' below.

Table 2. Descriptive statistics concerning each of the relevant NICE (2016) standards and the extent to which they were satisfied. QS: Quality Standard.

		Frequency (%) of responses			
Guideline	**NICE recommendation**	Yes	No	Partially	N/A
	QS1.2 Transition planning	**44.71%** 50%	**21.15%**	**22.12%**	**12.03%**
1.2.1-1.2.4	Timing and review	45.45% 28.57%	12.5% 13.64%	17.5% 25.76%	20% 15.2%
1.2.5-1.2.10	A named worker	40.82% 53.13%	19.05% 32.65%	23.81% 24.49%	28.6% 2.04%
1.2.11-1.2.12	Involving young people	**50%**	31.25%	15.63%	0%

1.2.13-1.2.18	Building independence	33.33%	**44.23%**	**5.77%**	**0%**
		72.73%	63.33%	3.33%	0%
1.2.19-1.2.22	Involving parents and carers	**61.29%**	18.18%	9.09%	0%
			32.26%	**3.23%**	**3.23%**
	QS1.3 Support before transfer				
1.3.1-1.3.4	Support before transfer				
1.3.5-1.3.9	Support from the named worker				
1.4.1-1.4.5	**QS1.4 Support after transfer**				

Transition Planning

Overall, for this standard, work was undertaken in-line for the audit sample in 65% on cases, which in the context of the staffing resource if a positive outcome. It is important to note that this NICE standard was only fully satisfied in 45% of cases, which of course still represents an area of needed improvement.

Timing of transition planning is particularly crucial. Often this is an area that can easily be overlooked by services, particularly because guidance suggests the timing should be from the age of 13 years and patients do not have their care transferred until they are between 16-18 years of age. During the audit period, there were 17% of patients that were not engaged in transition preparation in a timely manner and represents an area of needed improvement.

The guidelines advocate a named worker that follows a patient throughout their healthcare journey, whilst under paediatric care and then through to adult care for continuity. Opportunities to fully satisfy this guideline with current service constraints is a challenge. The CF service employs a youth worker that in part fulfils the role of a 'transition worker', given their remit is supporting patients aged 13-25 years.

However, it is not feasible for one member of staff to satisfy this need for all patients.

As highlighted in section 1, an important role of transitional care is to empower young people and to facilitate the development of independence in relation to their health condition, and also the impact it has on their daily life. This standard was undertaken in approximately 75% of cases, which is a real strength of the service's transitional care. This was largely facilitated by delivering transitional care in a specific adolescent clinic, whereby standard clinic process can be adapted to meet the developmental needs of this cohort. Clinicians encourage parents to be less engaged in the consultations, allowing space for young people to become more involved in this process. In addition, the clinic allows for completion of the Ready Steady Go framework in a collaboration with young people to identify areas of development and growth in terms of their independence.

Another important aspect of the adolescent clinic protocol is having explicit conversations with parents/caregivers alongside young people to determine how much young people wish for their parents to be involved in their care. This includes the necessity to assess and understand whether young people meet criteria for Gillick competence. This process is reflected in the frequency of which parents/caregivers are involved in transition planning to some extent, in approximately 85% of cases.

Support before transfer

Over half of the patients had the needed support and follow-up following transfer. A strength here was very good follow-up when people were unable to attend their clinics, good accessibility to the CF team (e.g. via clinical nurse specialist mobile) and when agreed it was helpful with the patient a member of the paediatric team attending their first adult clinic. Where this recommendation fell down included not having a separate age-banded clinic, having a developmentally appropriate approach, and consistent clinicians for their first few clinic appointments. For some patients given their developmental level this did not significantly impact, but for others it is an important area of development to ensure their needs are appropriately met.

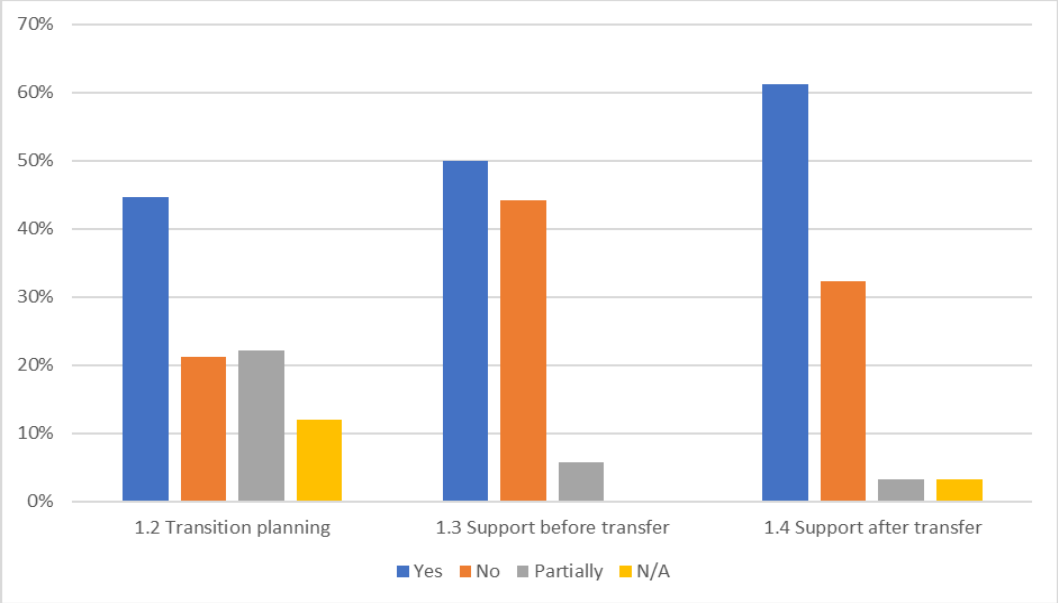


Figure 3. Graphical representation of descriptive statics for three NICE (2016) relevant quality standards, and the extent to which they were satisfied.

Discussion

This audit sought to establish a baseline of transitional care across Wales for patients living with CF, by measuring care against NICE (2016) guidelines. The author achieved this by undertaking a medical records review for all patients who transferred their care to adult CF services between January to December 2022 (n = 11), reviewing their care from the age of 13 up until the point of transfer against NICE quality standards, using the NICE audit tool.

Overall, the audit data have illustrated that a lot of work has been done in relation to transitional care within the service. It is positive to see that the largest proportion of scores (Figure 3) are regarding quality standards either being met or partially met, with a minority of scores indicating that standards were unmet. Nonetheless, the audit does identify several important areas of needed quality improvement to bring the services' transitional care more in-line with NICE (2016) quality standards.

It is evident that particular service initiatives supported positive outcomes for patients throughout the audited period, helping to mitigate service constraints (e.g. staffing). One initiative included the adolescent clinic protocol, allowing CF clinicians to adapt their standard approach in order to meet the particular needs of the adolescent cohort that were being cared for in this clinic in a developmentally appropriate way. The other was embedding frameworks into standard practice, particularly the Ready Steady Go (Nagra, McGinnity, Davis & Salmon, 2015), facilitating a dialogue between young people with CF, their caregivers and the CF team regarding their maturing needs, exploring gaps in knowledge and skills, and ascertaining their wishes in regard to their care.

A significant limitation of this audit is regarding the variation in transitional care across the region (shared care clinics). Given the limited sample size, it was not possible to explore these variations in greater detail, which led to an overall picture of transitional care across Wales. An important area of further exploration would be to ascertain regional transition processes, and to ensure that there are measures in place to ensure that practice is in-line with NICE (2016) guidance. For example, although there is an adolescent clinic for patients living in the region of Cardiff and the Vale of Glamorgan, other regions do not have sufficient numbers of patients in this age group nor the resource to facilitate such a process.

Instead, each clinic locality needs to assess the local need and deliver services to meet this.

In theory there are more rigorous ways to examine the service delivery in this area that could produce more informative data. For example, an important area missing is the views of young people and their families, which would be expected to elicit powerful data. As already discussed previously, there are significant resource limitations within the service, and so a requirement for any service improvement project is to be

prudent in terms of resource allocation. The current audit was an efficient way of gaining a snapshot of transitional care for people with CF in Wales and has elicited sufficient data to be able to guide on-going priorities for service improvement programmes in this area.

An area that was not thoroughly explored as part of this audit was the patient journey beyond the transfer of care to adult CF services in Wales. For example, how is care between the point of transfer up until the age of 25 years of age, which is an area that is still encompassed within the umbrella of transitional care. This would be an important area of exploration for future audit and service improvement, to ensure that the improvements in transitional care continue throughout the patient journey after transfer.

