

# Behavioural insights about barriers and facilitators to returning inhalers to the community pharmacy in Wales for safe disposal: patient and community pharmacy perspectives

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## Abstract

**Objectives:** Inhalers containing hydrofluorocarbons have significant global warming potential. This project aimed to understand patient and community pharmacy (CP) staff perspectives on engaging in a CP-based inhaler recycling scheme.

**Methods:** The COM-B Model of Behaviour and the Theoretical Domains Framework (TDF) underpinned the qualitative data collection methodology. Data from eleven patients and five CP staff were mapped to the COM-B, TDF, and Behaviour Change Wheel.

**Results:** Patients and CP staff believed widespread knowledge of the need for, and existence of inhaler recycling schemes would encourage participation, building on existing recycling behaviours and aligning with moral obligations. Patients viewed CPs as trusted information sources, well-placed to raise recycling awareness. No patient participants recycled their inhalers and they felt that CPs were not adequately promoting recycling. Despite being involved in a pilot scheme, CP staff described having insufficient time with patients to encourage recycling. Patients saw inhaler recycling as integral to the CP's professional role whereas CP staff felt this responsibility was for the wider healthcare team. Both groups agreed inhaler recycling awareness should be raised, highlighted the busyness of CPs as a barrier to conversations, and considered feedback on the inhaler recycling pilots success an important motivator.

**Conclusions:** This study provides new insights into patient' and CP staff views on inhaler disposal. Whilst some barriers and facilitators were the same for both, identified areas of divergence surrounded the TDF Domain Professional Role and Identity. Further research should quantify the extent to which the wider population and CPs in Wales hold these views.

**Keywords:** behavioural; insights; community pharmacy; theoretical domains framework; COM-B; inhaler disposal; recycling behaviour

## Introduction

In Wales, over 5 million inhalers are prescribed every year in primary care, and of the 350,000 to 400,000 inhalers prescribed every month, over half are metered dose inhalers (MDIs) (All Wales Therapeutics and Toxicology Committee [1]). The hydrofluorocarbons (HFCs) contained within MDIs have a significant global warming potential [2] and have been identified as one of the greatest single contributors to carbon emissions across the National Health Service (NHS) [3, 4]. The Welsh Government (WG) is committed to achieving a carbon-neutral public sector by 2030 and net zero emissions for all sectors by 2050 [5–7], however, no national schemes currently exist in Wales to support safe, environmentally friendly disposal of inhalers. Instead, patients are encouraged to return used or unwanted inhalers to a community pharmacy (CP) where they are processed for incineration with other returned medicinal waste.

In the United Kingdom (UK), there have been a small number of local unpublished pilot schemes testing the disposal and recycling of inhalers. For example, a pilot initiative was tested in a small geographical area of South Wales to encourage the return of inhalers to CPs, after which a specialist waste contractor recovers and reuses the plastic, metal and gas contained in the MDI inhalers. In 2023, a 1-year pilot postal recycling scheme involving CPs in Northeast England reported 20,000 inhaler returns and 120 tonnes CO<sub>2</sub> equivalent saved [8, 9].

Whilst recycling behaviours are commonplace in domestic settings, the extent to which this extends to medication recycling is unknown. Patients and CPs may need support to engage in medication-related recycling behaviours. The COM-B model seeks to understand behaviour by identifying the interactions between an individual's capability (C), opportunity (O), and motivation (M) [10]. To date, no research has

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been undertaken using the COM-B model of behaviour to explore medication-related recycling behaviour. The Theoretical Domains Framework (TDF) [11] was developed to identify determinants of health-related behaviour change and includes 14 domains. Fig. 1 shows the synergies between the COM-B model and TDF as a function of the Behaviour Change Wheel (BCW) [10], providing a method of identifying interventions linked to the target behaviour i.e. returning inhalers to the CP for the purpose of this study.

This study aimed to explore the perspectives of patients and CP staff about the perceived behavioural barriers and facilitators to engaging in a CP-based inhaler disposal and recycling scheme.

**Methods**

**Study design**

A qualitative approach was adopted using a combination of one-to-one semi-structured interviews and focus group (FG) discussions to gain the perspectives of patients and CP staff about engaging in inhaler disposal and recycling.

**Ethics**

The study received ethical approval from the Cardiff School of Sport and Health Sciences, Cardiff Metropolitan University Ethics Panel (Sta-7736).

