NICOR

Myocardial Ischaemia National Audit Project

How the NHS cares for patients with heart attack

Annual Public Report April 2014 – March 2015

This report is written for the public to show the performance of hospitals and ambulance services in England, Wales and Northern Ireland against national standards for the care of patients with heart attack in 2014/15.

Report prepared by
Dr Clive Weston, MINAP Clinical Lead
Kathleen Reinoga, MINAP & PCI Project Manager
Ronald van Leeven, MINAP & PCI Project Manager
Vlad Demian, NICOR Data Analyst

With assistance from:
Sue Manuel, NICOR Senior Software Developer
Sarah Brealey, British Heart Foundation
Members of the MINAP Steering Group

Electronic copies of this report can be found at:
http://www.ucl.ac.uk/nicor/audits/minap/publicreports

For further information about this report, contact:
Myocardial Ischaemia National Audit Project
University College London
1 St Martin's Le Grand, 2nd floor
London EC1A 4NP

Tel: 020 3108 7726
Email: minap-nicor@ucl.ac.uk

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The MINAP team would especially like to thank the contribution of all Hospitals and Ambulance Services who collect data and participate in the audit. Without this input the audit could not continue to produce credible analysis, or to effectively monitor and assess the quality of cardiac care.

For more information, please visit www.hqip.org.uk.

Data from this report are available on the data.gov.uk website.

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NICOR (National Institute for Cardiovascular Outcomes Research) is a partnership of clinicians, IT experts, statisticians, academics and managers which manages six cardiovascular clinical audits and two clinical registers. NICOR analyses and disseminates information about clinical practice in order to drive up the quality of care and outcomes for patients.

The British Cardiovascular Society is the voice for those working in cardiovascular health, science and disease management in the UK; we aim to promote and support both the healthcare professionals who work in cardiology and the patients for whom we want to encourage the best possible treatment. Our members are healthcare professionals, working in the field of cardiovascular health.

The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement, and in particular to increase the impact of clinical audit in England and Wales. HQIP hosts the contract to manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP). The programme comprises 40 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions.

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Executive summary

This report looks at heart attack treatment in England, Wales and Northern Ireland. It looks at the whole process from the call to the emergency services, to the prescription of preventive medications on discharge from hospital. It is based on data submitted by hospitals and emergency services, and is intended to cover every heart attack that is diagnosed.

Key findings

The audit shows continuous improvement in a number of aspects of the quality of care for patients following heart attack.

Immediate (primary) percutaneous coronary intervention (PCI) is now established as the preferred way to reopen a blocked artery (reperfusion) in ST-elevation myocardial infarction (STEMI). PCI rates increased in all nations covered in this report. Of patients who received reperfusion, 98% received PCI.

The rate of primary PCI in Wales (80%) is significantly lower than in England (99%) or Northern Ireland (92%), but is increasing steadily (from 30% in 2010-11).

Most hospitals are providing PCI to the majority of their patients within the recommended[1] time frames of 150 minutes from call for help, and 120 minutes from arrival at the hospital. Overall, 77% of patients are treated within 150 minutes of calling for help. Four in every five patients with STEMI are taken by ambulance directly to a hospital capable of providing primary PCI. For these, half receive PCI within 113 minutes of calling for help. For those who undergo PCI having first been assessed at another (non-interventional) hospital, half receive PCI within 145 minutes of calling for help.

89% of patients are treated with PCI within 90 minutes of arrival at hospital – the equivalent figure being 52% ten years ago (2004-05 report).

Patients suffering non-ST-elevation myocardial infarction (nSTEMI), may not require such urgent treatment but often have a worse long-term prognosis. This report shows year-on-year increases in the proportion of nSTEMI patients being admitted to a cardiac unit, being seen by a cardiologist and being referred for angiography – all measures that are linked to better patient outcomes.

However, despite improvements, in England, only 56.5% of nSTEMI patients are admitted to a cardiac unit; this is lower than in Wales and Northern Ireland.

Importantly, of those patients admitted directly to a hospital that has angiography capability, only 55.8% of nSTEMI patients had an angiogram within the recommended 72 hours of admission to hospital. When patients are transferred from another hospital to undergo angiography this statistic is likely to be even worse. This aspect of heart attack management – the provision of timely angiography (and PCI if appropriate) in nSTEMI – is the most obvious example of sub-optimal care for patients with heart attack and provides the greatest opportunity to improve care for the most patients.

Of the major risk factors for a heart attack (high blood pressure, high cholesterol, diabetes and smoking), diabetes is shown in this audit to have been diagnosed in an increasing proportion of heart attack patients. As rates of Type 2 diabetes continue to increase in the UK, the effect on heart attack rates may become even more significant.

People who smoke tobacco and suffer a heart attack are significantly younger than those who do not smoke. The average age at the time of heart attack is 57.9 years for male smokers compared with 68.1 years for men who have never smoked. The average age at the time of heart attack is 62.4 years for female smokers compared with 76.5 years for women who have never smoked.

Recommendations

Policy Makers, Service Directors and Commissioners should:

- Work with others to increase public awareness of the predictors of heart attack (including cigarette smoking) and support initiatives to mitigate these risk factors.
- Support initiatives that raise awareness of the signs and symptoms of a heart attack, and the need for urgent medical attention, to reduce the numbers of patients presenting to health services long after the onset of symptoms. Late presentation is shown by this report to be the biggest single reason why no reperfusion treatment was given.
- Require participating hospitals and ambulance trusts to maintain (and improve) case ascertainment and data quality with respect to national clinical audits.
- Enter into dialogue with service providers to better understand reasons for variation in process and outcome measures of care.

1. NICE Quality standard QS68, Acute coronary syndromes in adults, 2014.

Chief Executives, Medical Directors and Clinical Leads at provider centres should:

- Explore and understand variations in the care of both STEMI and nSTEMI patients in their own institution and compare their care to the best performance at a national level, considering ways to maintain and improve the quality of their services.
- Ensure nSTEMI patients have access to timely angiography (within 72 hours of admission to hospital) where this is indicated.
- Ensure there are sufficient resources allocated to clinical audit activity.

Clinicians and audit teams should:

- Ensure the data are accurate and reliably entered in a timely fashion.
- Interrogate the data on a regular basis, using the data to facilitate quality improvement initiatives.
- Remain committed to the collection of high quality data as outlined in the MINAP Minimum Data Standards.

Progress so far

The previous report, for 2013/14, contained recommendations concerning improved data completeness, continued investment in cardiac audit, and timely angiography for nSTEMI.

Data quality remains an issue, particularly for case ascertainment for nSTEMI and data completeness for STEMI. In the previous report, completeness of data in certain 'risk-adjustment' fields was judged inadequate (i.e. more than 10% incomplete). Including participating hospitals with insufficient data may present potentially misleading risk-adjusted mortality outcomes. Publication of risk-adjusted mortality in future versions of this report (see Introduction, part 2.4) will require hospitals to submit more complete data on patient characteristics.

Early review of these fields does show improvement in data quality, with an extra 19 hospitals becoming eligible for inclusion in risk-adjustment modelling (at least 90% data completeness of key fields) over the past 12 months. Overall completeness of the three key data fields (age, blood pressure, and heart rate) rose from 81.1% in 2013-14 to 90.1% in 2014-15.

NICOR continues to support data quality through provision of written data quality guidance, the introduction of a MINAP minimum data standard, data validation exercises and helpdesk support.

Angiography for nSTEMI within the recommended 72 hours has barely improved since the last report. As indicated above, this remains an area for considerable improvement, with opportunities to provide more timely and effective treatment, leading to shorter lengths of stay in hospital, and better patient outcomes. NHS England has introduced a best practice tariff for angiography following admission to hospital with nSTEMI to support such quality improvement. MINAP data will be used to inform this initiative. This will encourage adherence to the minimum data entry standards for the audit.

For Patients and the Public

This report provides a national picture of care for heart attack in 2014/15 in England, Wales, and Northern Ireland. It contains information about your local hospital and ambulance services, which can be compared with other hospitals and with national averages.

The report shows that the most common reason why no treatment is given to reopen the blocked artery that caused a heart attack is that the patient delayed seeking medical help after the onset of symptoms. A heart attack can be life-threatening, if you think you or anyone else is having a heart attack, even if you're not sure, you should phone 999 for an ambulance.

In the Introduction to this report we explain heart attacks and how they are treated. If you are interested in how heart attacks should be treated and why, you might want to read section 1.3 of the Introduction (in particular Aims of Management). Section 1.8 lists NICE Quality Standards – these are the general standards of care that all patients should receive.

Your local health services should have systems for involving patients and the public in decision-making and strategic developments. Using the information in this report can provide information to help you start a discussion or ask questions of health organisations.

Part One: Introduction

1. Background to heart attacks

1.1 About heart attack

A heart attack occurs when the flow of blood to the heart is blocked, most often by a build-up of fat, cholesterol and other substances, which form a plaque in the arteries that feed the heart (coronary arteries). The interrupted blood flow can damage or destroy part of the heart muscle.[2] This is known as a heart attack or myocardial infarction (MI).

Typical symptoms include chest pain or discomfort, sweating, breathlessness, and sudden changes in blood pressure, heart rate, and heart rhythm, which may lead to collapse or sudden death.

An electrocardiogram test (ECG) can help to diagnose a heart attack. A confirmed diagnosis is made by blood testing, though it may take some hours before the proteins released into the blood stream during a heart attack start to appear. To be effective at limiting heart muscle damage, treatment must start before the results of such tests are available.

1.2 STEMI and nSTEMI

Heart attack patients may be divided into those with, and those without, ST segment elevation visible on the ECG. This leads to the final diagnosis, once the blood test confirms a heart attack has occurred, of ST-elevation myocardial infarction (STEMI) or non-ST elevation myocardial infarction (nSTEMI).

ST-elevation usually means that a coronary artery is completely blocked - in most cases, this requires immediate treatment to re-open the artery (see Use of Primary PCI for STEMI). The absence of ST-elevation usually means that the coronary artery is only partly blocked.

Although patients with STEMI are at greater early risk, the medium to long-term outcome (in terms of recurrent heart attack or death) is in fact worse for those with nSTEMI.

As this report shows, nSTEMI patients make up the majority of heart attacks. Like those with STEMI, they are likely to have better outcomes if they receive a prompt angiogram and treatment to restore blood supply to the heart.

The National Institute for Health and Care Excellence (NICE) has published a series of guidelines, quality standards, pathways of care and technology appraisals (all with supporting evidence) for the management of patients with STEMI and nSTEMI. These can be found at **www.nice.org.uk.**

1.3 Aims of management

The aims and methods of heart attack management are shown in Figure 1. Not all interventions are suitable for all patients (see also 1.5 No reperfusion). Clinicians use their judgement when deciding which treatments should be offered.

For patients with heart attack symptoms without ST-elevation (nSTEMI) there is a wide spectrum of risk (see 1.6 below for more detail). The NICE guideline supports the use of risk scoring in nSTEMI, and the MINAP dataset contains data fields to record this risk stratification. This allows those patients who would most benefit from a more interventional approach to be identified.

Figure 1. Management of heart attack:

Aims	Methods
Prompt recognition of symptoms	■ Public awareness ■ Education of professionals
Accurate diagnosis	■ ECG ■ Blood tests to measure cardiac enzymes (especially troponin)
Restore blood flow to the heart (reperfusion)	■ Coronary angioplasty (also known as percutaneous coronary intervention (PCI) or stenting) Or ■ Coronary artery bypass graft (CABG) Or ■ Thrombolysis (also known as clot busting drugs or fibrinolysis) ■ Medications, e.g. nitrates
Promote healing	■ ACE inhibitors
Prevent future heart attacks	■ Long-term medications, e.g. statins, beta blockers, ACE inhibitors ■ Lifestyle changes
Education and support, promotion of healthy lifestyles	■ Cardiac rehabilitation ■ Patient support groups ■ Health promotion and information

2. MAYO Clinic website, 2016.

1.4 Angioplasty and interventional treatment for a heart attack

For patients with STEMI, re-opening of the blocked coronary artery must happen as quickly as possible. If patients delay too long in seeking help, or if medical services are slow in responding or in offering treatment, the treatment may be of no value.