Conclusion

Overall, this audit has enabled clinicians working in CF care in Wales to gain an overview of the quality of transitional care relative to NICE (2016) quality standards. It has demonstrated that there are areas of real strength and has also illustrated important areas of service improvement. The audit was not intended to be a rigorous research project, and instead was intended to be a pragmatic, prudent approach to ascertaining areas of strength along with areas of improvement. The audit has successfully led to an action plan (see section 4.2) for these improvements, and the intention should be to re-audit once sufficient time has been afforded to implement these recommendations.

Recommendations and action plan

Naturally as part of any clinical audit cycle (in-line with the PDSA cycle), is to identify recommendations and develop and action plan for implementation. These should then be re-audited to measure the impact of the changes. The action plan developed from this audit can be found in Table 3 below.

Table 3. Action plan developed from this audit.

	Action	Who is responsible
1	To develop a structured, written policy to outline the requirements of transitional care, in-line with national guidance.	**Paediatric Clinical Lead**
2	To develop local implementation plans in each locality clinic to ensure that appropriate transitional care processes are embedded into routine care.	**Regional Paediatric Leads**
3	Shared care clinics to take a leading role in supporting their patients to be prepared for transition	**Regional Paediatric Leads**
4	More explicit consideration needed to explore how young people wish their parents to be involved in their ongoing care and support	**All CF Clinicians**
5	Consider establishing a transition planning meeting at the end of each year, to look at how many patients from each region will be transferring in the following year and determine what measures need to be put in place to prepare and support them for transfer.	**Paediatric Clinical Lead**
6	To ensure that paediatric teams are working with young people to co-produce a one-page summary of their 'handover' information, e.g. bio-psycho-social factors that they feel are important for the adult team to know about	**Clinical & Regional Paediatric Leads**
7	Development of a 'my transition plan' document that has a timeline of the process, details of each stage of preparation, information about the adult centre	**MDT Transition Task & Finish Group**
8	To explore with young people the language around preparing for their transition to adult services. People have expressed confusion about the word 'transition' given it has multiple different meanings.	**MDT Transition Task & Finish Group**
9	To consider how the ward staff within the adult CF centre can be included as part of the transition process	**Adult Clinical Lead**

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Appendix A: Authorisation of data use for this project

Statement for Ethics

Kerry-Ann Holder (Cardiff and Vale UHB - Paediatric Health Psychology and Adult Inherited Conditions) <Kerry-Ann.Holder@wales.nhs.uk>
Sun 14/07/2024 13:52
To:Steven Stirk (Cardiff and Vale UHB - Child Psychology) <Steven.Stirk@wales.nhs.uk>

To whom it may concern

My name is Dr Kerry-Ann Holder and I am the Psychology Service Lead for Child Health Psychology. Dr Steven Stirk works in this department as a Highly Specialist Clinical Psychologist.

I hereby give my statement of permission to support Dr Stirk's ethics application. I can confirm that Dr Steven Stirk is able to use the data collected as part of the project *'A restrospective baseline of transition care in cystic fibrosis benchmarked against NICE (2016) quality standards'* for the purposes of his PGCert he is undertaking

Yours sincerely

Kerry-Ann

Dr Kerry-Ann Holder
Consultant Clinical Psychologist

Psychology Service Lead for Child Health Psychology, Inherited Bleeding Disorders, Hereditary Anaemias

British Psychological Society: National Assessor

Inclusion Ambassador: Cardiff and Vale UHB (Race and Culture)

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Tel: 029 2074 2139
Clinical days: Mon-Thurs

My pronouns are she/her

Bleeding Disorder Network Wales/Rhwydwaith Anhwylderau Gwaed Cymru/
Haemophilia Centre/Canolfan Hemoffilia

Seicolegydd Clinigol Ymgynghorol

Arweinydd Seicolegol y Gwasanaethau Canlynol: Gwasanaeth Seicoleg Iechyd Plant, Anhwylderau Gwaed Etifeddol ac Anemiau Etifeddol

Cymdeithas Seicoleg Prydain: Aseswr Cenedlaethol

Llysgennad Cynhwysiant: Bwrdd Iechyd Prifysgol Caerdydd a'r Fro (Hil a Diwylliant)

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'Hi' yw fy rhagenw

Child Health Psychology/Seicoleg Iechyd Plant

Appendix B: Swansea University ethical approval

Swansea University
Prifysgol Abertawe

Approval Date: 23/09/2024

Research Ethics Approval Number: 1 2024 11035 10334

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	A restrospective baseline of transition care in cystic fibrosis benchmarked against NICE (2016) quality standards.
Applicant name	STEVEN STIRK
Submitted by	STEVEN STIRK /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/13141

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low Risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

Dyddiad Cymeradwyo: 23/09/2024

Rhif Cymeradwyo Moeseg Ymchwil:

Diolch am gwblhau cais moeseg ymchwil am gymeradwyaeth foesegol ac am gyflwyno'r ddogfennaeth ofynnol drwy'r platfform ar-lein.

Teitl y Prosiect	A restrospective baseline of transition care in cystic fibrosis benchmarked against NICE (2016) quality standards.
Enw'r Ymgeisydd	STEVEN STIRK
Cyflwynwyd gan	STEVEN STIRK /
Dolen i'r ffurflen gais lawn	https://swansea.forms.ethicalreviewmanager.com/Project/Index/13141

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Acknowledgments

A big thank you to all of the paediatric and adult CF teams for their role in supporting people living with CF to have good quality transitional care, especially colleagues who volunteered to be a part of the MDT task and finish group.

About the Author

Steven Stirk is a Senior Clinical Psychologist working as part of the South Wales Paediatric Cystic Fibrosis Service based at the Noah's Ark Children's Hospital for Wales. He provides specialist psychological input for families living across South Wales affected by cystic fibrosis, and is particularly interested in supporting the whole multi-disciplinary team to provide good quality holistic biopsychosocial care

Prehospital Stroke Care: An evaluation of the implementation of a mobile stroke unit system in Wales

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Abstract:

A mobile stroke unit is a recently described healthcare innovation, taking hospital staff and a CT scanner mounted on an ambulance chassis. Stroke is a death of brain tissue after disruption of bloodflow, traditionally treated in hospital guided by CT scans, with later treatment leading to disability and even death, with a significant burden on health and social care for survivors. Mobile stroke units aim to treat patients quickly and efficiently before they even reach hospital, to improve their long-term outcomes. This report describes a simulation of potential mobile stroke unit activity in Wales to evaluate the potential impact. Data from actual 999 calls and audit data from a national audit of stroke performance in Welsh hospitals is used to describe the activity. The mobile stroke unit led to more patients receiving early stroke treatment, with some receiving treatment far earlier than possible in the hospital system. The impact of this work should be evaluated on a more complex set of patient identifiable data to allow an impact on health economics, and consideration of a clinical trial to be made.

Keywords: Stroke, Thromboylsis, Ambulance, Modelling.

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2	Regions of operation for MSU deployment
3	Modelled locations of MSU deployment
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6	Linkage & attrition of hospital and ambulance datasets
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Introduction

Mobile stroke units (MSUs) were first described in Germany in 2010 as a feasible platform to deliver stroke care more efficiently (Walter et al. 2012), bringing critical investigation and treatment into the field to reach patients earlier, improving long-term outcomes. Stroke services in Wales lag behind the rest of the UK in provision of centralised stroke units and provision of standardised stroke therapies, and the UK lags behind the other developed nations in a lack of an established MSU system.

This project aims to simulate the impact that an MSU system in Wales might have on stroke patients receiving thrombolysis therapy, using discrete event modelling on a dataset of 999 calls to project interactions between patients and emergency services. This modelling is informed by retrospective audit and experimental data to describe distribution of stroke patients, ambulance and MSU performance.

This report explores the implications of deficits in stroke care worldwide, and the particular challenges facing stroke care in Wales and future stroke service delivery. It discusses the specialist physician-led prehospital services already commissioned in Wales and the motivation to explore MSU implementation in the Welsh stroke system. The development of a simulated stroke dataset using available audit data on which to base modelling and description of ambulance and MSU operation within the model is described. The predicted impact of the modelled MSU is discussed, along with recommendations for future modelling and evaluation.

Identification of Project Requirements

Project Nature

This project endeavours to develop and interrogate a simulation model of emergency stroke care in order to perform an initial analysis of the impact of a mobile stroke unit system as a novel addition to ambulance and hospital treatment. Early stroke care encompasses the period up to hospital presentation and initial emergency department management; thus, modelling requires data from ambulance and hospital sources.