**Recruitment**

Patients were recruited via posters displayed in CPs located across three different geographical areas of Wales (North, Mid and South) (September to October 2023). Recruitment adverts were also posted online via X™, Facebook™ (specifically

Asthma UK support groups). CP staff were recruited with support from the Primary Care Division, Public Health Wales (PHW). Eight CPs involved in the pilot initiative were eligible to take part and were contacted via email and telephone (during August and September 2023). Patients and CP staff were offered a £20 shopping voucher as a token gesture for taking part. Table 1 outlines inclusion and exclusion criteria.

**Data collection**

Data collection materials were informed by the published literature for inhaler recycling [8,9, 12-21] and underpinned by the COM-B model and TDF [6, 7]. Interview schedule(s) (Supplementary Appendices 1 and 2) and FG topic guides (Supplementary Appendices 3 and 4) for patients and CPs respectively, were reviewed by the Project Steering Group (Supplementary Appendix 5). These explored both participant groups perceptions of the barriers and facilitators to inhaler recycling and gathered CP staff experiences of delivering an inhaler recycling scheme. Interviews and FGs were conducted online and recorded using Microsoft Teams™.

**Analysis**

Interviews and FGs were transcribed verbatim and de-identified. Transcripts were analysed by mapping the data first to the COM-B model and then the TDF. This five-stage process involved data familiarization, developing a thematic framework, coding the data, charting the data according to the thematic framework and data mapping and interpretation [22, 23].

As the aim of the analysis was to gain behavioural insights by considering the barriers and facilitators to inhaler recycling through the lens of COM-B, we used the six COM-B domains

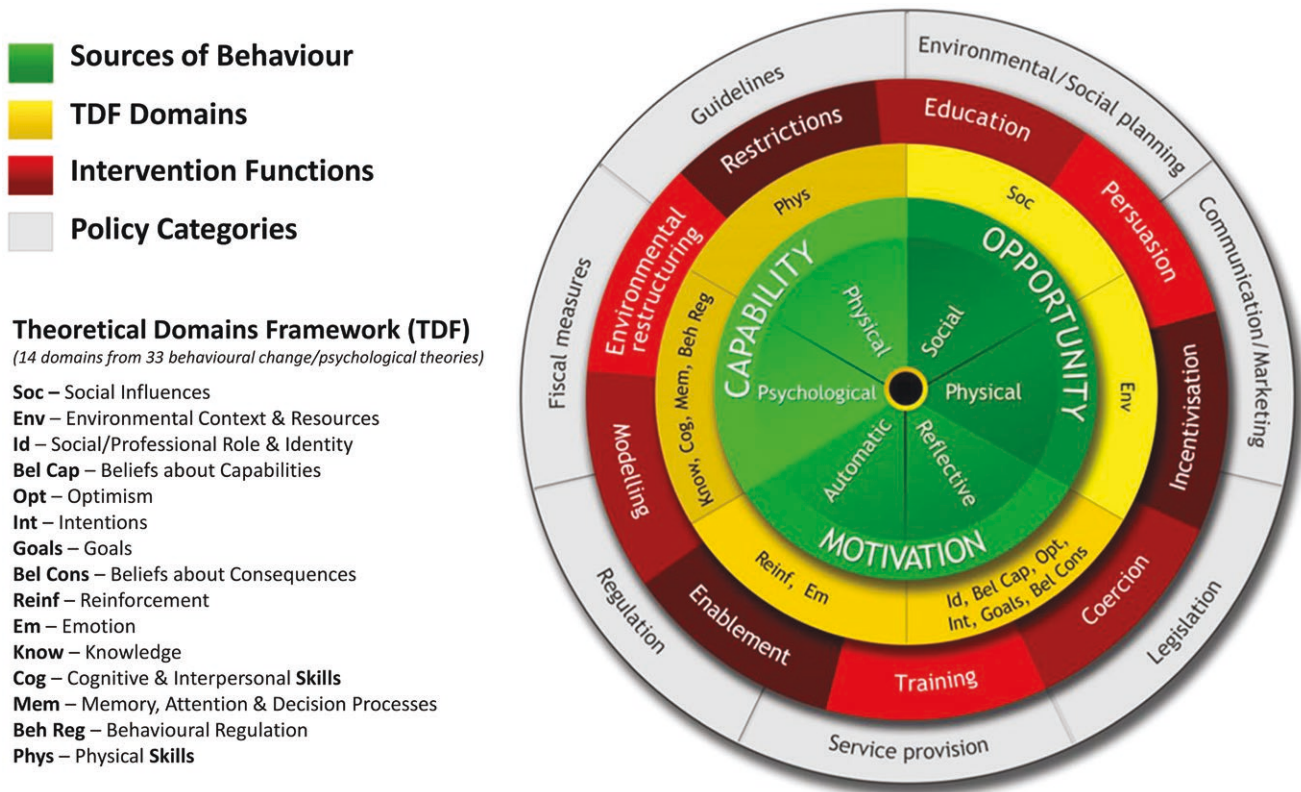


Figure 1: Behaviour change wheel.