Restoring blood flow can be achieved by primary PCI - an angioplasty and stent procedure - or with drugs designed to break down the blood clot (thrombolysis). While patients tend to wait a little longer for PCI than they would for thrombolysis, it is more likely to completely restore blood flow to the heart. Primary PCI is therefore the preferred treatment, with thrombolysis being reserved for cases where rapid access to primary PCI is impossible.

Many district general hospitals no longer routinely admit patients with STEMI. Patients are taken directly to a smaller number of specialised hospitals that provide PCI – these are sometimes called interventional heart attack hospitals (or Heart Attack Centres) – where a consultant-led service is available at all times. Sometimes, patients are transferred from the Heart Attack Centre to their local hospital following primary PCI, but often patients are discharged directly home after a stay in hospital of as short as 48 hours.

National guidance[3] recommends that primary PCI should be performed in those who present within 12 hours of onset of symptoms as soon as possible – and within 120 minutes of when thrombolysis could have been given. Based on past experience of thrombolysis treatment this equates to PCI within 90 minutes of arrival at hospital (the door-to-balloon time) and within 150 minutes of a patient's call for help (the call-to-balloon time). Results in MINAP are presented against these best practice standards, and against a more demanding 'aspirational' call-to-balloon target of 120 minutes.

Ideally, ambulance crews make an accurate diagnosis, through expert assessment of the patient and interpretation of an ECG that they record in the community, before taking the patient directly to the nearest interventional hospital. Rapid PCI requires close collaboration between ambulance and various hospital teams.

Some hospitals, while not designated Heart Attack Centres, do have facilities to perform PCI. If a patient arrives with, or develops, STEMI at these hospitals while a cardiologist and clinical team are available, it makes sense to provide primary PCI on-site, if it can be performed safely and immediately. Patients treated at these hospitals are more likely to arrive under their own steam, or they may have been less easy to diagnose before arrival. As such, direct comparison with patients managed in Heart Attack Centres is potentially misleading.

If PCI cannot be performed at the local hospital, a subsequent transfer to an interventional hospital is associated with added delay and longer call-to-balloon times, compared with direct transfer from home to an interventional centre.

1.5 No reperfusion

In some patients with STEMI, treatment to restore the blood flow to the heart is not appropriate. This may be because the patient's arrival at hospital is so long after the symptoms started that the treatment will not give benefit, or the treatment is not suitable for the patient (e.g. they are at increased risk of bleeding), or because the angiogram shows that the coronary artery is not actually blocked (such as in Takotsubo syndrome).

1.6 nSTEMI and access to angiography

For nSTEMI patients, who are generally suffering a partial rather than complete blockage of a coronary artery, immediate treatment to restore blood flow, such as primary PCI, is not essential. Often the event can be managed with a combination of drug treatments. However, some patients with nSTEMI either continue to suffer pain associated with reduced blood supply to the heart, or initially appear to stabilise but later experience further problems. Patients can be assessed for such risks within a few hours of admission to hospital using a variety of validated risk scores, based on measures including age, blood pressure and heart rate on admission to hospital, and their ECG and blood tests.

NICE guidelines suggest that patients at intermediate risk (above 3% risk of further heart attack or death during the next six months), and those in whom it is possible to demonstrate some remaining partial blockage to the coronary artery after the acute event, should be advised to have a coronary angiogram within 96 hours of admission. Other international guidelines have encouraged significantly earlier angiography. The NICE Quality Standard[4] suggests providing angiography (and then proceeding with PCI if appropriate) within 72 hours. The proportion of patients with a final diagnosis of nSTEMI (broadly reflecting the NICE classification of intermediate severity) who have angiography during their admission has increased from about 35% in 2003 to about 80% in 2014/15. This reflects a significant change in management for nSTEMI.

3. NICE Quality standard QS167, Myocardial infarction with ST-segment elevation: acute management, 2013.
4. NICE Quality standard QS68, Acute coronary syndromes in adults, 2014.

However, angiography is not appropriate for all patients with nSTEMI and those at the very highest risk were not included in trials that demonstrated the benefit of routine angiography. Clinical judgement (as well as patient choice) needs to be exercised in such cases.

2. Measuring outcomes

2.1 Measurements in this report

This report focuses on what aspects of care are provided to patients – in other words, it measures processes. It shows what care a person might expect to receive if they have a heart attack.

Good quality care can be defined through the processes measured here because they represent interventions that have been subject to rigorous assessments of effectiveness and/or appear in influential clinical guidelines. They are associated with better outcomes.

In the case of heart attack the most important and obvious outcome is survival (sometimes expressed as its opposite – case fatality or mortality rate). Yet even for this apparently straightforward outcome there are complexities with respect to reporting, for the following reasons:

1. There is no 'standard' or 'acceptable' death rate against which to audit.
2. In order to make fair comparisons between hospitals it is necessary to take into account (to adjust for) factors which influence survival, but are beyond the control of the hospital – such as age and other medical conditions. Choosing which factors to include in the mathematical adjustment, and how to address missing data, is a matter of judgement.
3. When the care of a patient with heart attack involves transfer between two hospitals, it becomes difficult to separate the role of each hospital in the eventual outcome.
4. Hospitals that manage relatively few patients each year are likely to report large variations in death rate between years. Other national cardiac audits, such as those of Adult Cardiac Surgery and the Interventional audit, report rates over the previous 3 years to 'smooth out' such differences.
5. It is unclear for how long survival should be monitored. To a patient, a five-year survival rate is probably a more important measure than a 30-day survival rate, but a five-year survival rate will be affected by many factors that are beyond the control of the admitting hospital.

Other outcomes that matter to patients include: length of stay in hospital; readmission following discharge; adverse effects of interventions; symptoms after discharge; return to reasonable levels of physical activity and confidence; quality of life. Defining and collecting information on those outcomes that occur after hospital discharge is challenging and may require electronic data-linkage. Some can be appreciated only by asking patients 'directly' through use of Patient Reported Outcome Measures (PROMs).

2.2 NICE Quality Standards

NICE has published quality standards, expressed through six statements, for the management of patients with ACS to influence the commissioning and provision of high quality coordinated care for patients with heart attack.[5]

The Quality Statements were published in September 2014, and are shown as Figure 2.

Figure 2. NICE Quality Standard, QS68

NICE Quality Standards for acute coronary syndromes (including myocardial infarction)	
1.	Adults with a suspected acute coronary syndrome are assessed for acute myocardial infarction using the criteria in the universal definition of myocardial infarction.
2.	Adults with nSTEMI or unstable angina are assessed for their risk of future adverse cardiovascular events using an established risk scoring system that predicts 6-month mortality to guide clinical management.
3.	Adults with nSTEMI or unstable angina who have an intermediate or higher risk of future adverse cardiovascular events are offered coronary angiography (with follow-on PCI if appropriate) within 72 hours of first admission to hospital.
4.	Adults with nSTEMI or unstable angina who are clinically unstable have coronary angiography (with follow-on PCI if indicated) as soon as possible, but within 24 hours of becoming clinically unstable.
5.	Adults who are unconscious after cardiac arrest caused by suspected acute STEMI are not excluded from having coronary angiography (with follow–on primary PCI if indicated).
6.	Adults with acute ST-segment-elevation myocardial infarction (STEMI) who present within 12 hours of onset of symptoms have primary percutaneous coronary intervention (PCI), as the preferred coronary reperfusion strategy, as soon as possible but within 120 minutes of the time when fibrinolysis could have been given.

The MINAP dataset is under review and the updated dataset will reflect revised NICE guidelines and technology appraisals.

5. http://www.nice.org.uk/guidance/qs68/

3. Background to MINAP

3.1 Principles

MINAP was established in 1999. It was founded on the following propositions:

- All patients should be included.
- Information should be collected as soon after treatment as possible.
- Participating hospitals should agree common definitions of clinically important variables and common standards of good quality care against which to audit their practice.
- The aspects of care being audited should have a proven link to better patient outcomes.
- A national aggregate figure should be produced, so a hospital could audit against agreed standards and compare against the national aggregate.
- Sufficient data should be recorded to allow for case-mix adjustment and other techniques for investigating differences in outcomes between hospitals.
- The dataset should be revised regularly to account for the introduction of newer treatments.
- The audit should maintain its credibility and validity by being guided and supported by relevant professional bodies and patient groups, and be managed by a small project team.
- A publicly accessible report should be published annually.

3.2 Purpose of MINAP

The information we collect is used to:

- Check NHS organisations providing care are following national guidance, and see what improvements are being made.
- Identify variations in the quality of care in hospitals in England, Wales and Northern Ireland.
- Identify when patients do not have access to the best cardiac care.
- Identify good practice and share it with other healthcare organisations.
- Inform patients of the risks and benefits of different cardiac procedures to facilitate informed choices.
- Facilitate research to identify improved treatments and interventions.
- Provide commissioners and policy makers with information to improve the delivery of cardiac services.
- Link NICOR data with information from other data sources, for example NHS Digital provides NICOR with Office for National Statistics (ONS) mortality tracking information, to enable NICOR to calculate how long patients live after different kinds of treatment.

The British Government has utilised data collected by MINAP to support investigatory reports. The Francis Inquiry, published in 2013, looked into the failings at the Mid Staffordshire NHS

Foundation Trust recommended "openness, transparency and candour throughout the system" and the development of "ever improving means of measuring and understanding the performance of individual professional teams, units and provider organisations".[6] MINAP was one of the first audits to make data available on the **data.gov.uk** website as part of the Transparency Agenda.[7] Data from MINAP was also included by Professor Sir Bruce Keogh in the 'data packs' that informed his review of 14 hospital Trusts with persistently high mortality rates.

Since MINAP began, its findings have been used as a basis for more than 70 peer-reviewed published studies, helping medical professionals, academics and the public understand more about heart attacks and how they are treated. Note, we do not pass on personal details to research groups.

Publications using MINAP data in 2015/16 are included in the appendices.

3.3 Organisation of MINAP

MINAP is one of six national cardiac clinical audits that are managed by the National Institute for Cardiovascular Outcomes Research (NICOR), which is part of the Institute for Cardiovascular Science at University College London (UCL). It aims to provide accurate data on cardiovascular outcomes for the public, healthcare providers and the medical profession.

MINAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP).

MINAP is overseen by a Steering Group of key stakeholders, including government and patient representatives – a list is available on the NICOR website **www.ucl.ac.uk/nicor**. The British Cardiovascular Society provides clinical direction and support. To encourage closer alignment of the national cardiac audits, Peter Ludman, the Clinical Lead for the National Audit of Percutaneous Intervention (NAPCI) is also a member of the MINAP Steering Group.

3.4 MINAP: Future plans

Mortality rates

Mortality rates are not included in this report. Previously, MINAP has included *unadjusted* mortality data, because many hospitals had provided inadequate data about those characteristics of patients that influence survival. However, this makes it difficult to compare hospitals or types of treatment. The majority of participating hospitals are now submitting data that will allow reliable risk-adjustment modelling, and so a comparison between hospitals, and identification of unexpectedly good or poor outcomes. It will also allow us to demonstrate more clearly that evidence-based care has a positive effect on patient outcomes. Some research studies using the MINAP dataset has already suggested this – one recent example is a paper published in the British Medical Journal (July 2016), "Geographic variation in the treatment of non-ST-segment myocardial infarction in the English National Health Service: a cohort study" (see Appendix 2).

Clinical Services Quality Measures

NICOR is participating in NHS England's development of Clinical Services Quality Measures (CSQMs). These are composite measures (based on multiple data items) designed to provide an at-a-glance indication of how well services are performing.

They will allow for reliable and rapid comparisons to be easily made between similar services across the country (for example, units within hospitals); providing better information for patients, clinicians and the public. They will help patients to understand whether they received the best care and how different services (such as hospitals) compare, and they will help clinicians to understand whether their actions are helping improve outcomes for patients, and how their organisations compare with others.

The cardiac measures will initially focus on the treatment of patients with heart attacks. National clinical audits such as MINAP are an important source of this data.

NICOR has held a public consultation on which measures to include. The measures are based on statistical principles and will be assured by clinical and technical experts.

Payment by results for angiography

NHS England and NHS Improvement are introducing a best practice tariff for non-ST segment elevation myocardial infarction (nSTEMI) from 2016/17. This is designed to encourage timely delivery (within 72 hours of admission) of coronary angiography for patients with nSTEMI, as recommended by the National Institute for Health and Care Excellence (NICE). MINAP data will be used to determine the delay of coronary angiography and used by commissioners within the Clinical Commissioning Groups (CCGs) to pay hospital trusts for this procedure based on performance.