A stroke is clinically defined as a syndrome of rapid focal loss of brain function, suspected to be due to an interruption in blood flow. Such strokes can be subdivided by their underlying mechanism into ischaemic stroke, primary intracerebral haemorrhage, and subarachnoid haemorrhage (Warlow 1998), of which ischaemic stroke accounts for the majority of cases. Early management of ischaemic stroke focuses on delivery of thrombolysis medication to restore blood flow, which increases disability-free survival when administered within 4.5 hours (Emberson et al. 2014). However, this treatment depends on a CT scan to effectively rule-out the haemorrhagic causes of stroke, limited to hospital settings until recent development of portable CT scanners.

The challenge is to deliver stroke patients rapidly to a setting that can provide CT scanning and thrombolysis, as effectiveness of treatment decreases with increasing time (Meretoja et al. 2014). Advances in stroke care were focused on extending the safe time period for thrombolysis, or additional experimental therapies to protect brain tissue (Fischer & Schaebitz 2000), rather than the more logistical issue of shortening the timeframe to CT scanning and treatment.

While the staffing and operational deployment of mobile stroke units varies across the established programmes (Calderon et al. 2018), core features are the ability to perform a comprehensive neurological assessment, CT scanning on suspected stroke cases, and administer thrombolysis to ischaemic stroke patients outside of a hospital setting. The benefit of this is moving a key time-sensitive intervention which affects long-term outcome in stroke to an earlier point in the patient journey, bypassing the need for transport to hospital and serial clinical assessments (Figure 1).

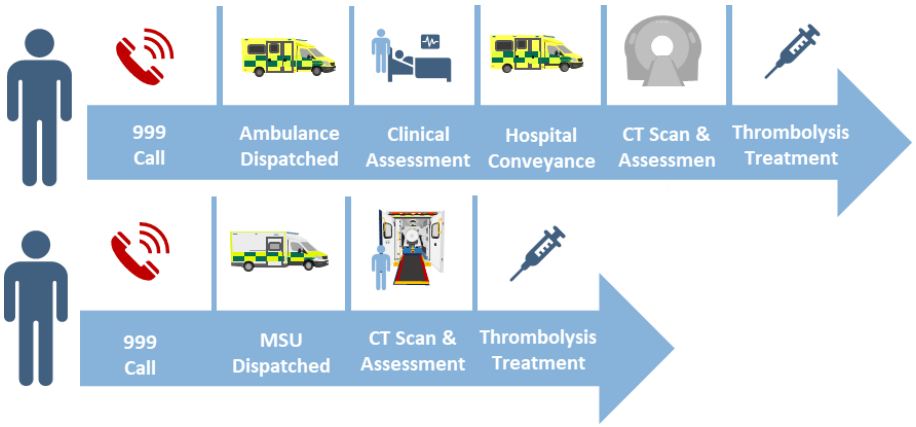


Figure 1: Comparison of conventional (top) versus MSU (bottom) route to thrombolysis

Project Task

The projected time to thrombolysis for stroke patients was predicted from a simulation of an operational mobile stroke unit versus standard care. This required a description of mobile stroke unit operation in terms of hours, location, interaction with hospital and time durations for relevant activities. For the simulation, it was also necessary to describe baseline performance of standard ambulance service and hospital care to allow comparisons to be drawn.

Established MSU systems from around the world have variable operational hours and catchment areas (Calderon et al. 2018), though typically operate in daytime hours in a limited radius around an ambulance base or regional stroke hospital. Attempts to cover an entire nation with multiple MSUs in cooperation has not been described in the literature. It was recognised that the location of an MSU responding to waiting 999 calls in order could result in attending patients already outside of the thrombolysis window, and that travelling to calls with no geographical restrictions could result in an MSU spending a significant period of operational activity returning to base at the end of a shift, limiting care delivery. A pragmatic decision was made to limit the maximum travel time to a 999 call at 2 hours, and to only respond to calls waiting 2 hours or less, in order to maximise the number of patients attended that were potential thrombolysis candidates. MSUs were also geographically restricted to responding to calls in their region of operation and would return to this region if a patient was conveyed to a hospital outside of this area. Wales was divided into North, Central & West and Southeast regions for MSU operation (Figure 2).

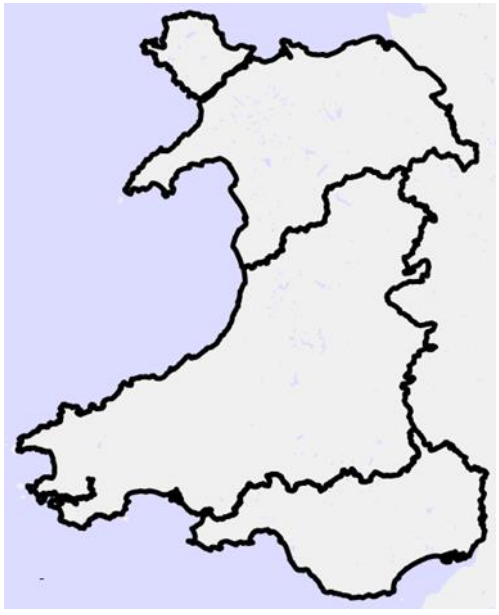


Figure 2: Regions of operation for MSU deployment

9 locations were selected as potential bases for MSU deployment (Figure 3), to give a coverage of all health boards and population centres, to allow comparison of urban, mixed and rural regions where volume of calls and travel distances were expected to vary significantly. A scenario where 9 MSUs were deployed simultaneously was also evaluated to evaluate a situation where demand for the MSU was more balanced relative to supply. Baseline ambulance performance. Performance of standard ambulance response was also modelled over a similar deployment to allow comparisons to be drawn. Standard response was modelled with transport to current stroke hospitals, as well as to proposed reconfigured stroke hospitals (Figure 5) to allow comparison with a future MSU operating in a reconfigured stroke system to ensure results were relevant to changing service provision.

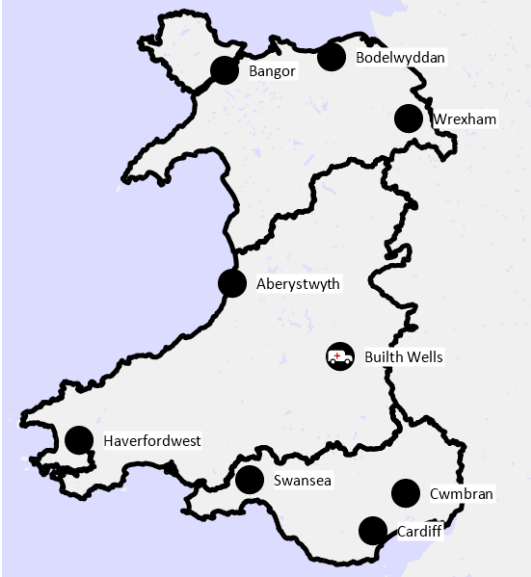


Figure 3: Modelled locations of MSU deployement

In addition to the distribution of MSU activity in space, it was necessary to define the time spent on operational activities for both the MSU and standard ambulance vehicles in the simulation. The patient journey for a patient suffering an acute stroke, from symptom onset to time of thrombolysis treatment in hospital was described in terms of a series of discrete time periods for both standard ambulance and emergency department care and MSU care (Figure 4) For the MSU, the time period for transport to hospital after treatment was still considered as it was necessary to predict when the MSU would be available for subsequent taskings.