**Table 1.** Participant inclusion criteria

To be eligible to participate in the study participants needed to meet the following inclusion criteria:

Patients	18 years or older Resident in one of the three geographical areas of Wales – <ul style="list-style-type: none"> <li>•North –Betsi Cadwaladr University Health Board.</li> <li>•Mid—Cwm Taf Morgannwg University Health Board;</li> <li>•South—Swansea Bay University Health Board</li> </ul> Prescribed one or more inhalers (at least one of these must be an MDI) OR A parent/guardian of an individual aged less than 18 years old who is prescribed inhaled medications (at least one of these must be an MDI)
Community Pharmacy Staff	Aged 18 years or older Employed in a one of the eight CPs in the named geographical area operating an the pilot inhaler recycling initiative.

as an a priori thematic framework and data was deductively coded to these domains. Data from patients and CP staff were initially analysed separately by coding each line of the transcripts to the COM-B model components (i.e. *Physical Capability*, *Psychological Capability*, *Physical Opportunity*, *Social Opportunity*, *Reflective Motivation* and *Automatic Motivation*) and then to the 14 TDF domains.

Initial codes were discussed by the research team (HS, DHJ, AH, and AC) with input from two steering group members (SE and AW). The coding frameworks used for analysis are presented in Supplementary Appendices 3 (patients) and 4 (CP staff). Data from patients and CP staff were synthesized by identifying areas of similarity and divergence within COM-B components and TDF domains. All codes mapped onto the COM-B and TDF domains, however, if this had not been the case the remaining data would be themed appropriately with new themes developed.

## Results

### Participant characteristics

Sixteen participants were recruited for the study; interviews and FGs ranged from 30 to 45 minutes. Eleven patients (seven males and four females) aged between 18 and 65 years participated in one-to-one interviews. Four patients lived in North Wales, two in Mid-Wales, and two in South Wales. No patients were recruited from within the geographical area that was piloting the inhaler recycling initiative therefore none of the patients interviewed had experience of inhaler recycling. Five CP staff (each representing one of the eligible CPs operating the pilot initiative) participated in one-to-one interviews ( $n = 3$ ) or a small FG ( $n = 2$ ). There were four males and one female; ages ranged between 30 and 60 years old.

### Overview of COM-B barriers and facilitators for patients and CP staff

None of the patients interviewed had prior experience with an inhaler disposal scheme and were generally unaware that they could return inhalers to the CP, with some reporting disposing of their inhalers with domestic waste.

The factors perceived to influence inhaler recycling varied across both participant groups with some commonalities found for *Psychological Capability*, *Physical Opportunity*, *Social Opportunity* and *Reflective Motivation* as barriers and *Physical Capability* and *Reflective Motivation* as facilitators.

Perceived barriers to inhaler recycling for patients mapped to all components of the COM-B model other than *Automatic Motivation*. Patient-perceived facilitators were mapped to three of the six COM-B components: *Physical Capability*, *Reflective Motivation*, and *Automatic Motivation*. For CP staff, perceived barriers mapped to four COM-B components: *Psychological Capability*, *Physical opportunity*, *Social Opportunity* and *Reflective Motivation*. Perceived facilitators for CP staff are mapped to four components, namely *Physical Capability*, *Social Opportunity*, *Reflective Motivation*, and *Automatic Motivation* (See Table 2).

Predominantly perceived barriers for patients related to (i) *Psychological Capability* i.e. awareness of the ability to return inhalers to CPs for disposal and recycling, lack of attention to CP-based medication recycling schemes, remembering to recycle, and the ability to form new recycling habits. (ii) *Physical Capability* i.e. knowing what parts of the inhaler to recycle and the ability to travel to the pharmacy, (iii) *Social Opportunity* i.e. CP's not informing them about recycling and (iv) *Physical Opportunity* i.e. the perceived need for the space and capacity in CP to deliver the service, and (v) *Reflective Motivation* i.e. lack of optimism about recycling.