Improved data collection on nSTEMI patients

We know that nSTEMI, which makes up the majority of heart attacks, are under-represented in MINAP, for reasons explained in the Introduction. We will work to capture a larger proportion of nSTEMI patients in future reports.

6. The Mid Staffordshire NHS Foundation Trust Public Inquiry (2013). Executive Summary. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/279124/0947.pdf

7. http://data.gov.uk/dataset/minap-analyses-2013

Part Two: Methodology

1.1 How the information is collected

The current dataset, version 10.3.2, contains 130 fields. It is revised every two years to allow both continuing monitoring of established practices and information about new treatments. It is designed to capture the entire 'patient pathway' – from the time the patient calls for professional help to the point of discharge. This includes patient demographics, medical history and clinical assessment, investigations, interventions, and treatment with medications before, during and after the hospital stay. The most recent versions of the MINAP dataset are available on the MINAP web pages at

www.ucl.ac.uk/nicor/audits/minap/datasets.

Participating hospitals are requested to enter all patients with suspected heart attack. Approximately 90,000 records are uploaded each year.

The audit has been running continuously since 2000 and all hospitals in England, Wales and Northern Ireland that admit patients with ACS contribute data (except Scarborough General Hospital, which is intending to re-engage with the national audit in the next twelve months, having stopped submitting data in 2011).

1.2 Security and patient confidentiality

Strict security measures are in place to safeguard patient information. All data are encrypted on transmission and stored, encrypted, on NICOR servers. NICOR manages access control to the servers via user IDs and passwords. Patient-identifiable data are kept strictly confidential and is only used for the purpose of linking records.

Data held within NICOR are managed within a secure storage and processing environment within the UCL network and in accordance with the UCL information governance and security policy.

NICOR is licensed under the Data Protection Act by the Information Commissioner's Office. Additionally, NICOR has support under section 251 of the National Health Service (NHS) Act 2006 (Ref: NIGB: ECC 1-06 (d)/2011).

NICOR staff recognise that confidentiality is an obligation and regularly undergo training to ensure understanding of the duty of confidentiality and how it relates to patient information.

Reports we publish will never identify any patient.

1.3 Data Completeness and Data Quality

MINAP records the vast majority of patients having STEMI in England, Wales and Northern Ireland. Evidence for this is that the number of STEMI patients receiving primary PCI in MINAP is similar to the number of primary PCI cases in the Adult Coronary Intervention Audit.

However, we know that not all nSTEMI heart attacks are recorded, and this varies significantly between hospitals. Partly this reflects the greater difficulty in diagnosing nSTEMI (there are many non-coronary causes of elevation of the particular blood biomarker that characterises nSTEMI). However, under-reporting of nSTEMI appears to correlate with resources allocated to data collection. Non-STEMI is therefore under-represented in MINAP. The true number is difficult to establish, as it is not possible to reliably compare MINAP data with Hospital Episode Statistics (HES) in England or the Patient Episode Database for Wales (PEDW).

The completeness of the data collected by hospitals is based on patients recorded with nSTEMI. The completeness of a number of key fields is continually monitored and is available to hospitals in an online view that is refreshed daily. Currently these fields continue to be 99% complete.

MINAP has a number of approaches to support improvements in data quality. MINAP provides detailed data quality guidance and a variety of clinical scenarios to aid data entry. A dedicated helpdesk advises colleagues who experience problems. The MINAP data application contains error-checking routines, including range and consistency checks, designed to minimise common errors. In December 2014, MINAP introduced a minimum data standard for STEMI and nSTEMI patients and data quality has improved over the last 18 months. MINAP also carries out rigorous checks to ensure quality of data. For example, there is an annual data validation study to check data held on the NICOR servers.

1.4 Reporting process measures

In reporting the process measures, we include:

- All patients with a discharge diagnosis of STEMI in call-to-balloon and door-to-balloon times. We include all patients that had ST segment elevation detected by ECG during hospitalization as well as at the time of admission to hospital.
- All patients with a discharge diagnosis of nSTEMI when reporting admissions to a cardiac ward, care under a specialist, and (for those admitted directly to a hospital with facilities to perform angiography) in reporting delay to angiography.
- All patients with acute coronary syndromes (both STEMI and nSTEMI) in reporting use of secondary prevention therapy and length of stay in hospital.

In addition we remove malformed entries, such as duplicates, and records with invalid dates. We further exclude patients younger than 20 years of age.

1.5 Improving analysis

NICOR's Analysis Team uses the R statistical programming language to help standardise processing of data across the HQIP audits.

Modules for the removal of duplicate entries and the cleaning of date, numeric, and categorical variables have been developed. The cleaning rules and algorithms are regularly curated by the team and reviewed by the audit leads to ensure that the analyses are properly specified, transparent, and reproducible.

In advance of publication of the annual report, hospitals and ambulance services receive and review draft unit-specific process measure reports that are generated using the same template of calculations that are later used to compute annual MINAP statistics. By leveraging the group review process in this way, NICOR seeks to guarantee that all published statistics have been 'vetted' and are reliable.

Part Three: Results and analyses

1. Characteristics of patients with heart attack in 2014/15

In 2014/15, 92,258 records were submitted to the MINAP database from hospitals in England, Wales, Northern Ireland and Isle of Man. Of these, 83,842 (91%) related to patients with a final diagnosis of myocardial infarction (40.5% STEMI; 59.5% nSTEMI). Two thirds of heart attacks occurred in patients who had not experienced previous attacks, while in the remainder there was a history of previous episodes.

Heart attack was more common in men – a ratio of two men for every woman. This ratio has not changed significantly over the past five years. Male predominance was more marked in STEMI (71.2% male) than in nSTEMI (64.7% male). Of all men suffering heart attack, 42.7% experienced STEMI and 57.3% nSTEMI. Of all women suffering heart attack, 35.5% experienced STEMI and 64.5% nSTEMI.

For both STEMI and nSTEMI, women tended to be older than men. The average age of male STEMI patients was 63.1 years compared with 71.4 years for females; the average age for male nSTEMI patients was 68.9 years compared with 74.7 years for females. Overall almost half of all heart attacks recorded in MINAP were in people over 70 years of age. Those with STEMI tended to be younger (average age 65.4 years) than those with nSTEMI (average age 71.0 years). Half of STEMI patients were 65 years or younger; half of nSTEMI patients were 72 years or older (Figure 3).

Figure 3. nSTEMI and STEMI, by age

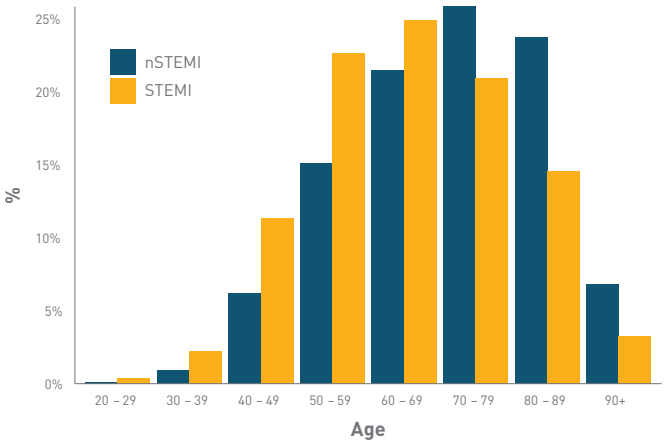
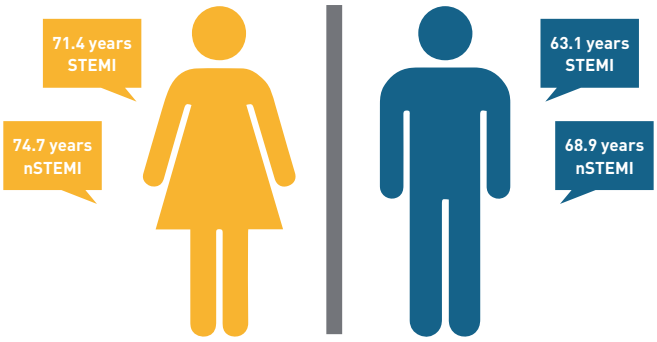


Figure 4. STEMI and nSTEMI patients by age and gender



Among those admitted with a first heart attack, and who had not previously undergone cardiac surgery or PCI, the prevalence of previously diagnosed high blood pressure (hypertension) for both men (43.2%) and women (54.1%) is similar to that reported over the past two years. Similarly, the prevalence of recognized and treated hyperlipidaemia (in most cases, high cholesterol levels managed by statins) has remained stable (29.9% in men and 28.8% in women).

While the prevalence of two of the major 'modifiable' risk factors for coronary disease – hypertension and hyperlipidaemia – has remained stable, there continues to be a yearly increase in the frequency of a prior diagnosis of diabetes (mainly Type 2 diabetes mellitus) in those experiencing a first heart attack; Approximately one in every five patients with heart attack has been diagnosed with diabetes (18.3% of male patients and 20.5% of female patients). This is much higher than the prevalence of diabetes in the general population (Figure 5).

Figure 5. Proportion of heart attack patients previously diagnosed with diabetes

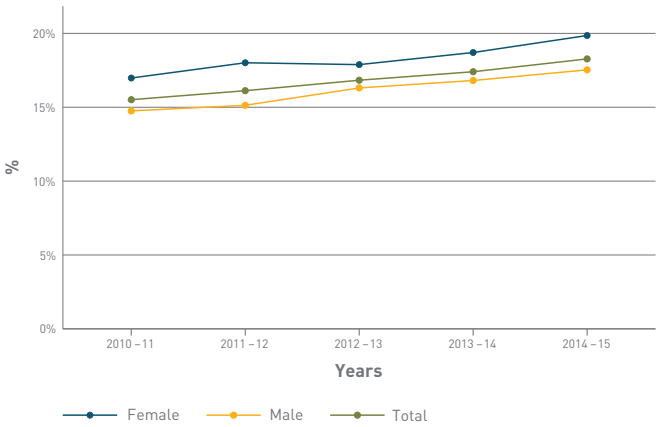
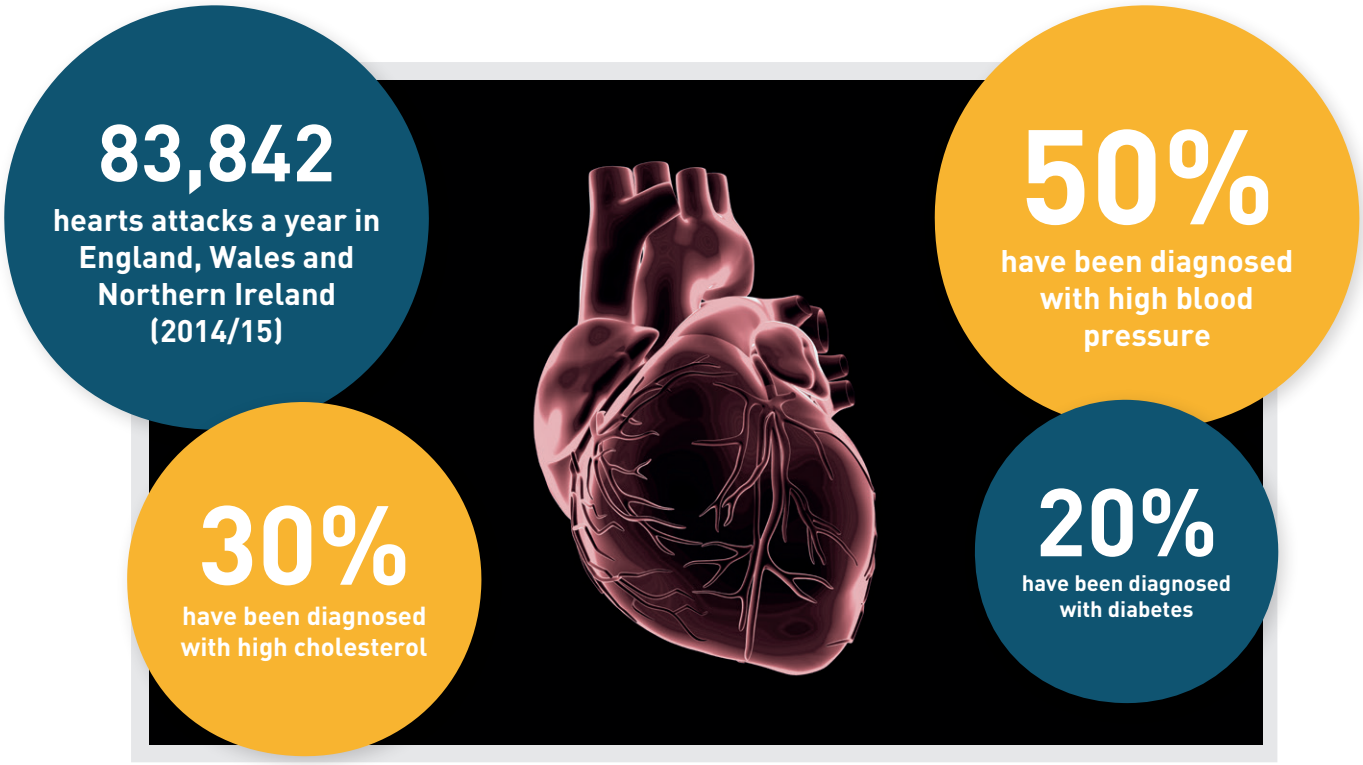


Figure 6. Risk factors for heart attack



Smoking is another recognised risk factor for the development of coronary artery disease and for heart attack. Most younger people suffering heart attack in MINAP are cigarette smokers. The average age at the time of heart attack is 57.9 years for male smokers compared with 68.1 years for men who have never smoked. The average age at the time of heart attack is 62.4 years for female smokers compared with 76.5 years for women who have never smoked.