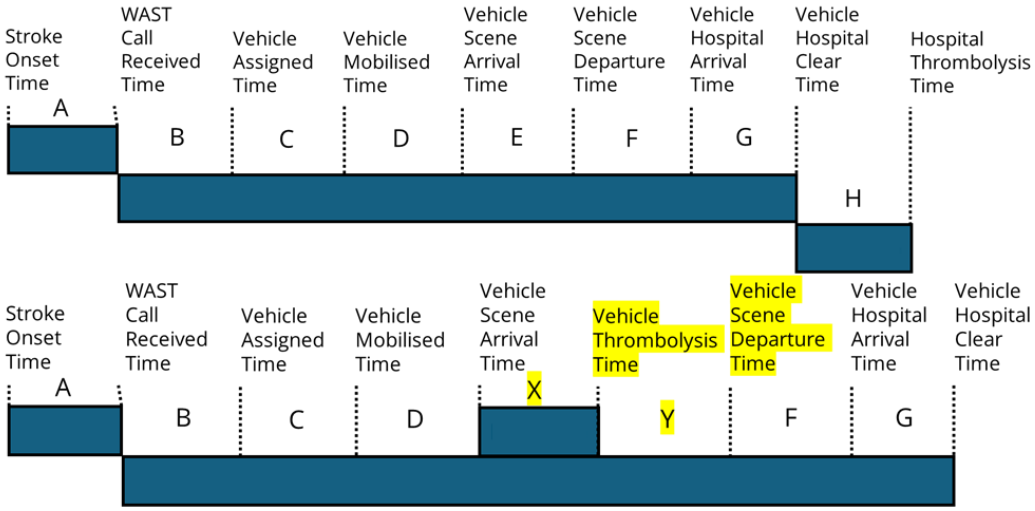


Figure 4: Time course of early emergency response to an ischaemic stroke

Approximately 7,400 people suffer a stroke each year in Wales, with increasing incidence (Cross Party Group on Stroke, 2020). Stroke is the 2nd leading cause of death worldwide (Mozaffaraian et al. 2015), as well as an increasing cost to society, predicted to rise 194% encompassing healthcare, social care and lost productivity (Stroke Association, 2017). There is currently significant variation between the 12 hospitals providing acute stroke care in Wales (Sentinel Stroke National Audit Programme, 2019) and reconfiguration of services is planned, in the knowledge that hyperacute stroke units provide improved patient outcomes (Morris et al. 2014).

The Emergency Medical Retrieval and Transfer Service (EMRTS) currently delivers 2 unique, commissioned non-hospital based, physician-led healthcare services for Wales. Firstly a prehospital emergency medicine service which provides advanced care in addition to WAST, and secondly an adult critical care transfer service which provide dedicated interhospital critical care transfer on bespoke ambulance platforms across Wales and beyond. Between the services they have experience of taking care normally limited to hospital settings to the prehospital setting, development of specialist medical vehicles and specialist dispatching of assets outside of standard AMPDS ambulance dispatch (Lyons et al. 2021). EMRTS is uniquely placed in Wales to provide the expertise to evaluate and deploy a mobile stroke unit system in Wales.

Mobile stroke units have the potential to reduce time to thrombolysis (Larsen et al. 2021) though the potential benefit is dependent on the particularities of the system which are varied (Calderon et al. 2018), limiting external validity of existing data. Reconfiguration of stroke services will reduce the number of centres offering thrombolysis (Figure 4), risking delays to thrombolysis. An MSU system may reduce the burden of stroke, with significant financial saving, while having the additional benefit of attracting additional specialist clinicians to Wales, as observed with development of prehospital services (Emergency Medical Retrieval & Transfer Service, 2021).

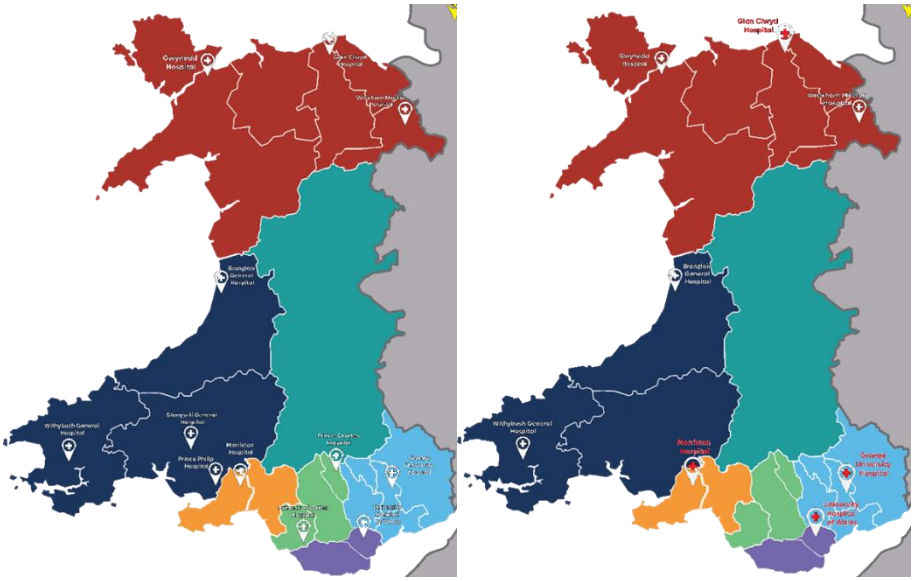


Figure 5: Current (left) and potential (right) stroke thrombolysis centres in Wales

Main Analysis

Stroke Dataset

Data from WAST was taken from the year 1st January 2023 -31st December 2023, which includes 11,974 incidents coded as AMPDS28 (suspected stroke or TIA). SSNAP data was taken from the same time period which included 5,066 hospital cases of confirmed stroke. Only 1,157 hospital records included a WAST dispatch number to allow data linkage, and of these only 580 cases were assigned an AMPDS code 28 at triage. Of the 580 cases, data irregularities or corruption limited analysis to 503 cases with complete data (Figure 3).

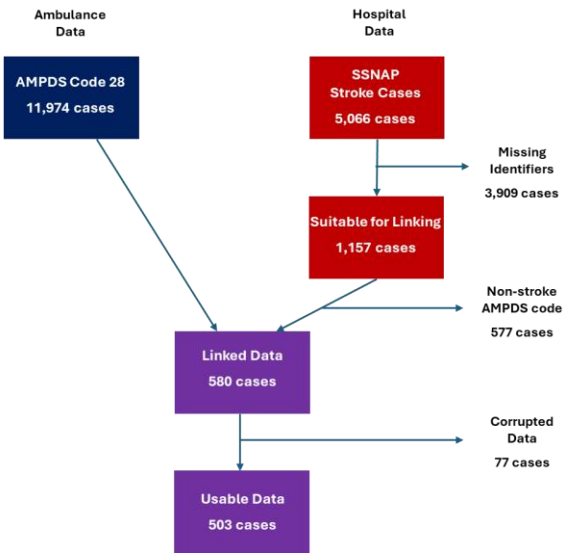


Figure 6: Linkage & attrition of hospital and ambulance datasets

Missing identifiers made it impossible to compile a fully linked database of stroke cases from the ambulance AMPDS Code 28 dataset. Examining the 503 linked cases, there was significantly uneven distribution across Wales, suggesting that inclusion of ambulance identifier codes in SSNAP data was only performed consistently at a proportion of audited hospitals. A study of stroke identification by UK ambulance call handlers has suggested a positive predictive value of 12.8% for stroke (McClelland & Burrow, 2021). Extrapolating this to 11,974 AMPDS code 28 calls within the dataset, then 1,532 true strokes should be expected. In order to address this deficit, the 1,029 missing stroke cases were sampled from the 11,974 AMPDS28 incidents. Stroke cases were sampled at random by locality, until the distribution of true strokes represented the distribution of AMPDS code 28 999 calls (Figure 4).

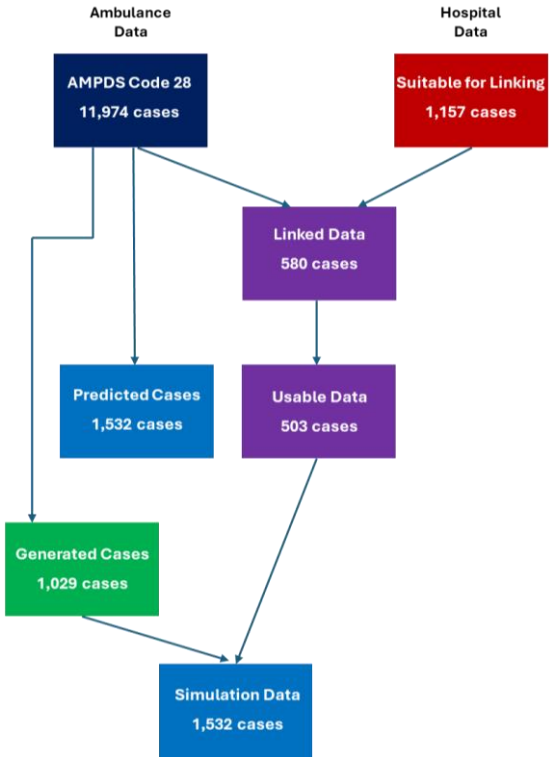


Figure 7: Generation of final stroke dataset for modelling

Baseline data produced a distribution of 999 call events classified as potential strokes, containing a proportion of calls designated to represent actual stroke cases. (Figures 5-6). Extrapolating stroke cases from 999 calls introduces risk of non-representative data, though this is stratified by region to avoid bias. The positive predictive value of the AMPDS system in detecting stroke has only been assessed in the northeast of England, in a single-language setting (McClelland & Burrow, 2021). Welsh language speakers are not evenly distributed throughout the Principality (Irvine et al. 2006), with calls in Welsh not necessarily acutely represented by work evaluating English language calls. Data from the calendar year 2023 was the most recent data available for ambulance 999 calls, would reasonably be expected to best represent current trends in emergency calls, and was readily available in a format for modelling. However, the COVID-19 pandemic significantly affected care-seeking behaviors including emergency care (Gale et al. 2021) affecting the external validity of 999 call data from recent years used to predict future trends. Sampling data from 2023 is a reasonable compromise between available contemporaneous data and risk of artefact.