Whereas Patients' perceived facilitators for inhaler recycling were predominantly related to (i) *Reflective Motivation* i.e. a belief in their capability to engage with recycling schemes, having strong intentions to use a scheme if it is simple and exists locally, that pharmacists see it as part of their professional role to encourage engagement with inhaler recycling, that they view recycling as having a positive impact and that recycling aligns with their goals; (ii) *Automatic Motivation* i.e. already going to the pharmacy to pick up prescriptions was seen as positive reinforcement to recycle as was receiving praise from healthcare professionals for returning medication; and (iii) *Physical Capability* i.e. that they have the necessary skills to be able to recycle.

In contrast, the key barriers to CP staff engaging with the inhaler recycling scheme related to (i) *Psychological Capability* i.e. having a limited understanding of the inhaler recycling process which impacts on confidence to explain the process to patients; lack of motivation to promote inhaler recycling, (ii) *Physical Opportunity* i.e. workload capacity for delivering the scheme, having the right environment, i.e. space for the recycling bins, and appropriate funding for recycling services, (iii) *Social Opportunity* i.e. prioritizing other aspects of patient care within their professional role compared to safe disposal of medication, and (iv) *Reflective Motivation*

**Table 2.** Summary of barriers and facilitators to inhaler recycling mapped to COM-B components for patients and CP staff

COM-B Model component	Patient Perceived Barrier	CP staff Perceived Barrier	Patient Perceived Facilitator	CP staff Perceived Facilitator
<i>Physical Capability</i>	Yes	No	No	No
<i>Psychological Capability</i>	Yes	Yes	Yes	Yes
<i>Physical Opportunity</i>	Yes	Yes	No	No
<i>Social Opportunity</i>	Yes	Yes	No	Yes
<i>Reflective Motivation</i>	Yes	Yes	Yes	Yes
<i>Automatic Motivation</i>	No	No	Yes	Yes

i.e. comparison of success with other local schemes could be demotivating, low intentions to engage in the scheme.

CP staff-identified facilitators related to the following; (i) *Psychological Capability* i.e. knowing that patients will want to recycle increased confidence regarding the behavioural regulation required for the pharmacy team to engage with a pilot, having experience of operating the initiative meant the underpinning skills for delivery were in place, having visual cues around the pharmacy served as a reminder to engage in the initiative and enhanced their knowledge of the scheme (ii) *Social opportunity* i.e. social influences like seeing patients recycling their inhalers and hearing about other pharmacies engaging successfully with the scheme, (iii) *Reflective Motivation* i.e. showing optimism for building on successes so far, the enthusiasm of patients, having experience of the running the pilot initiative enhanced confidence in their capability to deliver it, belief that the desired goal would be attained and seeing the positive consequences of the scheme contributed to positive intentions and a commitment to the service as part of their role, and (iv) *Automatic Motivation* i.e. behaviour reinforced by seeing the quantities of inhalers being returned and the desire to engage in behaviours that were considered morally commendable.

### Patient-perceived barriers and facilitators mapped to the TDF

TDF mapping for patients and CP staff is outlined in Table 3, including illustrative quotes for each of the 13 (out of a possible 14) domains identified across the data for barriers and facilitators. TDF Domain 13 (Emotion) was the only domain not represented by patients or CP staff. No new themes were developed at this stage of analysis.

## Discussion

This study provides new insights into the views of patients and community pharmacists (CPs) regarding inhaler disposal and recycling. While some barriers and facilitators were shared by both groups, differences emerged in the Professional Role and Identity domain concerning who should take responsibility for promoting inhaler recycling. Further research is needed to explore the extent to which these views are held by the wider population and CPs in Wales to inform the development of any national scheme. This is the first publication to use the COM-B model [10] and Theoretical Domains Framework (TDF) [11] to explore the return of inhaler medication to CPs for recycling from both patients' and CPs' perspectives. Both theoretical models were effective tools for collecting behaviourally informed data and enabled the structured identification of barriers and facilitators that may influence the success of implementing inhaler recycling schemes.