STEMI Cases

2. Primary PCI for STEMI *(see Appendix 3, Table 1)*

NICE Quality Statement 6: Primary PCI for acute STEMI.

Adults with acute ST-segment-elevation myocardial infarction (STEMI) who present within 12 hours of onset of symptoms have primary percutaneous coronary intervention (PCI), as the preferred coronary reperfusion strategy, as soon as possible but within 120 minutes of the time when fibrinolysis could have been given.

The use of primary PCI in cases of STEMI appears to have reached a plateau. In 2014/15 it was provided to 98% of those who received any reperfusion treatment (i.e. either primary PCI or thrombolysis). This year in England 99% of patients were treated with PCI compared to 98.5% in 2013/14. In Wales 80% patients had primary PCI compared to 79.5% in 2013/14. This figure is unlikely to change substantially until the primary PCI service for North Wales, a predominantly rural area, becomes operational during 2016. In Northern Ireland 92.0% all patients recorded in MINAP received primary PCI in 2014/15.

All service providers (ambulance and hospital services) are audited against best practice standards for providing primary PCI for STEMI. These standards are described in national and international guidance for the management of STEMI. They include the provision of primary PCI within 90 minutes of arrival at the primary PCI centre (the door-to-balloon (DTB) time) and within 150 minutes of a patient's call for help (the call-to-balloon (CTB) time). Almost all hospitals are now treating the majority of their patients within a CTB time of 150 minutes and some within a CTB of 120 minutes.

The median DTB and CTB is the delay, from arrival at hospital and from call for help respectively, experienced by 50% of patients admitted to each hospital.

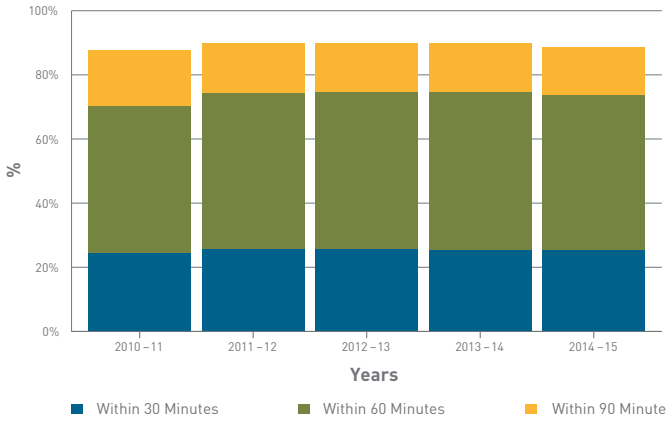
Usually, patients with a diagnosis of STEMI confirmed by a paramedic crew are taken directly to an interventional hospital (Heart Attack Centre). This is not always possible, particularly where the diagnosis cannot be confirmed by ambulance crews, or in more remote parts of the country. This leads to the need for transfer between hospitals, from one that cannot provide immediate primary PCI to one that can – as occurred in 19% of STEMI cases in 2014/15 – or for the use of thrombolysis (clot-busting drugs) to restore blood flow.

2.1. Door-to-balloon time

The door-to-balloon (DTB) time is the time between the patient arriving at the hospital and the start of the angioplasty procedure. Overall, the median DTB was, as in the previous year, 41 minutes, with 25% treated within 29 minutes and 75% within 59 minutes of arrival. This measure of in-hospital delay to treatment was, as last year, slightly shorter (median DTB 38 minutes) for those patients transferred to a PCI-capable hospital (Heart Attack Centre) following assessment at a non-interventional hospital than for those brought directly to the Heart Attack Centre (median DTB 41 minutes). This suggests that the staff at the Heart Attack Centre have more time to prepare for the arrival of those patients that have been assessed in another hospital. However, the more clinically significant call to-balloon time is longer for this group of patients, as section 2.2 will explain.

The percentage of patients with an admission diagnosis of STEMI who receive primary PCI within 90 minutes of arrival at a Heart Attack Centre was 52% in 2004/5, and had risen to 92% in 2013/14. This year (2014/15) the proportion was 88.6%. (Figure 7). This slight fall may represent simple year-on-year variability, rather than any systematic reduction in quality of care. It still reflects a close collaboration between ambulance services, emergency departments and admitting hospitals. In particular, direct transfer of the patient by ambulance from the community to the catheter lab without involvement of other departments or wards has reduced delays.

Figure 7. Door to balloon times for STEMI patients



In England this year, 88.9% of 18,986 eligible patients were treated with primary PCI within 90 minutes of arrival at the heart attack centre: compared with 92% of 17,996 in 2013/14. In Wales, 79% of 835 eligible patients were treated within 90 minutes compared to 87% of 491 in 2013/14. In Northern Ireland, 92% of 663 eligible patients were treated within 90 minutes. Last year, only Belfast hospitals were included in MINAP, and 95% of 358 eligible patients then were treated within 90 minutes of arrival.

2.2. Call-to-balloon time

The call-to-balloon (CTB) time is the interval between a call for professional help and the angioplasty procedure. It depends on both the relevant ambulance service and the admitting hospital – although some patients present themselves at hospital with symptoms of heart attack without alerting the emergency services. In 2014/15 14% of all heart attacks recorded in MINAP were 'self-presenters'; 5% of those whose diagnosis at the time of admission was 'Definite myocardial infarction' (in nearly all cases, STEMI) self-presented.

Overall, 77% of 19,044 eligible patients were treated within 150 minutes (and 53.6% within 120 minutes) of calling for professional help in 2014/15. Individual hospital performance with respect to this standard is presented in Table 1 (Appendix 3).

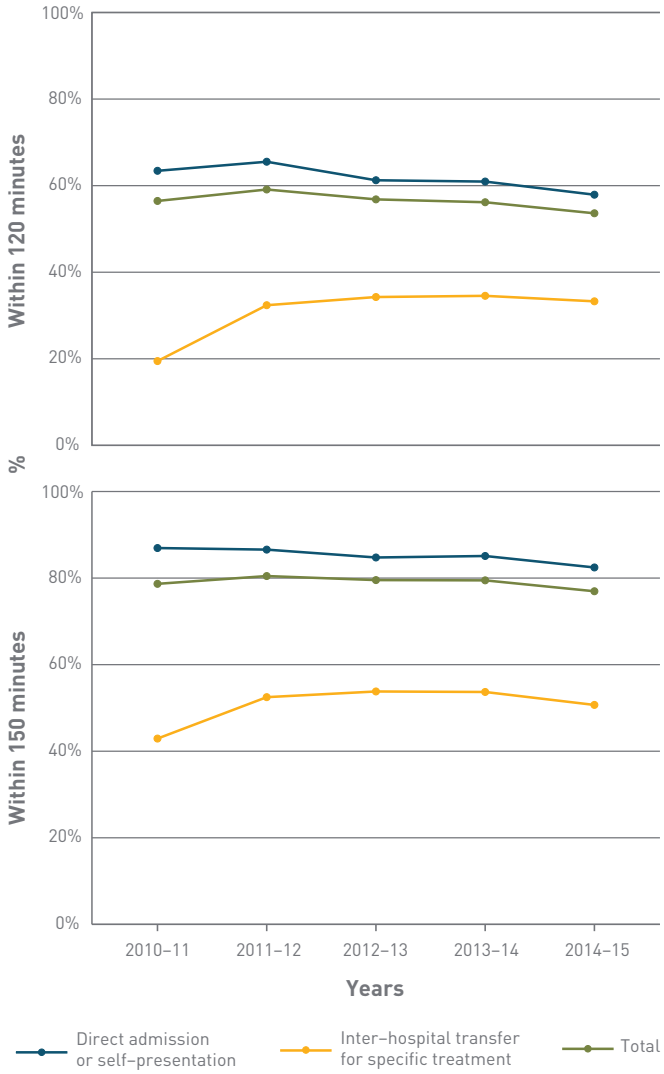
In England, 77% of 17,733 eligible patients were treated within 150 minutes of calling for help (and 54% within 120 minutes). This is a slight drop in performance from 2013/14, when 82% out of 16,930 eligible patients were treated within 150 minutes, and 59% within 120 minutes. The median call-to-balloon time was 115 minutes.

In Wales, 67% of 697 patients were treated within 150 minutes of calling for help (and 41% within 120 minutes), compared with 75% of 424 patients within 150 minutes, and 52% within 120 minutes in 2013/14. This apparent worsening of performance probably reflects a 'roll-out' of the more effective primary PCI treatment (rather than thrombolysis) to a larger geographical area. The median call-to-balloon time was 126 minutes.

In Northern Ireland, 80.8% of 614 patients were treated within 150 minutes of calling for help (and 60% within 120 minutes). The comparator from 2013/14 is hospitals in Belfast, where 89% of 313 eligible patients were treated within 150 minutes, and 80% within 120 minutes. Once again, the apparent worsening of performance probably reflects a 'roll-out' of primary PCI to a population that includes those in rural or remote areas. The median call-to-balloon time was 106 minutes.

Overall, 80% patients receiving primary PCI were admitted directly to interventional PCI-capable hospitals, either by ambulance or arriving under their own steam. Of these, 82.4% had a CTB within 150 minutes and 58% within 120 minutes. This compares with 50.7% within 150 minutes and 33.7% within 120 minutes for those who were transferred to the interventional hospital following initial assessment at another hospital. The median call-to-balloon time for those directly admitted was 113 minutes, compared with 145 minutes for those who were transferred between hospitals. Figure 8 shows the difference in CTB times between those directly admitted to an interventional hospital and those needing to be transferred between hospitals.

Figure 8. Call-to-balloon times: differences between patients transferred between hospitals and those who arrived directly



In England, 80.5% patients receiving primary PCI were admitted directly to interventional hospitals. Of these, 82.7% had a CTB within 150 minutes and 58.4% within 120 minutes. This compares with 50.5% within 150 minutes and 32.3% within 120 minutes for those who had required inter-hospital transfer. Overall 54% of patients received primary PCI within 120 minutes of calling for help in England.

In Wales, 79.7% patients receiving primary PCI were admitted directly to interventional hospitals. Of these, 72.4% had a CTB within 150 minutes and 44.5% within 120 minutes. This compares with 26.7% within 150 minutes and 17.8% within 120 minutes for those transferred between hospitals. Overall 41% of patients received primary PCI within 120 minutes of calling for help in Wales.

In Northern Ireland, 71% patients receiving primary PCI were admitted directly to interventional hospitals. Of these, 85.5% had a CTB within 150 minutes and 59.6% within 120 minutes.

This compares with 68.1% within 150 minutes and 59.6% within 120 minutes for 'inter-hospital transfers'. Overall 59.6% of patients received primary PCI within 120 minutes of calling for help in Northern Ireland.