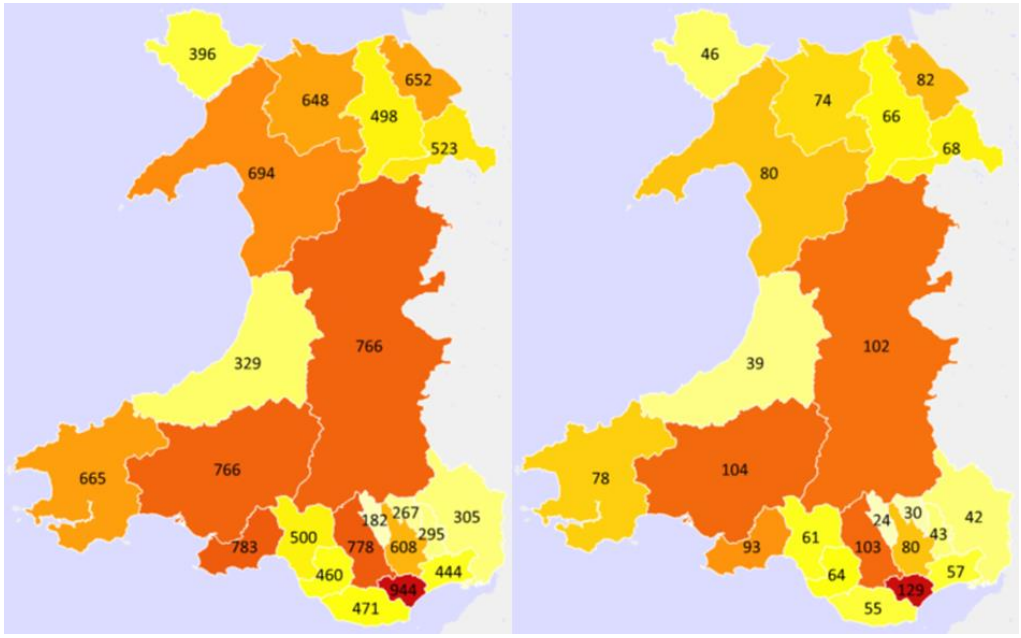


Figure 8 – Distribution of 999 calls (left) and simulated stroke cases (right), by region

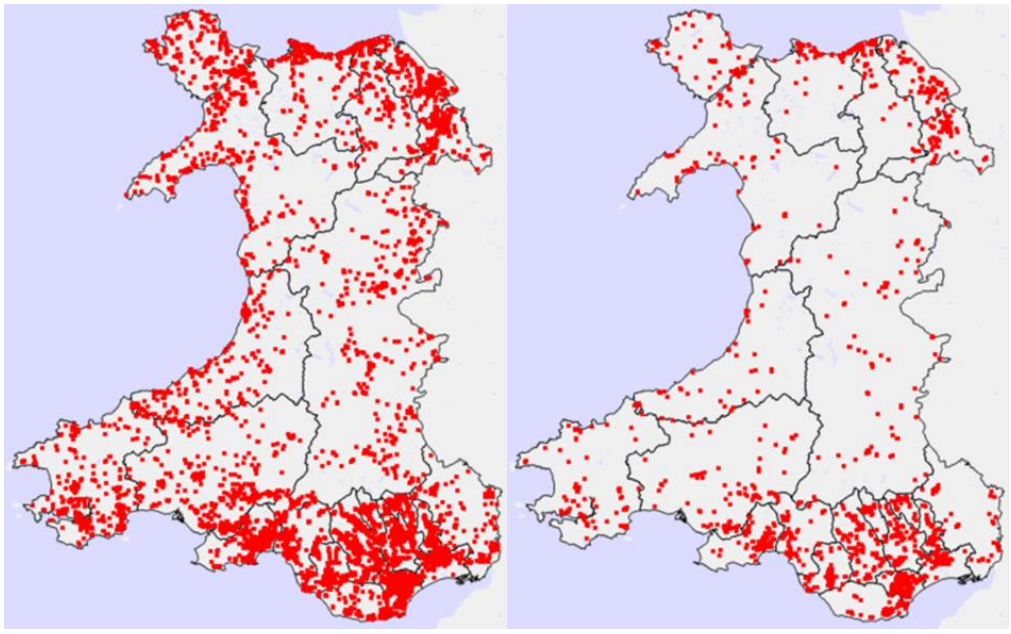


Figure 9 – Distribution of 999 calls (left) and simulated stroke cases (right) by incident

Model Dataset

The time from symptom onset to a 999 call (Time A – figure 4) was derived directly from SSNAP audit data for stroke patients, taken from a multi-year dataset 2014 to present, encompassing 48,539 stroke cases. The data was strongly skewed with peak at 0 minutes, median of 22 minutes and mean of 25 minutes. For the simulation a triangular distribution was used to sample onset-999 time for simulated stroke cases, with peak, mean and median identical to historical data. (Figure 10).

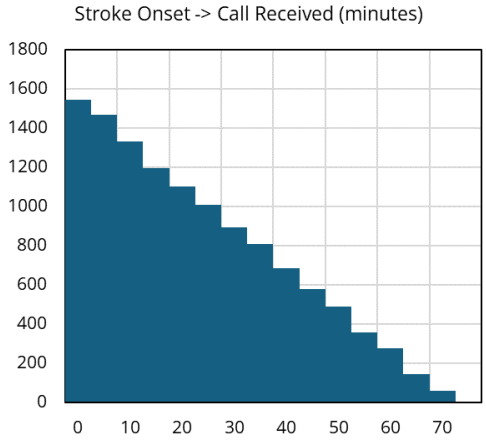


Figure 10: Plot of simulated time from symptom onset to 999 call (x) against frequency of calls (y)

Durations B-D, representing initial ambulance service response, were derived from sampled 999 call data and historical data of vehicle travel time on blue lights and sirens, which was highly variable with road conditions, depending on time and day of the call. Duration E, representing the time taken for clinical assessment and management by the ambulance crew on scene was derived from actual incident data, found to fit a Galton distribution with a mean duration of 30 minutes. Duration F was produced in a similar manner to duration D, representing the travel time to hospital depending on road state, while duration G was the time taken to handover after arrival at hospital, derived from incident data similarly to duration E. Duration H represents hospital management after ambulance handover and encompasses CT scanning and thrombolysis as an end-point, where applicable. While time to CT scanning is often a focus of research on improving stroke care (Rose et al. 2008) and data was available from SSNAP on time to CT scanning, the time to thrombolysis overall determines patient outcomes so a single time for hospital management was selected, often referred to as ‘door to needle time’. Hospital performance data is produced by SSNAP providing overall statistics for each hospital regarding arrival to thrombolysis time, which was applied to a triangular distribution for each hospital using the available mean and interquartile range to produce a unique performance for each stroke hospital.

In land-based MSU scenarios, the modeled durations A - B and F - G remained unchanged. The key difference was that hospital thrombolysis, previously Duration H, now occurred in the MSU, designated as Duration X, with scene duration being a composite of time up to thrombolysis and time post-thrombolysis until leaving scene. Literature suggests that the comprehensive medical assessment on-board the MSU increases the vehicle scene duration, previously Duration E, now Duration X+Y, to a median of 45 minutes. A distribution of MSU performance was derived from the East of England MSU Trial (Grunwald et al. 2020) and used to translate the existing distribution of ambulance scene times to a longer duration. Specific data from the trial on time to thrombolysis was modelled in a triangular distribution with a median time of 33 minutes.