## Strengths and limitations

The strengths of this research include the novel application of the COM-B model [10] and TDF [11] to understand inhaler recycling behaviours, and the use of both patient and CP perspectives to provide a comprehensive view. However, several limitations must be acknowledged. First, the views about environmental sustainability captured in the interviews and FGs could have been influenced by the recruitment strategy used. Self-selection bias may have meant that patients who already held positive attitudes towards recycling and sustainability volunteered for the study and therefore these views may not be representative of the general community. At the time of the interviews, there was no requirement for CPs to actively encourage patients to return inhalers to pharmacies for safe disposal other than the pilot in a small geographical area of South Wales. None of the patients interviewed were from this area and therefore did not have experience with such schemes. This may have impacted engagement in the research, as patients may not have felt confident discussing unfamiliar issues in interviews or FGs. The low awareness among patients about the need to return inhalers to pharmacies for disposal could have impacted their engagement in the research. Alternative data collection methods such as qualitative surveys may have encouraged a broader range of patients to engage with the research.

## Context

Patients in this study were generally unaware that they could return inhalers to the pharmacy, and many were disposing of inhalers in domestic waste. This behaviour is consistent with the wider literature which indicates that most inhalers are not recycled [8–20] and that over 90% of patients dispose of their inhalers in household bins [20, 24]. Both patients and CP participants were confident that once awareness was raised about the existence of, need and rationale for an inhaler recycling scheme, it would be used. It was important to patients that inhaler recycling schemes were straightforward as there would be a reluctance to participate in schemes that were complex (e.g. having to sort different inhaler types or dismantling into components). This illustrates that the design of inhaler recycling schemes should consider the physical capability of the intended audience to ensure that schemes are designed in a way that maximizes engagement [25, 26].

A recent UK-based “postal recycling scheme” indicates that even relatively simple schemes may have limited uptake [8]. This postal scheme provided patients with pre-paid and pre-addressed envelopes to return inhalers for recycling. Although over 20,000 inhalers were returned to waste management centres over the 12 months pilot the figure represents only 7% of the pre-paid envelopes being returned. Low uptake of schemes may represent that engagement often requires

**Table 3.** Perceived barriers and facilitators mapped to the TDF domains for patients and CP Staff

COM-B Component	TDF Domain	Barriers	Facilitators
Psychological Capability	Knowledge	<p>Patients lack knowledge about the environmental impact of inhalers.</p> <p><i>“I’ve been taking pumps for 40 years now, longer than I’d care to admit, but it has never been pointed out to me that I could take the empty inhaler back to the pharmacy.” (P1)</i></p> <p>Pharmacists had limited procedural knowledge about the processes involved in inhaler recycling.</p> <p><i>“...probably couldn’t...explain 100% what is gonna happen to those inhalers after they leave the pharmacy...” (CP4).</i></p>	<p>Information packs provided at the start of the pilot scheme (e.g. stickers, posters, leaflets) enhanced pharmacy staff knowledge about the value of inhaler recycling.</p>
Psychological Capability	Memory and Attention Processes	<p>Patients find it difficult to remember to return inhalers.</p> <p><i>“Anything extra, people are less likely to do because you are likely to forget” (P2).</i></p>	<p>Patients reported that posters were useful draw attention to the scheme.</p>
Psychological Capability	Behavioural Regulation	<p>Disposal of inhalers in household bins was a habit which needs to be broken.</p> <p><i>“So, when you’re tidying up, you think, oh, just chucking it in the bin, chucking it in the recycling. So yeah, that’s the problem.” (P2).</i></p>	<p>Monitoring engagement with the scheme. Many patients were already returning used medication.</p> <p><i>“...we’ve got recycling bins in the pharmacies, and we encourage the patients just to return any used or unused inhalers to the pharmacy” (CP5).</i></p>
Physical Capability	Skills	<p>Patients did not perceive themselves to have the skills to be able to recycle inhalers at home.</p> <p><i>“I think if it was more to do with like personally sorting everything out, there might have been a bit more difficult” (P2).</i></p>	<p>Not coded</p>
Physical Opportunity	Environmental Context and Resources	<p>Patients felt that some community pharmacies would have limited resources and space to run a recycling scheme.</p> <p><i>“I don’t think they have the time or be interested in handing out medication all the time. They’re not gonna talk to me about my inhaler recycling (P2).</i></p> <p>Pharmacists considered their workload to be high which made it difficult to run additional services.</p> <p><i>“The pharmacy is a busy place and it’s, it’s- you know, it’s got, it’s got other agendas” (CP4).</i></p>	<p>Community Pharmacy was viewed (by patients) as an environment where there was the ability to recycle.</p> <p><i>“Considering they’re a big chain company, it shouldn’t be a problem” (P1).</i></p>
Social Opportunity	Social Influences	<p>Limited promotion of the scheme by pharmacy staff.</p> <p><i>“I don’t think I’ve actually been told by a pharmacist that you can take anything back” (P1).</i></p> <p><i>“If I’m to be honest, we haven’t really pushed it as hard as we could have” (CP3).</i></p>	<p>Modelling of recycling behaviour was seen by CP staff as something that could encourage other patients.</p> <p><i>“...sometimes it’s actually people have been in the pharmacy at the same time as somebody else who is returning them. So it’s not just by us, it’s by watching other people as well and watching other patients” (CP2).</i></p>
Reflective Motivation	Social/Professional Role & Identity	<p>Inhaler recycling was not viewed by pharmacy staff as the responsibility of community pharmacy.</p> <p><i>“that’s not our job to do that...” (CP2).</i></p>	<p>Patients felt that pharmacists have a responsibility to encourage sustainable behaviour(s).</p> <p><i>“It should be up to the pharmacy themselves to advertise that they do it – recycling - rather than the user asking about the recycling process” (P1).</i></p> <p>Inhaler recycling was perceived by patients and pharmacists to be a moral responsibility.</p> <p><i>“As providers of pharmaceutical services physical products, we have got a duty. We have always taken important our duty to take in waste medicines from patients” (CP2).</i></p>