Figure 9 shows, for those admitted directly to an interventional centre, the distribution of call-to-balloon times from 2010-11 to 2014-15 and Figure 10 shows the median time from calling for help to arriving at the hospital (call to door). The time interval from call-to-door has increased – presumably related to a roll-out of the primary PCI service to more remote areas – but this has had only a limited effect on overall call-to-balloon delay.

Figure 9. Distribution of call-to-balloon times over the past five years

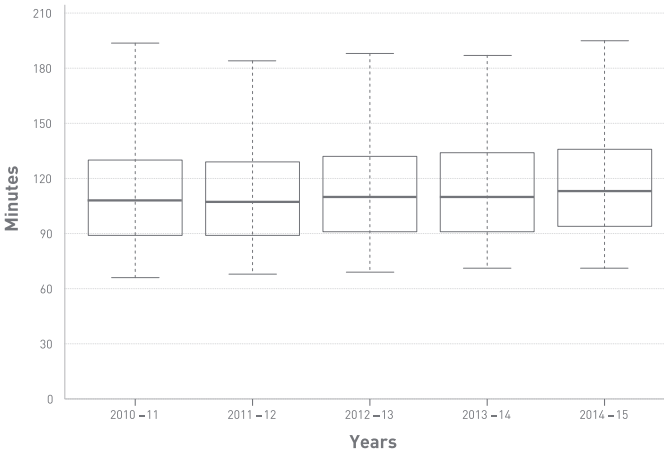
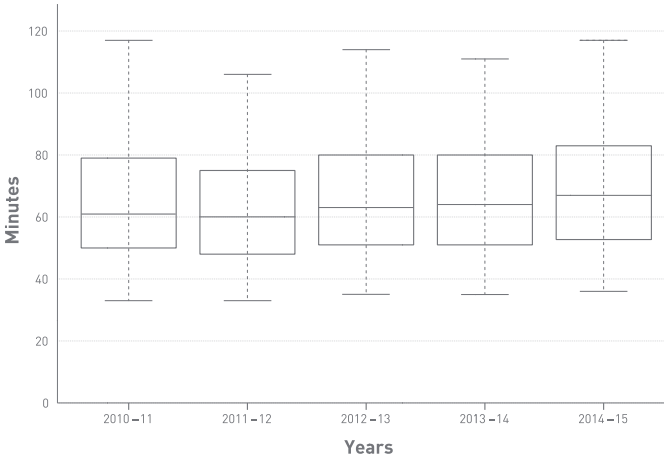


Figure 10. Distribution of call-to-door times over the past five years



3. Thrombolytic treatment for STEMI

Intravenous thrombolytic treatment (with clot-busting drugs), once the preferred option in the early treatment of STEMI, is now seldom used, except in those few areas where rapid access to primary PCI is not available. Its use has been declining over a number of years, and continued to do so in 2014/15, falling to 462 from 601 patients in 2013/14.

When it was the standard treatment, the aim was to give thrombolysis within 60 minutes of a call for professional help – the call-to-needle time. It is questionable whether such a target is realistic considering the small numbers and often remote locations of patients who now receive thrombolysis.

Figure 11 shows the median call-to-needle times for the five hospitals that have each recorded 20 or more cases of thrombolytic treatment for STEMI during 2014-2015. Among these the majority of patients were in North Wales, where a little under a half achieve the 60 minute call-to-needle time.

Figure 11. Call-to-Needle (CTN)

Call-to-Needle (CTN) times for those hospitals providing thrombolytic treatment rather than primary PCI for STEMI. Some of these patients may have received thrombolysis from ambulance paramedics before arrival at hospital

		2014 - 2015	
Hospital	**Median of CTN (min)**	**Thrombolysis within 60 mins (%)**	**Eligible patients for CTN60 (N)**
Altnagelvin Area Hospital, Northern Ireland	64.5	44.4	18
Glan Clwyd, Wales	64	46.3	41
Noble's Hospital, Isle of Man	73	88.9	9
Wrexham Maelor Hospital, Wales	44	48.9	47
Ysbyty Gwynedd, Wales	61	43.4	53

4. Patients that receive no reperfusion

There remains a substantial proportion of patients with a final diagnosis of STEMI who do not receive treatment to restore blood flow through the blocked coronary artery; in 2014/15, 26.6% - similar to the previous year.

The most common reason offered as to why no reperfusion treatment was given was that it was not applicable (of no benefit) to patients who presented late (typically more than 12 hours) after the onset of symptoms. This shows the importance of raising awareness among the public to increase recognition of symptoms and of the need to seek urgent medical attention. In a few cases, other serious illnesses such as advanced cancer, made reperfusion treatment inappropriate. In some cases the perceived risk of bleeding during or soon after reperfusion therapy was judged too high to allow such treatment (Figure 12). Largely these are matters for the judgment of individual clinicians when the patient is first assessed.

However, in some cases when an emergency angiography has been performed with the intention directly to proceed with primary PCI, a decision may be made that PCI is not required, is not feasible, or should be aborted in favour of bypass surgery (CABG). This is one of the benefits of angiography in the early management of STEMI. Importantly, in MINAP those patients who undergo timely emergency angiography in readiness for primary PCI, yet who do not proceed to PCI, are coded as having had 'no reperfusion' – even if they proceed to emergency CABG. As such, some patients do not undergo angiography at all (see Figure 12), and other patients do not proceed to PCI following angiography (see Figure 13).

Figure 12. No angiogram or reperfusion, STEMI patients in England, Wales and Northern Ireland

Reason why no reperfusion was attempted (patients where no angiogram was performed)	Number	Percentage
Administrative failure	49	0.54%
Elective decision	1368	15.12%
Ineligible ECG	2198	24.29%
Patient refused treatment	68	0.75%
Risk of haemorrhage	85	0.94%
Too late	1768	19.54%
Uncontrolled hypertension	3	0.03%
Other	1397	15.44%
None	1137	12.56%
Unknown	54	0.60%
Missing	922	10.19%
Total	**9049**	**100%**

Figure 13. Angiogram but no reperfusion, STEMI patients in England, Wales and Northern Ireland

Reason for no reperfusion following initial emergency angiogram	Total	Percentage
Angiographically normal coronaries / mild disease / Infarct Related Vessel unclear	607	12.8%
Coded not applicable	1185	24.9%
Complication before PCI could be performed	35	0.7%
Other	205	4.3%
Patient died	86	1.8%
Patient refused	27	0.6%
PCI felt to be inappropriate	359	7.6%
Surgical disease (i.e. patient proceeded to CABG)	287	6.0%
Technical failure	38	0.8%
No specific reason offered	1922	40.5%
Total	**4751**	**100%**

5. Ambulance service performance *(see Appendix 3, Table 2)*

Ambulance personnel continue to provide the earliest care for patients with heart attack. This includes: resuscitation from sudden cardiac arrest; pain relief; performing of ECG and continuing cardiac monitoring; (when appropriate) oxygen therapy; provision drugs such as aspirin, as well as professional reassurance to patients and their relatives.

Ambulance services are responsible for the early recognition of heart attack symptoms, by collaborating closely receiving hospitals they can promptly send an alert to the relevant hospital. Over recent years, their focus has shifted from the provision of pre-hospital thrombolytic treatment to the identification of those patients with STEMI who might benefit from primary PCI – transferring these patients rapidly to an interventional hospital. As previously shown for thrombolytic therapy, time to treatment also plays a key role in survival with primary PCI. For this reason, one measure of ambulance service performance is the overall call-to-balloon time for their patients receiving primary PCI, even though the PCI is performed within the hospital.

Table 2 (Appendix 3) shows ambulance service performance in England and Wales expressed as the median call-to-balloon time for patients who received care from ambulance personnel. Across the country, the average time for patients to receive primary PCI was 112 minutes, with individual services ranging from 90 to 125 minutes. Overall, 83% of patients had a CTB within 150 minutes and 60% within 120 minutes, although these figures varied between ambulance trusts. For patients treated within 120 minutes, the CTB times ranged from 45.8% to 81.4%.

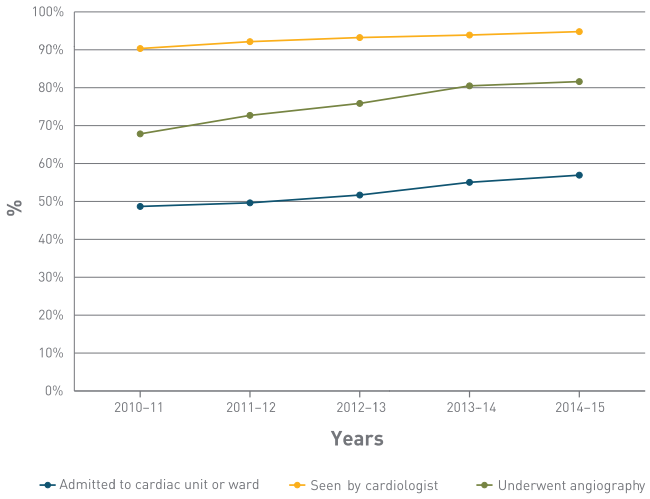
nSTEMI cases

6. Care for patients with nSTEMI *(see Appendix 3, Table 3)*

Compared with STEMI, patients with nSTEMI have a lower early risk of death, usually do not require immediate reperfusion treatment, yet often present more diagnostic difficulties. For these reasons they are not always admitted to cardiac care units, nor always cared for by cardiologists. But the long-term outlook, in terms of risk of a second heart attack or death, is actually worse for nSTEMI patients. Specialist involvement is important, as it increases the likelihood of them receiving 'evidence-based' treatments. Performance of angiography and coronary intervention is an important aspect of treatment for most patients (see section 7.3 Angiography in nSTEMI). Ideally, admission should be to a cardiology ward or other specialist facility, where nursing staff have expertise in cardiac nursing and there is easy access to specialist advice.

As explained in Part Two, Methodology (section 1.3), the numbers of nSTEMI reported in MINAP are incomplete, and in particular it is likely that patients who are not admitted to a cardiac care unit are, in many cases, omitted. The quality of care for patients not entered into MINAP remains unknown. The variable nature of recording nSTEMI between hospitals may also distort some analyses.

Figure 14 shows how three different aspects of care for nSTEMI have changed over time



6.1. Admission to cardiac unit/ward

Table 3 (in the appendices) shows the percentage of nSTEMI patients that were admitted to a cardiac unit or ward and the percentage of nSTEMI patients seen by a cardiologist or member of their team, by hospital, in 2013/14 and 2014/15. Overall, 56.9% of patients with nSTEMI were admitted to a cardiac unit or ward in 2014/15. In England in 2014/15, 55% of 45,500 nSTEMI patients were admitted to a cardiac care

unit or ward compared with 55% in 2013/14. In Wales, 71% of 2,726 nSTEMI patients were admitted to a cardiac unit or ward compared to 65% in 2013/14. In the Northern Ireland, 88 % of 1563 patients were admitted to a cardiac unit or ward in 2014/15.

6.2. Specialist care during admission

Overall, cardiologists saw 94.8% of patients with nSTEMI. In England in 2014/15 95% of 45,500 nSTEMI patients were seen by a cardiologist, or member of the cardiologist's team, during admission (but not necessarily admitted directly under the care of a cardiologist), compared with 94% in the previous two annual audits. In Wales, 87.6% of 2,726 nSTEMI patients were seen by a cardiologist or member of their team compared to 85% in 2013/14. In Northern Ireland, cardiologists saw 99.4% of 1563 nSTEMI patients in 2014/15.

6.3. Angiography in nSTEMI

MINAP reports the proportion of those patients with a final diagnosis of nSTEMI who are eligible for and who undergo a diagnostic coronary angiography. The frequency with which patients with nSTEMI are referred for angiography has increased significantly over the past decade – from about a quarter (27%) in 2004/5 to 81.6% in 2014/15 (Figure 15 above). Table 3 shows the percentage of nSTEMI that were referred for angiography by hospital in 2013/14 and 2014/15. In 2014/15, 79.4% of nSTEMI patients in England were referred for pre-discharge angiography after nSTEMI compared to 78% in 2013/14. In Wales the figure was 76.9% in 2014/15, compared with 80% 2013/14. In Northern Ireland 94.3% underwent angiography in 2014/15.