The strengths of this approach include detailed modeling using various distributions, such as triangular and Log-Normal, to capture the variability in real-world scenarios. Leveraging historical data from EMRTS and WAST ensures that the model is grounded in actual operational metrics, enhancing its validity. Applying median durations and interquartile ranges for hospital performance by stroke hospital is a strength, as it accounts for variability in stroke protocols and operational efficiency across different hospitals. However, there are limitations to this approach. The reliance on an observational trial from the East of England for mean scene times and times to thrombolysis introduces potential biases. The assumption that the MSU

spends equal time with strokes and non-strokes, and that all patients are conveyed to hospital, may not accurately reflect real-world operations. Additionally, while the use of SSNAP data provides a basis for modeling, the variability in stroke protocols, demand for CT scanning, staffing, and other factors across Welsh hospitals may affect the accuracy of the model. Changes in hospital infrastructure or protocols over time could render some prior audit data non-representative, particularly considering that restructuring stroke services may concentrate and improve performance in remaining centres. An additional benefit of an MSU is the ability to convey patients directly to stroke units, bypassing A&E as comprehensive clinical assessment has already been completed. Handover of the MSU at hospital may subsequently be altered to the point where duration G is non-comparable between standard ambulance and MSU models, though there is insufficient data in the scope of this work to model this reliably. Handover times from air ambulance cases were considered, where the team is assigned a higher priority to handover than a standard ambulance at hospital arrival, though the heterogeneity of patient presentations and treatments meant this was felt to be inappropriate as the varied patient condition can significantly influence the time taken to hand over care.

Baseline Results

The baseline scenario, linking ambulance and SSNAP data, shows that out of 11,974 historical AMPDS28 incidents, there was at least one vehicle scene arrival in 11,335 cases. Of these, 503 were identified as strokes through matching. The median and mean times from stroke onset to scene arrival were 74 and 115 minutes, respectively. The median and mean times from stroke onset to hospital arrival were 148 and 202 minutes, respectively. The median and mean times from stroke onset to hospital thrombolysis were 208 and 298 minutes, respectively, with 0% of patients receiving thrombolysis within 90 minutes, 7% within 180 minutes, and 44% within 270 minutes. The data are summarised in Figure 11.

	Responded AMPDS28 (count)	Responded Strokes (count)	Stroke Onset until Scene Arrival median/mean (minutes)	Stroke Onset until Hosp. Arrival median/mean (minutes)	Stroke Onset until Hospital Thrombolysis median/mean (minutes)	Stroke Onset until Hospital Thrombolysis <90 / <180 / <270 min (%)
Baseline (historical)	11,335 (*)	503 (*)	74 / 115 (**)	148 / 202 (**)	208 / 298 (**)(***)	0% / 7% / 44% (**)(***)(****)

Figure 11: Results of matched baseline stroke cases

As discussed there was significant geographical skew in the 503 matched SSNAP stroke cases, meaning that this data likely represents only selected cases from a number of discrete regions, with influence on travel times and hospital performance making generalising this data to the rest of Wales unreliable. However, as the only source of real-world data it is important as a comparator to the simulated modelling data.

Modelling Results

In the adjusted baseline scenario, simulations were run to assess the effect of a standard ambulance responding from nine different base locations. Each vehicle operated daily from 07:30 to 19:30. An overload scenario was also modeled, where nine non-MSU vehicles were placed in all nine locations, working simultaneously. In these scenarios, strokes were transported to the nearest current stroke hospital, a set of 14 hospitals, while non-stroke cases were transported to the nearest emergency department.

A single simulated non-MSU ambulance responded to 169 to 290 stroke incidents out of 1,213 to 2,168 999 calls. No simulated stroke patients in this model were eligible to start hospital thrombolysis within 90 minutes, and up to 8% within 180 minutes. In the overloaded scenario, where nine non-MSU vehicles work from all nine locations simultaneously, 9,360 AMPDS28 incidents are responded to, of which 1,224 are strokes. Despite the increased response capacity, 0% of stroke patients start hospital thrombolysis within

90 minutes, and only 14% within 180 minutes. A detailed breakdown of results for this modelling scenario is displayed in figure 12.

	Responded AMPDS28 (count)	Responded Strokes (count)	Stroke Onset until Scene Arrival median/mean (minutes)	Stroke Onset until Hosp. Arrival median/mean (minutes)	Stroke Onset until Hospital Thrombolysis median/mean (minutes)	Stroke Onset until Hospital Thrombolysis <90 / <180 / <270 min (%) (*)
Bangor	1,574	196	103 / 111	157 / 164	261 / 267	0% / 3% / 56%
Bodelwyddan	1,603	199	96 / 103	151 / 157	253 / 259	0% / 7% / 60%
Wrexham	1,579	204	103 / 107	156 / 161	260 / 263	0% / 8% / 54%
Aberystwyth	1,209	172	124 / 129	187 / 194	283 / 289	0% / 2% / 42%
Builth Wells	1,218	171	117 / 127	178 / 190	276 / 286	0% / 2% / 46%
Haverfordwest	1,213	169	107 / 115	168 / 178	263 / 271	0% / 7% / 54%
Swansea	2,126	285	106 / 110	157 / 159	258 / 261	0% / 4% / 58%
Cardiff	2,168	290	97 / 102	148 / 151	250 / 254	0% / 8% / 62%
Cwmbran	2,135	284	101 / 106	153 / 154	255 / 258	0% / 6% / 60%
All 9 at once	9,360	1,224	68 / 76	123 / 129	224 / 230	0% / 14% / 81%
(*) = for clarification, these percentages are over the responded strokes only.						

Figure 12: Results of modelled ambulance baseline response

A dedicated 999 ambulance responding to only stroke calls is not representative of standard practice, though the proportion of patients receiving thrombolysis is not vastly different to the known baseline cases described above (Figure 11). Furthermore, the ambulance response in reality is more complex and heterogenous than transferring all stroke patients to stroke centres and non-stroke patients to the nearest emergency department; the retrospective diagnosis of stroke may not be evident on scene with crossover of non-stroke and stroke hospital destinations, patients may be discharged on scene and not all patients may be transported under blue-light conditions. Meal breaks and shift start response restrictions, commonplace in ambulance practice have not been added to a model, though the ambulance is not deployed to a new mission in the last 30 minutes of its operational duty period. The baseline scenario has multiple points of risk of artefact, with potential to both over- and under-estimate efficacy, limiting comparison to retrospective data. However, consistency between modelling the MSU and non-MSU vehicles does allow for a reasonable comparison.

A modified baseline model was simulated to allow evaluation of the likely state of reconfigured stroke services which a future MSU would operate within. Under proposals, emergency stroke thrombolysis would be consolidated to 10 Welsh hospital sites (supported by 2 English sites), with comprehensive inpatient stroke care on 4 of these sites. In this modified baseline there was a slight decrease in onset of symptoms to thrombolysis time notable in the south where thrombolysis centres are proposed to close, increasing scene to hospital transit times (Figure 13)

	Responded AMPDS28 (count)	Responded Strokes (count)	Stroke Onset until Scene Arrival median/mean (minutes)	Stroke Onset until Hosp. Arrival median/mean (minutes)	Stroke Onset until Hospital Thrombolysis median/mean (minutes)	Stroke Onset until Hospital Thrombolysis <90 / <180 / <270 min (%)
Bangor	1,573	200	102 / 110	156 / 164	260 / 266	0% / 4% / 57%
Bodelwyddan	1,606	202	96 / 103	152 / 157	253 / 259	0% / 7% / 59%
Wrexham	1,576	202	101 / 107	155 / 161	260 / 265	0% / 7% / 55%
Aberystwyth	1,206	172	120 / 128	189 / 196	284 / 291	0% / 2% / 41%
Builth Wells	1,212	174	118 / 129	184 / 196	277 / 291	0% / 1% / 45%
Haverfordwest	1,205	167	106 / 115	174 / 182	267 / 275	0% / 6% / 51%
Swansea	2,115	283	105 / 108	158 / 161	268 / 269	0% / 3% / 52%
Cardiff	2,162	284	98 / 102	151 / 154	259 / 261	0% / 5% / 59%
Cwmbran	2,124	281	102 / 106	156 / 158	264 / 264	0% / 4% / 56%
All 9 at once	9,355	1,223	68 / 76	126 / 132	230 / 234	0% / 12% / 78%
(*) = for clarification, these percentages are over the responded strokes only.						

Figure 13: Results of the modelled ambulance modified baseline response

Reconfiguration of stroke services is undergoing consultation, and 2 initial configurations have been proposed, one discontinuing acute stroke thrombolysis services in Wrexham Maelor Hospital, and the other discontinuing services at Prince Charles Hospital (NHS Wales Executive, unpublished data). While the most likely option has been modelled, the uncertainty regarding this risks the validity of modelling for both the modified baseline and the simulation of MSU activity which utilizes the same sites. However, in light of uncertainty regarding configuration of stroke services, modelling does provide a unique opportunity to translate historical data which could otherwise be considered invalid and use it to contribute to a prediction of future performance of new services, in the absence of other suitable data or techniques to inform service changes. This modelling, focused on stroke 999 calls is complementary to work by NHS Wales Executive focusing on access to reconfigured stroke services by census regions based on geography. By using ambulance service timing data and actual stroke calls this modelling can account for varied distribution of stroke calls which are influenced by factors such as deprivation and other social determinants of health.