Table 3. Continued

COM-B Component	TDF Domain	Barriers	Facilitators
Reflective Motivation	Beliefs about Capabilities	Not coded	Returning inhalers to pharmacy was viewed as a simple task from the patient's perspective. "I have to pick mine up from the pharmacy anyway. So, you know, it really doesn't get much easier than that" (P1). Pharmacists believed they would be able to continue to deliver scheme. "...runs pretty confidently and I can't think of any areas we're not confident about" (CP5)
Reflective Motivation	Optimism	Not coded	Optimism that the public are becoming more aware of sustainability. "I think people, people are more environmentally aware now that they and I think it's you know people are quite positive about returning" (CP2).
Reflective Motivation	Beliefs about Consequences	Patients perceived the environmental impact of recycling an inhaler to be low. <i>Personally, I don't think it'll have much of an individual impact, if I recycle them or not</i> (P2).	Belief that recycling has a positive impact on the environment from both patients and CP staff perspectives. "I think it's definitely important to take them where they need to go and recycle them properly" (P1). "It's got to be a benefit, especially when you see the quantity in either the box or in the tub. So you realize how much is being dispensed on a weekly on a monthly basis within our small community" (CP2).
Reflective Motivation	Intentions	Not coded	Patients intended to use the scheme. "I think it's definitely important to take them where they need to go and recycle them properly" (P1).
Reflective Motivation	Goals	Not coded	-Behaviour aligned with patient and pharmacist personal goals to become more sustainable. "I do generally try to dispose of all my waste correctly and recycle if possible. So shouldn't really be any different for the inhaler" (P3).
Automatic Motivation	Reinforcement	Pharmacy staff felt that comparison of success with other local schemes could be demotivating. "Their bin was probably 60-70% full...it was like a little bit of a, a demoralising thing for us..." (CP4).	Both groups saw the value of giving praise for patients engaging in the scheme. "it's having that upbeat thing when somebody bring them brings back and it's like oh great. Thank you. Great we'll go will get we're gonna go and recycle them now and make making I suppose making a fuss of that" (CP4) Incentivisation may improve patient engagement. "Bit like the old pop bottle scheme used to get couple of pence back when you took your pop bottle back. I mean, people will, won't they?" (P2).
Automatic Motivation	Emotion	Not coded	Not coded

Key: Codes in parentheses following each verbatim quote provides the study number for each patient (P) or Community Pharmacy (CP) staff participant, followed by the University Health Board initials (BC= Betsi Cadwaladr; SB= Swansea Bay; CTM = Cwm Taf Morgannwg).

patients to change a pre-existing habitual behaviour (i.e. disposal of inhalers in domestic waste). This barrier is supported by the current study patients interviewed in this study felt that changing how they currently dispose of inhalers may be difficult as putting inhalers in household waste had become a habit. Informational approaches alone are generally ineffective at encouraging people to adopt new sustainable behaviours and interventions should also incorporate components that encourage habit formations, such as behavioural prompts, incentives, or implementation intention setting [27].