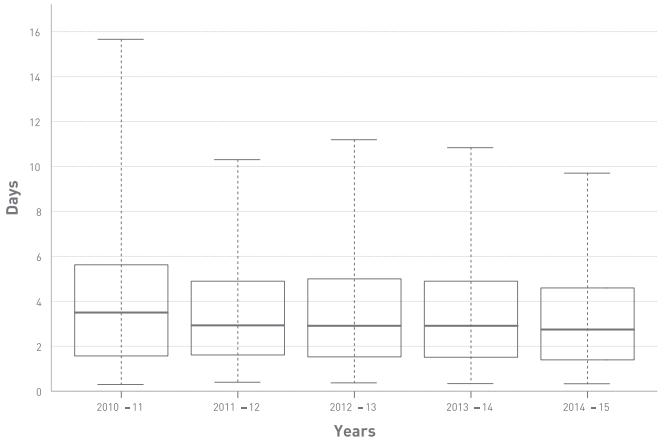
In a small number of cases, patients are discharged with arrangements to return for angiography later. When these are included, the overall rate of angiography in eligible patients reaches 81.6%.

6.4. Delay to angiography in nSTEMI

While immediate angiography is not warranted in the vast majority of patients with nSTEMI, early angiography is recommended for those at moderate to high risk – defined as those patients with an estimated probability of death within the following 6 months of more than 3%. The maximum acceptable delay from admission to angiogram has been variously defined. The NICE Quality Standard document for ACS has suggested that high quality care is characterised by angiography within 72 hours of being admitted to a hospital.

The analyses presented here have been restricted to those patients who were directly admitted to the hospital where angiography was performed. For those with reliable timings recorded, 17.1% had received an angiogram within the first 24 hours after admission; 37.8% within 48 hours and 55.6% within 72 hours. 30.4% undergo angiography more than 96 hours after admission. Changes to angiogram waiting times between 2010/11 and 2014/15 are shown in Figure 15.

Figure 15. Delay from admission to angiogram for nSTEMI patients ('Direct admissions' only)



At present we cannot reliably capture the entire care pathway of those patients who are transferred from non-angiography-capable hospitals to have angiography at a second hospital. It is likely that the overall interval from admission to angiography for patients transferred between hospitals is longer than for those admitted directly. (This has been demonstrated in the National Audit of PCI for those patients who go on to undergo PCI after angiography). The MINAP dataset now contains data fields that will allow the collection of reliable information about such patients.

STEMI & nSTEMI at discharge

7. Use of secondary prevention medication *(see Appendix 3, Table 4)*

NICE guidance and technology appraisals support the use of combinations of the following drugs in all eligible patients who have had an acute heart attack, in order to reduce the likelihood of a further heart event:

- **Angiotensin converting enzyme (ACE) inhibitors**
- **Aldosterone antagonists (in those with evidence of systolic heart failure)**
- **Angiotensin receptor blockers (not normally in combination with ACE inhibitors)**
- **Aspirin**
- **Beta-blockers**
- **Thienopyridine inhibitors (clopidogrel or prasugrel)**
- **Ticagrelor**
- **Statins**

Historically, MINAP has reported on the rates of prescription of individual secondary prevention medication at the time of discharge from hospital.

Overall, the rate of use of these drugs is high (in cases where their usage is appropriate) – aspirin 98.3%; beta-blocker 96.6%; either ACE inhibitor or angiotensin receptor blocker 94.6%; statins 97.4%; either clopidogrel or prasugrel or ticagrelor 97.5%.

Over the last two years a more stringent measure of hospital performance has been reported, by measuring the use of a combination of these drugs. This performance measure includes data for all patients with ACS, both STEMI and nSTEMI – regardless of what their initial hospital treatment was. The particular drugs, or classes of drugs, included in the composite indicator are aspirin; a second antiplatelet agent (clopidogrel or prasugrel or ticagrelor); beta-blockers; ACE inhibitors or angiotensin receptor blockers; and statins. The reported percentage represents the proportion of patients discharged from medical care following heart attack that receive all the medicines for which they are eligible. [While 71% of patients are reported to be eligible to receive all five drug classes, there may be good reasons why a particular patient cannot be given one or more of the secondary prevention drugs – so using this performance measure, a hospital will have treated two patients equally well if one patient is discharged taking all five drug classes and the other is discharged taking three of the drug classes, having been identified as being ineligible to receive the other two.] Overall, in 2014/15, 90.5% of patients were discharged taking all the secondary prevention drugs for which they were eligible. The performance of individual hospitals is shown in Table 4 (in the appendices).

Patients are not included in the composite score for a hospital if they are transferred to another hospital, or if they died in hospital. Due to the method of reporting, the initiation of secondary prevention medication prior to inter-hospital transfer will not be attributed in the report. As a result, the figures we report for non-interventional hospitals that work closely with interventional centres may not fully reflect the volume of cases initiated.

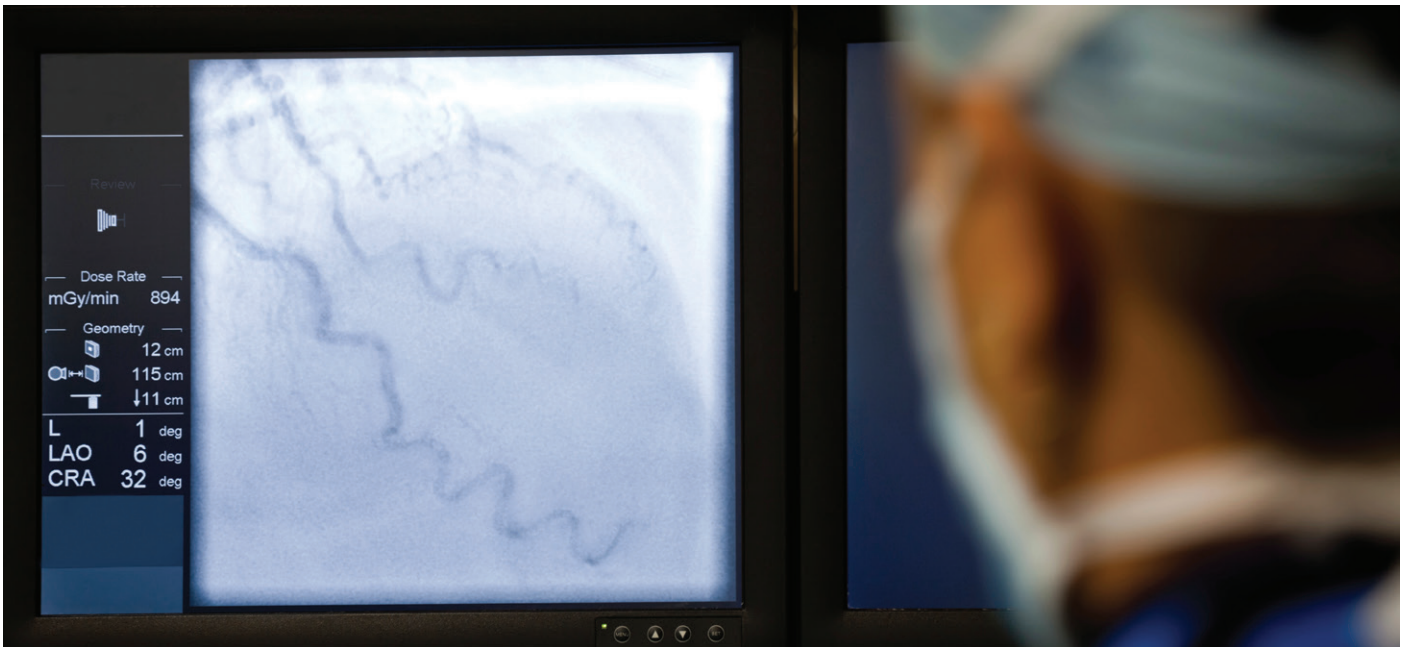
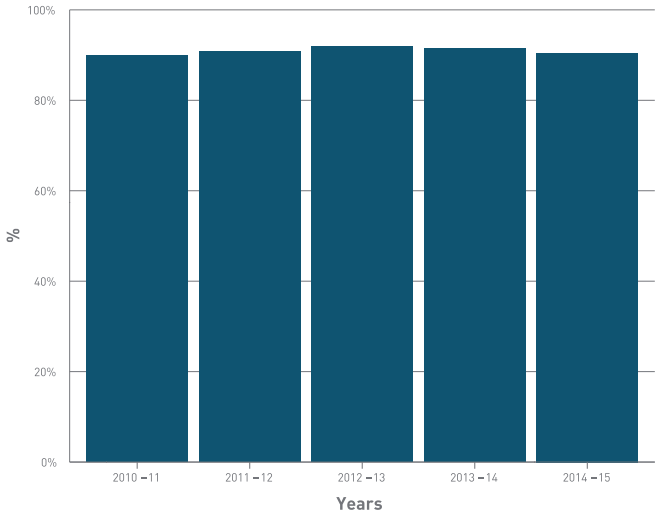


Figure 16. Proportion of heart attack patients receiving all appropriate secondary prevention medications



8. Length of stay *(see Appendix 3, Table 5)*

The length of time that a patient stays in hospital following a heart attack is influenced by many factors. Generally, patients with nSTEMI spend significantly longer in hospital than those with STEMI. This may partly reflect the urgency with which primary PCI is provided in STEMI, compared with the less urgent provision of angiography in nSTEMI, but also reflects the characteristic of the patients. As reported above, individuals experiencing nSTEMI tend to be older and are therefore more likely to have associated health and social issues that delay their discharge home.

The analysis of length of stay reported here is only for patients who were managed without transfer between hospitals, because MINAP cannot reliably link the date of admission of a patient to one hospital with the date of their discharge from another hospital. It is likely that those transferred between hospitals have a longer length of stay than those managed in one place. Also, patients with STEMI admitted to and "retained" in non-interventional hospitals often have non-cardiac health issues that had made transfer to an interventional centre inadvisable. The length of stay of such patients is likely to be substantial longer than others.

Excluding inter-hospital transfers, in 2014/15 the median length of stay for patients with STEMI was 3 days (Inter Quartile Range (IQR) 2-5 days). In other words, a quarter of those admitted with STEMI had been discharged within 48 hours of admission, half within 72 hours and three quarters within 120 hours. For nSTEMI the median length of stay was 5 days (Inter Quartile Range (IQR) 3-9 days). 5% patients with STEMI remained in hospital more than 17 days after admission. 5% patients with nSTEMI remained in hospital more than 25 days after admission.

Appendix 1: Glossary

ACE inhibitors - A class of drug used after a heart attack to treat and prevent of heart failure. They are also used to treat high blood pressure. They work by making your blood vessels relax or dilate. Angiotensin receptor blockers (ARBs) have broadly similar effects.

Acute coronary syndrome (ACS) - This term covers all episodes that result from sudden and spontaneous blockage or near blockage of a coronary artery, including heart attack and unstable angina.

Angina - Symptoms of chest pain that occur when narrowing of the coronary arteries prevent enough oxygen containing blood reaching the heart muscle when its demands are high, such as during exercise. See also 'Unstable angina'.

Angiogram - An X-ray investigation performed under a local anaesthetic that produces images of the flow of blood within an artery (in this case the coronary artery). Narrowing and complete blockages within the arteries can be identified and this allows decisions to be made regarding treatment, such as primary percutaneous intervention or coronary artery bypass grafting. The technique of producing angiograms is called angiography.

Beta blockers - Drugs used to help prevent attacks of angina, to lower blood pressure, to help control abnormal heart rhythms and to reduce the risk of further heart attack in people who have already had one. They work by blocking the actions of the hormone adrenaline, which makes the heart beat faster and more vigorously. They may also be used in heart failure.

Call-to-balloon time (CTB) - In heart attack treatment, the interval between the call for professional help and the start of primary PCI.

Cardiac rehabilitation - a programme of exercise and information sessions designed to help patients who have had a heart attack and reduce their risk of a further heart event.

Case mix - Different types of patients treated by a hospital or an operator

Coronary heart disease (CHD) - A group of diseases that includes stable and unstable angina, heart attack, and sudden coronary death. It is a result of the narrowing or blockage of the coronary arteries.

Door-to-balloon time (DTB) - In heart attack treatment, the time between the ambulance arriving at a PCI hospital and the start of primary PCI.

Elective - A procedure that is scheduled in advance because it does not involve a medical emergency.

Electrocardiogram (ECG) - A test to record the rhythm and electrical activity of the heart. The ECG can often show whether a person has had a heart attack, either recently or some time ago. It can also tell if reperfusion therapy is appropriate and if it has been effective.