The data highlights the challenge in delivering early thrombolysis, where many patients are being attended to by ambulances within 1-2 hours of their symptom onset, in spite of these emergency calls being identified and prioritised as stroke. Other stroke patients with different routes, either own transport or calls mis-triaged as another presentation may have even longer courses but would not be able to benefit from an MSU as proposed in this initial work. Given this delay, it is unsurprising that no patients were predicted to receive ultra-early thrombolysis within 90 minutes and only 1-7% modelled stroke patients received thrombolysis within 180 minutes. Considering the arrival of ambulances on scene between 96 and 120 minutes on average, there is evident potential for an MSU with thrombolysis capability to significantly impact the number of patients receiving thrombolysis before 180 minutes if deployed.

The mobile stroke unit modelled response is summarized in figure 14. The introduction of a mobile stroke unit significantly improved proportion of simulated stroke patients receiving thrombolysis. The proportion of patients receiving ultra-early thrombolysis rose from 0% to 12-18% varied by region, with the proportion of strokes treated within 180 minutes rising from 1-7% to 66-81% and the proportion of patients receiving thrombolysis (total, within 4.5 hours) rising from 41-59% to 95-99%. In spite of covering a large region, with

associated transit times, the MSU was able to deliver thrombolysis to almost all stroke patients it attended across 9 locations, highlighting its potential efficacy.

	Responded AMPDS28 (count)	Responded Strokes (count)	Stroke Onset until Scene Arrival median/mean (minutes)	Stroke Onset until Hosp. Arrival median/mean (minutes)	Stroke Onset until Hospital Thrombolysis median/mean (minutes)	Stroke Onset until Hospital Thrombolysis <90 / <180 / <270 min (%)
Bangor	1,573	200	102 / 110	156 / 164	260 / 266	0% / 4% / 57%
Bodelwyddan	1,606	202	96 / 103	152 / 157	253 / 259	0% / 7% / 59%
Wrexham	1,576	202	101 / 107	155 / 161	260 / 265	0% / 7% / 55%
Aberystwyth	1,206	172	120 / 128	189 / 196	284 / 291	0% / 2% / 41%
Builth Wells	1,212	174	118 / 129	184 / 196	277 / 291	0% / 1% / 45%
Haverfordwest	1,205	167	106 / 115	174 / 182	267 / 275	0% / 6% / 51%
Swansea	2,115	283	105 / 108	158 / 161	268 / 269	0% / 3% / 52%
Cardiff	2,162	284	98 / 102	151 / 154	259 / 261	0% / 5% / 59%
Cwmbran	2,124	281	102 / 106	156 / 158	264 / 264	0% / 4% / 56%
All 9 at once	9,355	1,223	68 / 76	126 / 132	230 / 234	0% / 12% / 78%
(*) = for clarification, these percentages are over the responded strokes only.						

Figure 14: Results of the modelled MSU response

The MSU attended between 167 and 284 strokes in a year, suggesting that a stroke patient was treated on between 46% and 78% operational shifts. This is a higher response rate than the East of England trial (Grundwald et al. 2020) where only 33 stroke patients were attended with a suggested rate of a patient in 24% operational shifts, though this utilised dispatch to stroke and headache AMPDS calls and was available to be diverted to suspected cardiac arrest cases by ambulance control. Narrowing the dispatch of the MSU in this model to focus on stroke calls only has potentially increased the number of stroke patients attended by the MSU. However, the only 12-15% of attended MSU calls were true strokes – while the MSU would have potential value in assessing stroke mimics, in discharging patients on scene and a number of other interventions, this is not the focus of the asset. Predicted to employ a radiographer, a paramedic and a specialist nurse in a mixture of band 6 and 7 roles, the operating costs are high and should be focused on stroke patients where possible.

A single MSU was predicted to deliver thrombolysis to between 74 and 106 additional patients per year compared to baseline. However, notable benefits are also seen in the subgroups of patients receiving thrombolysis in the earlier windows of 0-90 and 0-180 minutes, where between 9 and 45 additional patients and between 104 and 191 additional patients have been estimated to receive thrombolysis respectively. While there is some benefit in stroke thrombolysis up to 4.5 hours, the benefit is time-sensitive with long-term implications on morbidity and mortality (Meretoja et al. 2014). At 90 minutes the number of patients needed to treat for a benefit to be felt is 3.4-3.9 patients (Lansberg et al. 2009), increasing to 4-4.3 patients at 180 minutes, highlighting how small improvements in performance in this patient group may result in sufficiently meaningful outcomes to justify MSU use. A number needed to treat at 270 minutes of 5.9-6.7 patients means, taking the higher estimate, a single MSU may significantly alter the outcome for 15-28 patients per year.

While this utilization of the MSU with existing ambulance dispatch and triage shows promise in the simulations, the dispatch of such a specialist asset by a limited triage system should be evaluated, given the described positive predictive value in stroke of 12.8% and the stroke attendance rate of 12-15% in the simulation. A similar, specialist, physician-led prehospital service utilised by EMRTS employs a dedicated ambulance dispatcher supported by a clinician (Lyons et al. 2021), with triage criteria designed to optimise the deployment of a limited asset to time-critical patients where the benefit will be maximised. The

deployment of the MSU 08:30-19:30 is in line with commonly utilised patterns of shift working, though not corresponding fully with the period of demand for stroke response (Figure 15). Furthermore, early morning stroke 999 calls may represent 'wake up strokes' where the time of onset is during the hours of sleep and is not certain, limiting delivery of thrombolysis treatment. The model data suggests that the peak demand for a 999 response to a stroke is between 07:00 and 20:00, with a high level of demand (>200 calls/hr) between 08:00 and 16:00). Either a single MSU is incapable of servicing the South region, or the defined regions of cover are too large to reasonably cover with a single MSU. In order to maximise the patient benefits, the travel distances and resulting times should be minimised where possible. In the current model an MSU based in Cwmbran is predicted to respond to calls across Cardiff, Swansea and surrounding areas, resulting in large periods of time in transit (Figure 16).