Generally, inhaler recycling schemes were viewed as acceptable, with patients expressing a strong intent to use such schemes if they become available in their local CP's. Patients linked their intention to engage with an inhaler recycling scheme to their moral responsibility to improve sustainability. Feelings of personal responsibility and moral obligations have

been identified in the broader literature as key predictors of recycling behaviours [27, 28]. However, there is often a mismatch between intended recycling behaviour and observed behaviour [28]; findings from a meta-analysis of 91 studies of recycling behaviours found that underlying psychological constructs, such as attitudes, perceived behavioural control, and perceived social norms were better predictors of intentions to recycle than self-reported or observed recycling behaviours. Future evaluation of inhaler recycling schemes should seek to incorporate measures of both behavioural intentions and observable recycling behaviours.

A key area of divergence within the data set was the views around the professional roles and identity of CP staff. Patients perceived CPs to be well placed to raise awareness of recycling schemes and viewed the CP as a trusted source of information about medicines use and disposal. However,

the busy nature of the pharmacy environment was viewed by patients as a potential barrier to engaging in conversations with pharmacy staff about recycling. This was corroborated by the CP staff perspective who reported that they were hesitant to fully engage with inhaler recycling initiatives due to an extensive workload, with many competing tasks. Most of the CP staff interviewed described difficulties implementing the inhaler recycling pilot within their pharmacy as they were already working at capacity. These comments echo the findings of a recent literature review which has found that CP workload has increased since the introduction of new contractual arrangements in England and Wales [29]. CP participants also raised practical issues relating to the pharmacy environment's suitability to store inhalers, for example, there was a lack of space to accommodate the large recycling bins used for collection. In contrast to patients' views about the CP's role, inhaler recycling was not considered a professional priority, and more emphasis was placed on the need to fulfil other aspects of patient care. For this group of staff, the motivation to deliver an inhaler recycling scheme stemmed from their perceived moral responsibility to be sustainable rather than professional duty.

## Conclusions

This study provides new insights into patients' and CP staff views on inhaler disposal. Whilst some barriers and facilitators were the same for both groups, identified areas of divergence surrounded the TDF Domain *Professional Role and Identity*, which related to who is responsible for promoting inhaler recycling. This study contributes to the existing knowledge base highlighting the complexities and differing perspectives surrounding inhaler disposal and recycling. The findings underline the importance of understanding both patient and CP staff viewpoints to effectively address the challenge of promoting sustainable practice within pharmacy. Further research should aim to gather the views of patients who have experience of engaging with CP-based inhaler recycling initiatives. The authors recommend undertaking further quantitative research to establish any changes in behaviours after the implementation of any future recycling schemes across Wales (from both the patients and CP staff perspectives).

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## Supplementary Material

Supplementary data are available at *International Journal of Pharmacy Practice* online.

## Author contributions

All authors are in agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropri-

ately investigated and resolved. Dr Catherine Heidi Seage - Substantial contributions to the conception or design of the work, acquisition of data, analysis and interpretation of data for the work; drafting the work and revising for manuscript and final approval of the version to be published. Aleysha Caffoor - Substantial contributions to the conception or design of the work, acquisition of data, analysis and interpretation of data for the work; drafting the work and final approval of the version to be published. Alys Harrop, Substantial contributions to the conception or design of the work, acquisition of data, analysis and interpretation of data for the work; drafting the work and final approval of the version to be published. Dr Angharad Wooldridge, Substantial contributions to the conception or design of the work, analysis and interpretation of data for the work; drafting the work and revising for manuscript and final approval of the version to be published. Hannah Thomas, Substantial contributions to interpretation of data for the work; drafting the work and revising for manuscript and final approval of the version to be published. Sian Evans, Substantial contributions to the conception or design of the work, analysis and interpretation of data for the work; drafting the work and revising for manuscript and final approval of the version to be published. Dr Sarah Brown, Substantial contributions to interpretation of data for the work; drafting the work and revising for manuscript and final approval of the version to be published. Professor Delyth H James, substantial contributions to the conception or design of the work, acquisition of data, analysis and interpretation of data for the work; drafting the work and revising for manuscript and final approval of the version to be published.

## Conflict of interest

The author(s) declare that there are no conflicts of interest.

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## Ethical Approval

School of Sport & Health Sciences Ethics Panel (Sta-7736).

## Data access statement

The author(s) have full access to the study data, and this is ongoing.

## Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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