Heart attack - The term applied to the symptoms, usually but not always involving chest pain, which develop when a clot (thrombus) develops within a heart artery. Usually this follows on from a gradual build-up of fatty material (atheroma) inside the artery (a process called atherosclerosis). The heart muscle supplied by the blocked artery suffers permanent damage if the blood supply is not restored quickly. The damage to heart muscle carries a risk of sudden death.

Interventional centre (also known as Heart Attack Centre or PCI hospital) - A hospital equipped with catheter laboratories and trained staff to perform percutaneous coronary interventions, (normally available around the clock).

Myocardial infarction - Often called a heart attack, this means the death of the cells of an area of the heart muscle (myocardium) as a result of oxygen deprivation, which in turn is caused by blockage of the blood supply to the heart.

The National Institute for Health and Care Excellence (NICE) – The official body in England which provides national guidance and advice to improve health and social care.

Non-ST elevation myocardial) infarction (nSTEMI) - A heart attack that occurs without ST segment elevation on the ECG. It usually means a coronary artery is partly blocked, so emergency treatment to restore the blood flow may not be needed, but the long-term prognosis is actually worse than for STEMI.

Percutaneous coronary intervention (PCI) - A technique to re-open a blocked coronary artery, also called angioplasty. Primary PCI means it is carried out as an emergency treatment for a heart attack, in which case it must be performed as soon as possible after the STEMI is diagnosed to prevent loss of a heart muscle.

Reperfusion - Treatment that improves the blood supply to the heart, including PCI or thrombolysis.

Risk adjustment - A process used to account for the impact of individual risk factors such as age, severity of illness and other medical problems so that different patients and different hospitals can more fairly be compared on specific measures.

Statins - Drugs used to reduce cholesterol levels in the blood.
ST elevation myocardial infarction (STEMI) - A heart attack characterized by a specific abnormal appearance on the ECG (ST segment elevation) which usually means a coronary artery is completely blocked.

ST elevation myocardial infarction (STEMI) - A heart attack characterized by a specific abnormal appearance on the ECG (ST segment elevation) which usually means a coronary artery is completely blocked.

Thrombolysis - Also called fibrinolysis or clot-busting drugs, intravenous medications to break down a clot in a coronary artery to restore the blood flow to the heart. Formerly the standard treatment for STEMI but now PCI is preferred as it is more effective.

Unstable angina - A sudden episode of chest pain, caused by a lack of oxygen supply to the heart, which is unpredictable and can occur when the patient is at rest. It is a type of acute coronary syndrome and should be treated as an emergency.

Appendix 2: Published research using MINAP data

MINAP is a rich source of data about heart attack patients in the UK and how they are treated. It is regularly used by researchers as a basis for peer-reviewed scientific studies. These can tell us more about different aspects of coronary heart disease and treatments, and help to improve standards as well as increasing scientific understanding of this important area.

This is a list of studies based on MINAP data published during 2015 and the first half of 2016. A complete list can be found at **www.ucl.ac.uk/nicor/audits/minap.**

Hall M, Dondo TB, Yan AT, Goodman SG, Bueno H, Chew DP, Brieger D, Timmis A, Batin PD, Deanfield JE, Hemingway H, Fox KA, Gale CP. *Association of Clinical Factors and Therapeutic Strategies With Improvements in Survival Following Non-ST-Elevation Myocardial Infarction, 2003-2013.* JAMA. 2016 Sep 13;316(10):1073-82. doi: 10.1001/jama.2016.10766.

Wu J, Gale CP, Hall M, Dondo TB, Metcalfe E, Oliver G, Batin PD, Hemingway H, Timmis A, West RM. *Impact of initial hospital diagnosis on mortality for acute myocardial infarction: A national cohort study. Eur Heart J Acute Cardiovasc Care.* 2016 Aug 29. pii: 2048872616661693.

Alabas OA, Hall M, Dondo TB, Rutherford MJ, Timmis AD, Batin PD, Deanfield JE, Hemingway H, Gale CP. *Long-term excess mortality associated with diabetes following acute myocardial infarction: a population-based cohort study. J Epidemiol Community Health.* 2016 Jun 15. pii: jech-2016-207402. doi: 10.1136/jech-2016-207402.

Dondo TB, Hall M, Timmis AD, Gilthorpe MS, Alabas OA, Batin PD, Deanfield JE, Hemingway H, Gale CP. *Excess mortality and guideline-indicated care following non-ST-elevation myocardial infarction.* Eur Heart J Acute Cardiovasc Care. 2016 May 3. pii: 2048872616647705.

Walker S, Asaria M, Manca A, Palmer S, Gale CP, Shah AD, Abrams KR, Crowther M, Timmis A, Hemingway H, Sculpher M. *Long-term healthcare use and costs in patients with stable coronary artery disease: a population-based cohort using linked health records (CALIBER).* Eur Heart J Qual Care Clin Outcomes. 2016 Jan 20;2(2):125-140.

Dondo T B, Hall M, Timmis A D, Yan A T, Batin P D, Oliver G, Alabas O A, Norman P, Deanfield J E, Bloor K, Hemingway H, Gale C P; *Geographic variation in the treatment of non-ST-segment myocardial infarction in the English National Health Service: a cohort study.* BMJ Open 2016;6: e011600 doi:10.1136/bmjopen-2016-011600

Hall M, Laut K, Dondo TB, Alabas OA, Brogan RA, Gutacker N, Cookson R, Norman P, Timmis A, de Belder M, Ludman PF, Gale CP; *National Institute for Cardiovascular Outcomes Research (NICOR). Patient and hospital determinants of primary percutaneous coronary intervention in England, 2003-2013.* Heart. 2016; 5. pii: heartjnl-2015-308616. doi: 10.1136/heartjnl-2015-308616.

Tonne C, Halonen JI, Beevers SD, Dajnak D, Gulliver J, Kelly FJ, Wilkinson P, Anderson HR. *Long-term traffic air and noise pollution in relation to mortality and hospital readmission among myocardial infarction survivors.* Int J Hyg Environ Health. 2016;219(1):72-8.

Rashid S, Simms A, Batin P, Kurian J, Gale CP World J Cardiol. *Inequalities in care in patients with acute myocardial infarction.* World J Cardiol. 2015 Dec 26;7(12):895-901. DOI: 10.4330/wjc.v7.i12.895.

Kwok CS, Bachmann MO, Mamas MA, Stirling S, Shepstone L, Myint PK, Zaman MJ. *Effect of age on the prognostic value of left ventricular function in patients with acute coronary syndrome: A prospective registry study.* Eur Heart J Acute Cardiovasc Care. 2015, Dec 16; pii: 2048872615623038. DOI: 10.1177/2048872615623038

Chung SC, Sundström J, Gale CP, James S, Deanfield J, Wallentin L, Timmis A, Jernberg T, Hemingway H; *Comparison of hospital variation in acute myocardial infarction care and outcome between Sweden and United Kingdom: population based cohort study using nationwide clinical registries.* BMJ. 2015;351:h3913. doi: 10.1136/bmj.h3913.

Shah AD, Langenberg C, Rapsomaniki E, Denaxas S, Pujades-Rodriguez M, Gale CP, Deanfield J, Smeeth L, Timmis A, Hemingway H. *Type 2 diabetes and incidence of cardiovascular diseases: a cohort study in 1.9 million people.* Lancet Diabetes Endocrinol. 2015; 3: 105–13. DOI 10.1016/S2213-8587(14)70219-0

Brown RA, Varma C, Connolly DL, Ahmad R, Shantsila E, Lip GY. *Simultaneous computerised activation of the primary percutaneous coronary intervention pathway reduces out-of-hours door-to-balloon time but not mortality.* Int J Cardiol. 2015;186:226-30 DOI 0.1016/j.ijcard.2015.03.172

Rothnie KJ, Smeeth L, Herrett E, Pearce N, Hemingway H, Wedzicha J, Timmis A, Quint JK. *Closing the mortality gap after a myocardial infarction in people with and without chronic obstructive pulmonary disease.* Heart. 2015;101(14):1103-10 DOI 10.1136/heartjnl-2014-307251

Simms AD, Weston CF, West RM, Hall AS, Batin PD, Timmis A, Hemingway H, Fox K, Gale CP. *Mortality and missed opportunities along the pathway of care for ST-elevation myocardial infarction: a national cohort study.* Eur Heart J Acute Cardiovasc Care. 2015;4(3):241-53

Brauer R, Smeeth L, Anaya-Izquierdo K, Timmis A, Denaxas SC, Farrington CP, Whitaker H, Hemingway H, Douglas I. *Antipsychotic drugs and risks of myocardial infarction: a self-controlled case series study.* Eur Heart J. 2015;36(16):984-92

Appendix 3: Tables

Table 1 Primary PCI in hospitals in England, Wales and Northern Ireland

Delays to treatment reported by those hospitals providing primary PCI for patients admitted directly (Direct) and those transferred (Transfer) from another hospital with STEMI.

DTB = door-to-balloon interval; CTB = call-to-balloon interval; CTB150 = proportion treated within 150 minutes of call for help; CTB120 = proportion treated within 120 minutes of call for help. Median is the time within which 50% of patients were treated (following call for help - CTB Median - and arrival at hospital - DTB Median). Delays are not reported when there were fewer than 20 patients. The Direct Admission column reports the proportion of all patients receiving primary PCI who are directly admitted to that hospital.

	Eligible patients who received pPCI within 90 minutes of arrival at Heart Attack Centre (door-to-balloon)	Median of door-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre	Median of call-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	pPCI within 150 minutes of calling for help for patients transferred to Heart Attack Centre	Eligible patients who received pPCI within 120 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	Proportion of patients with direct admission to Heart Attack Centre		Eligible patients who received pPCI within 90 minutes of arrival at Heart Attack Centre (door-to-balloon)	Median of door-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre	Median call-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	pPCI within 150 minutes of calling for help for patients transferred to Heart Attack Centre	Eligible patients who received pPCI within 120 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	Proportion of patients with direct admission to Heart Attack Centre
Year	2013/14									2014/15							
	DTB90 (%)	Out of (N)	DTB Median (minutes)	CTB150 All (%)	Out of (N)	CTB Median (minutes)	CTB150 Direct (%)	Out of (N)	CTB150 Transfer (%)	Out of (N)	CTB120 All (%)	Direct Admission (%)	DTB90 (%)	Out of (N)	DTB Median (minutes)	CTB150 All (%)	Out of (N)	CTB Median (minutes)	CTB150 Direct (%)	Out of (N)	CTB150 Transfer (%)	Out of (N)	CTB120 All (%)	Direct Admission (%)
England	**92.1**	**17991**	**40**	**82.4**	**16930**	**112**	**87.5**	**14167**	**56.6**	**2778**	**59.1**	**81.4**	**88.9**	**18986**	**41**	**82.3**	**17733**	**115**	**82.8**	**14590**	**50.5**	**3050**	**53.9**	**82.8**
Basildon Hospital, Basildon	97.7	611	35	83.2	596	119	86.3	467	72.1	129	52.7	76.9	97.5	628	33	87.6	614	114	89.4	483	80.9	131	57.0	78.7
Basingstoke and North Hampshire Hospital, Basingstoke	97.7	43	32	93.5	31	82	93.5	31		<20	80.6	88.6	76.3	76	34	70.8	65	111	69.5	59		<20	55.4	90.8
Birmingham City Hospital, Birmingham	74.0	100	74.5	82.4	85	122	81.7	82		<20	49.4	97.0	77.7	85	63	85.5	69	107	85.3	68		<20	63.8	98.6
Birmingham Heartlands Hospital, Birmingham	89.6	269	61	87	247	119	90	211	69.4	36	51.8	86.6	90.6	342	53.5	84.2	322	116.5	88.9	269	60.4	53	55.6	83.5
Blackpool Victoria Hospital, Blackpool	91.0	532	47	80	485	123	83.7	418	56.7	67	46.8	80.7	89.2	613	52	69.8	546	132	75.9	444	43.1	102	31.9	81.3
Bristol Royal Infirmary, Bristol	90.4	501	39	66.5	495	127	79.8	372	26.0	123	41.6	74.3	89.8	577	40	63.4	576	131.5	77.5	427	22.8	149	36.6	74.1
Castle Hill Hospital, Cottingham	93.2	441	32	81.5	417	108	88.5	382	5.7	35	65.5	89.1	90.0	471	33	77.8	433	113	85.0	394	5.1	39	57.7	91.0