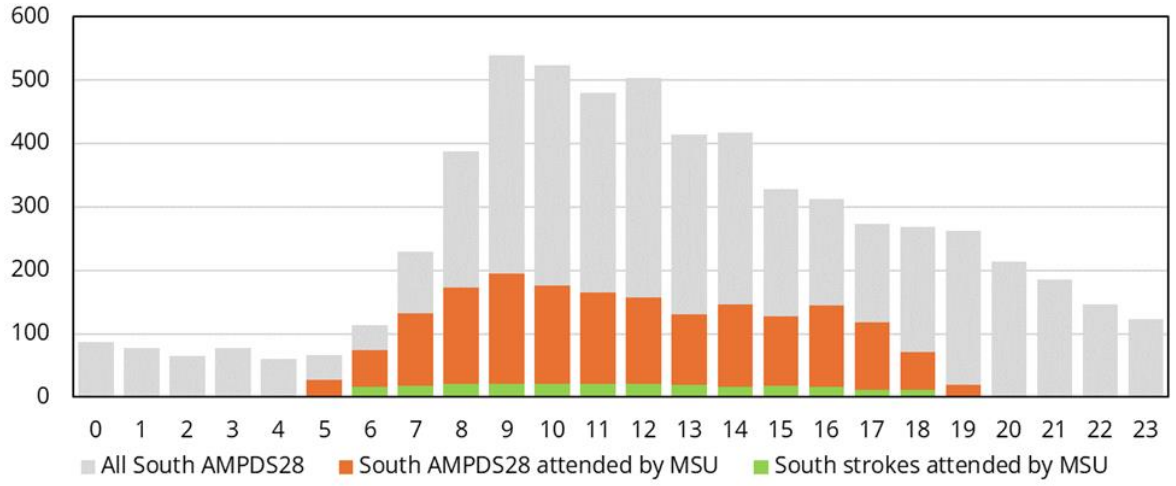


Figure 15: AMPDS28 calls for the South region, with Cwmbran MSU response

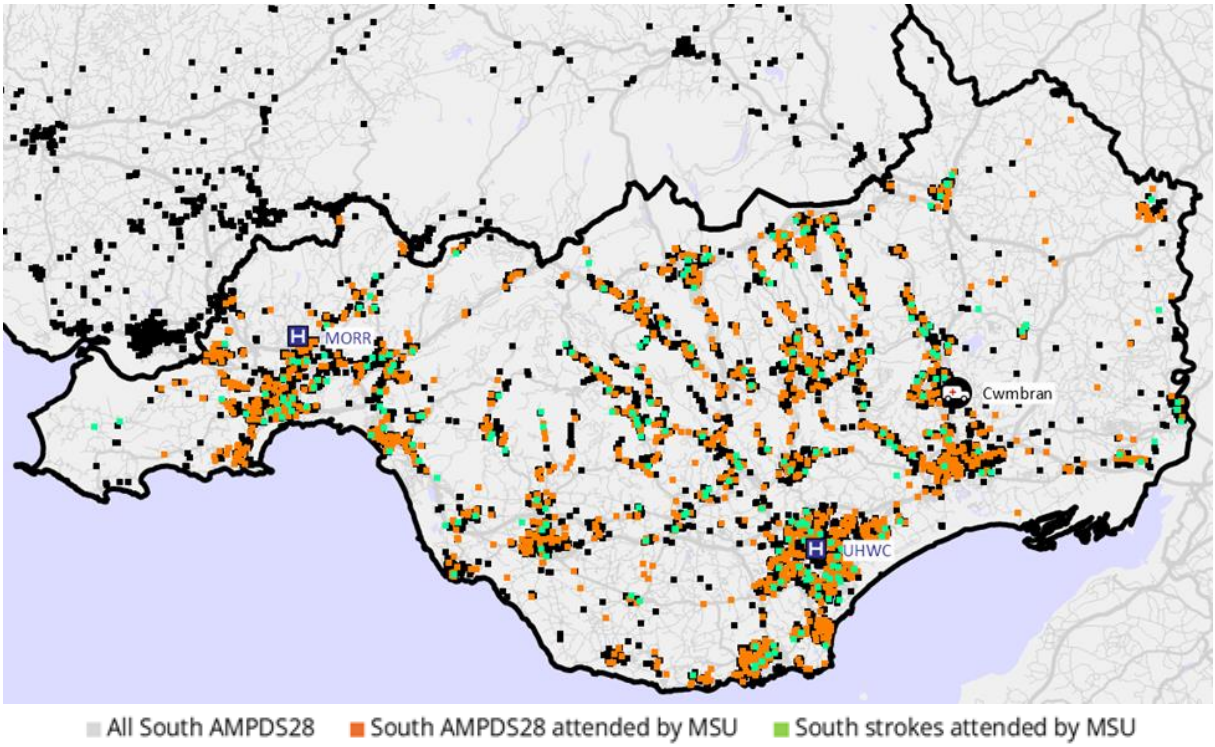


Figure 16: Geographical results of MSU simulation based at Cwmbran, South region

In summary, the simulated mobile stroke unit markedly outperformed the simulated baseline ambulance response, showing an improved proportion of patients receiving thrombolysis at early intervals as well as

overall. The majority of patients attended to were not suffering acute stroke, limiting the measured impact of the MSU, though other benefits such as avoiding hospital attendance have been described (Grundwald et al. 2020) that were not assessed in this modelling. Incorporating into existing ambulance triage and dispatch systems the simulated mobile stroke unit was able to attend a modest number of stroke cases, though overall performance may have been over-estimated by exclusion of meal breaks and other common operational ambulance restrictions from the modelling. The benefits of the mobile stroke unit were seen across urban deployment locations of Cardiff and Swansea as well as more rural locations including Aberystwyth and Builth Wells, suggesting that distance and travel time from hospital was not the only limiting factor in stroke treatment, balanced against increased demand for 999 ambulances and saturated emergency department response in major urban centres.

Reducing the time spent in transit by the MSU would undoubtedly increase the number of patients attended to by the MSU, while an improved accuracy of dispatch would improve the proportion of stroke patients treated. This could be achieved by deploying the MSU to smaller regions such as health boards, or in the vicinity of hospitals, while the latter risks the limitations seen in other models and limits the equity of treatment between urban and rural populations. Alternatively, improvements in dispatch could be considered ranging from This modelling differs from existing studies of MSU deployment in the UK in that it has evaluated a whole country, deploying MSUs to only AMPDS28 coded calls and all patients were conveyed to hospital. The largest increase in patients receiving thrombolysis was predicted for an MSU based in Cardiff, operating in the south region. However, there was benefit seen at all deployment locations.

A key limiting factor, as discussed previously, is the simulated stroke data at the core of this work. SSNAP gathers data from every inpatient stroke episode, including patient-specific outcome data. A completely matched dataset of SSNAP and ambulance data would necessitate holding patient-identifiable data on a large scale but would allow a more comprehensive description of MSU performance and wider healthcare benefits.

Conclusion

The simulation suggests that a mobile stroke unit covering a large area can improve the delivery of thrombolysis to a large area. However, it is important to note that a significant proportion of MSU responses were to non-stroke patients, with 85-87% of attended calls being non-strokes. While the MSU has potential value in assessing stroke mimics and other interventions, its primary focus should remain on stroke patients to justify the high operating costs. Additionally, the MSU spent a considerable amount of time in transit between incidents, which affects its overall impact. Reducing transit times and improving dispatch accuracy could enhance the MSU's effectiveness in treating stroke patients.

The simulated dataset and modelling approach provide valuable insights into the operational dynamics of MSUs and their impact on stroke care. The model for stroke 999 calls provides a useful platform to evaluate modifications to the proposed MSU, or other changes in stroke care delivery. The predicted outcomes suggest that MSUs can play a pivotal role in bridging the gap between prehospital and hospital stroke services, offering a more integrated and efficient care pathway.

Key Recommendations

The recommendations of this work can be separated into 3 main themes: Using the existing simulated stroke dataset to evaluate modifications to the operational model for the MSU, using fully matched patient-identifiable data to fully simulate the impact of an MSU system on actual outcomes, informed by the results from the simulated stroke dataset, and performing health economic analysis.

Simulated stroke dataset

The current simulation uses the MSU without modification of operating hours, across large regions, and with standard dispatch and conveyance arrangements. In order to evaluate and optimise changes to the MSU model, and maximise time spent delivering stroke treatment, a number of further simulations should be considered as a continuation of this work, which would use fewer resources than starting modelling de-novo with a new datset.

The operational hours of the MSU should be simulated across the period of peak stroke demand, rather than the standard shift of 07:30-19:30, and should consider 2 or more MSUs deployed out of the same

location on a staggered shift pattern such as 07:30-19:30 and 10:00-20:00 in order to maximise attendance to calls in peak periods of demand. The impact of shrinking the operational region that an MSU is limited to should be considered, such as using a radius from base, though it is more appropriate to consider boundaries between health boards given that an MSU may be commissioned on a health board basis.

The impact of specialist dispatch on MSU operation should be considered and simulated. This would likely involve eliminating non-stroke AMPDS28 calls from a revised call simulation, such that the total number of calls to respond to decreases, and the number of strokes remains constant, increasing the proportion of calls that represent a true stroke.

Reducing the use of the MSU for conveyance should be considered by modelling a standard ambulance to deploy alongside the MSU for the purpose of conveying patients after MSU treatment is complete, allowing the MSU to immediately move to the next waiting stroke call. In this model, if the second vehicle was unavailable the MSU would retain the ability to convey patients, but the time utilised would be significant reduced.

Fully matched patient dataset

The original aspiration of this modelling work was fully-matched patient data, requiring permissions and aggregation of data on a larger scale. This would allow individual stroke calls to be tied to a specific outcome including hospital attended, length of stay, and functional outcomes. The patients attended to the MSU would be removed from the outcome dataset and their outcomes replaced with detailed simulated data. The MSU has the ability to discharge patients at scene, directly admit patients to stroke units and bypass the emergency department, reducing burden on medical teams, CT scanner use and emergency staff, as well as freeing emergency ambulances for other responses.

In this more detailed simulation a number of outcomes could be considered including actual totals of patients receiving thrombolysis, and a time to thrombolysis scaled in single minutes, given some analysis links outcomes to minute-by-minute performance (Meretoja et al. 2014). Additional benefits could be seen on the wider system impacts of the MSU as described above

Health economic analysis

The goal of this analysis of MSU operation is to inform a strategic case for a trial of an MSU in Wales. From initial modelling with simulated data to optimise the MSU working model, to trial on a fully-matched patient data set to accurately describe stroke and wider outcomes, the culmination of this work should be health economic analysis to critically analyse the cost-benefit of an MSU deployment, both to justify a limited trial and a system-wide implementation. This would utilise experimental data to extrapolate the economic impact patients treated by the MSU.

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