Cheltenham General Hospital, Cheltenham	92.1	63	40	84.7	59	108	84.7	59		<20	69.5	100.0	95.1	41	40	85.4	41	110		<20		<20	63.4	0.0
Conquest Hospital, St Leonards on Sea	85.1	94	49	76.6	77	122	86.8	68		<20	46.8	84.2	74.3	101	53.5	65.1	83	117	72.0	75		<20	50.6	90.4
Cumberland Infirmary, Carlisle	84.8	125	47	81.6	114	115	81.6	114		<20	55.3	100.0	84.0	175	50	72.4	152	119		<20		<20	50.0	0.0
Derriford Hospital, Plymouth	78.7	183	52	70.5	183	126	70.9	182		<20	45.9	99.5	82.6	132	49	73.6	129	120		<20		<20	48.8	0.0
Dorset County Hospital, Dorchester	94.1	34	23.5	94.1	34	87.5	94.1	34		<20	82.4	100.0	89.3	28	29	89.3	28	109.5		<20		<20	53.6	0.0
Eastbourne District General Hospital, Eastbourne	97.2	71	43	92.8	69	104	92.4	66		<20	76.8	95.8	90.9	99	43	84.1	88	108.5	88.5	78		<20	64.8	88.6
Freeman Hospital, Newcastle	98.4	790	24	89.2	714	90	98.4	548	59.0	166	80.4	69.9	98.1	786	24	87.6	731	93	96.8	554	57.7	170	76.1	75.8
Frimley Park Hospital, Frimley	95.3	256	33	87.3	228	103	93.6	202	38.5	26	74.6	85.3	92.3	248	33	85.1	222	107	86.6	202	70.0	20	67.6	91.0
Glenfield Hospital, Leicester	83.2	352	55	86.5	319	110	86.5	319		<20	62.1	99.7	83.2	351	49	82.9	315	108		<20		<20	62.9	0.0
Great Western Hospital, Swindon	91.7	48	35.5	95.2	42	95.5	95.2	42		<20	76.2	100.0	84.8	46	39	82.2	45	99		<20		<20	57.8	
Hammersmith Hospital, London	86.7	368	46	78.2	367	109	82.5	275	65.2	92	59.4	74.5	92.1	403	47	74.8	369	121	86.6	290	31.7	79	48.8	78.6
Harefield Hospital, Harefield	97.7	692	28	91.6	670	106	96.5	536	75.0	148	67.3	77.7	96.5	569	30	83.9	565	106	93.6	421	55.6	144	65.7	74.5
James Cook University Hospital, Middlesborough	93.7	522	34	91.9	507	94	92.9	436	85.9	71	77.1	84.9	92.2	573	30	84.8	560	97	87.6	450	73.6	110	72.3	80.4
John Radcliffe Hospital, Oxford	96.7	362	25	80.7	357	105	90.6	297	31.7	60	63.6	82.6	90.2	306	26	84.0	244	111	87.5	208	40.0	20	63.1	85.3
Kettering General Hospital, Kettering	94.5	253	36	93.2	234	100	94.2	225		<20	76.5	92.7	93.0	271	32	91.3	230	98	93.1	217		<20	79.1	94.4
King's College Hospital, London	89.2	297	50	75.6	275	126	80	250	32.0	25	47.6	90.6	72.9	340	50	59.3	221	126.5	62.7	201		<20	35.3	91.0
Leeds General Infirmary, Leeds	90.3	995	47	70.5	972	127	86.5	682	32.8	290	42.9	68.5	85.7	1061	49	64.8	1059	133	79.5	745	27.6	304	35.0	70.4
Lincoln County Hospital, Lincoln	98.5	335	27	87.9	321	111	91.4	268	69.8	53	62.0	83.6	95.5	358	29	85.0	341	113.5	86.5	303	71.4	35	56.0	88.9
Lister Hospital, Stevenage	92.6	81	35	92.9	70	92.5	92.8	69		<20	80.0	96.3	93.8	240	28	91.9	222	97	91.7	216	n/a	<20	78.4	97.3

	Eligible patients who received pPCI within 90 minutes of arrival at Heart Attack Centre (door-to-balloon)		Median of door-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre		Median of call-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre		pPCI within 150 minutes of calling for help for patients transferred to Heart Attack Centre		Eligible patients who received pPCI within 120 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	Proportion of patients with direct admission to Heart Attack Centre		Eligible patients who received pPCI within 90 minutes of arrival at Heart Attack Centre (door-to-balloon)		Median of door-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre		Median call-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre		pPCI within 150 minutes of calling for help for patients transferred to Heart Attack Centre		Eligible patients who received pPCI within 120 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	Proportion of patients with direct admission to Heart Attack Centre
Year	2013/14													2014/15												
	DTB90 (%)	Out of (N)	DTB Median (minutes)	CTB150 All (%)	Out of (N)	CTB Median (minutes)	CTB150 Direct (%)	Out of (N)	CTB150 Transfer (%)	Out of (N)	CTB120 All (%)	Direct Admission (%)		DTB90 (%)	Out of (N)	DTB Median (minutes)	CTB150 All (%)	Out of (N)	CTB Median (minutes)	CTB150 Direct (%)	Out of (N)	CTB150 Transfer (%)	Out of (N)	CTB120 All (%)	Direct Admission (%)
Liverpool Heart and Chest Hospital, Liverpool	98.5	850	33	80.8	804	100	98	512	50.9	293	67.3	57.9		88.2	937	31	70.8	908	106	89.3	515	46.4	392	58.8	56.7
London Chest Hospital, London	98.5	611	41	87.3	600	108	95.5	443	64.3	157	65.5	72.4		97.6	531	42	85.4	526	114	94.7	395	57.3	131	58.9	75.1
Manchester Royal Infirmary, Manchester	90.6	545	48	71.2	541	124	88.3	342	41.7	199	45.5	61.7		80.9	618	49	63.0	616	132	79.3	386	35.7	230	36.4	62.7
Musgrove Park Hospital, Taunton	97.5	159	24	94.9	156	95	94.4	143		<20	80.8	91.9		96.4	139	29	90.7	129	106	90.4	115		<20	70.5	89.2
New Cross Hospital, Wolverhampton	93.3	466	44	80.8	381	113	88.1	344	13.5	37	58.0	79.5		85.9	468	50	76.3	414	120	83.3	372	14.3	42	49.8	89.9
Norfolk and Norwich University Hospital, Norwich	96.0	373	34	87.6	370	117	88.8	357		<20	54.9	96.5		94.2	399	35	80.4	393	118	83.0	376		<20	52.2	95.7
Northern General Hospital, Sheffield	82.5	629	55	73.7	509	130	75.1	422	66.7	87	38.5	71.9		81.8	615	50	62.2	494	134	70.2	383	31.7	104	35.0	77.5
Nottingham City Hospital, Nottingham	81.6	196	41	83.5	176	101	88.1	160		<20	67.6	89.8		83.8	334	41	81.9	325	105	83.7	295	63.3	30	66.8	90.8
Papworth Hospital, Cambridge	93.6	472	37	79.5	469	123	78.6	364	82.9	105	47.8	77.2		94.0	403	36	80.4	403	120.5	78.1	278	85.6	125	48.6	69.0
Queen Alexandra Hospital, Portsmouth	92.5	321	38	85.7	315	105	88.4	285	60.0	30	67.3	90.3		90.6	371	42	80.5	348	109	86.6	298	44.0	50	62.1	85.6
Queen Elizabeth Hospital (Birmingham), Birmingham	93.9	179	37	92.1	165	89	92.1	165		<20	81.2	100.0		88.7	186	42	92.1	165	97	93.3	163		<20	75.2	98.8
Royal Berkshire Hospital, Reading	97.3	150	27	99.3	137	83	99.3	137		<20	94.2	99.3		94.8	172	29	93.5	168	89		<20		<20	86.3	0.0
Royal Bournemouth General Hospital, Bournemouth	88.3	273	44	79.2	250	115	82.7	231		<20	56.0	90.0		79.3	305	46.5	68.4	275	121	69.8	255		<20	46.2	92.7

Royal Cornwall Hospital, Truro	89.6	193	47	77.9	190	125.5	77.9	190		<20	40.0	100.0	83.3	209	49	71.2	205	126		<20		<20	43.4	0.0
Royal Derby Hospital, Derby	95.9	219	42	93.5	216	100.5	93.9	214		<20	80.1	99.1	88.9	189	46	86.5	178	102	86.2	174		<20	72.5	97.8
Royal Devon & Exeter Hospital, Exeter	89.7	224	36	76.9	221	119	77.1	218		<20	51.6	97.8	83.6	262	42	59.6	250	137.5	60.5	243		<20	32.4	97.2
Royal Free Hospital, London	96.7	181	47	96.6	177	104	97.4	151	92.3	26	70.1	85.6	95.5	246	47.5	87.8	245	115	89.3	214	77.4	31	56.3	87.4
Royal Sussex County Hospital, Brighton	89.6	297	40	85.5	296	113.5	85.4	261	85.7	35	59.8	88.2	89.6	289	33	82.4	289	109	83.6	268	66.7	21	64.7	92.7
Royal United Hospital Bath, Bath	90.3	62	42.5	84.7	59	115	84.7	59		<20	54.2	100.0	92.7	55	36	90.2	51	116	88.5	26		<20	52.9	51.0
Salisbury District Hospital, Salisbury		<20	106		<20	204		<20		<20		100.0		<20			<20					<20		
Sandwell General Hospital, West Bromwich	89.2	111	64	93.5	92	114.5	93.2	88		<20	56.5	96.4	90.6	117	56	93.5	92	102.5	93.2	88		<20	79.4	95.7
Southampton General Hospital, Southampton	94.8	192	47	86.5	192	108.5	88.8	179		<20	66.7	93.2	93.8	161	47	82.6	161	112	86.3	153		<20	65.2	95.0
St George's Hospital, Greater London	89.1	512	45.5	85.6	492	110	85.2	426	87.9	66	61.6	86.3	88.9	488	50	85.0	465	115	82.9	391	96.0	74	56.6	84.1
St Peter's Hospital, Chertsey		<20	60		<20	82.5		<20		<20		93.8		<20			<20			<20		<20		
St Thomas' Hospital, London	91.0	111	55	77.6	98	112	86.2	80		<20	59.2	80.0	90.9	110	55	79.0	100	116.5	90.1	81		<20	52.0	81.0
Sunderland Royal Hospital, Sunderland		<20			<20			<20		<20			57.1	21	57		<20			<20		<20		
Torbay Hospital, Torquay	89.8	128	50.5	89.2	111	105	89.2	111		<20	63.1	100.0	74.3	144	48	72.3	130	106		<20		<20	56.2	0.0
University College Hospital [Heart Hospital], London	92.5	146	53.5	80.2	91	118	94.7	75		<20	54.9	52.1	90.9	110	50	85.7	56	116	90.4	52		<20	55.4	92.9
University Hospital Coventry, Coventry	93.9	377	35	91	365	95	93.8	308	75.4	57	77.3	83.0	92.5	375	37	87.5	367	101	90.9	308	67.9	56	70.8	83.9
University Hospital of North Staffordshire, Stoke-on-Trent	89.8	394	50.5	77.8	388	124	84.9	299	53.9	89	45.4	76.2	87.9	356	48	70.5	349	125	80.2	252	45.4	97	42.7	72.2
Watford General Hospital, Watford	100.0	49	35	93.9	49	104	93.9	49		<20	73.5	100.0		<20			<20			<20		<20		
Wexham Park Hospital, Slough		<20	60		<20	109		<20		<20		100.0	6667.0	33	12	63.6	33	86		<20		<20		

	Eligible patients who received pPCI within 90 minutes of arrival at Heart Attack Centre (door-to-balloon)		Median of door-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre		Median of call-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre		pPCI within 150 minutes of calling for help for patients transferred to Heart Attack Centre		Eligible patients who received pPCI within 120 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	Proportion of patients with direct admission to Heart Attack Centre		Eligible patients who received pPCI within 90 minutes of arrival at Heart Attack Centre (door-to-balloon)		Median of door-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre		Median call-to-balloon	Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre		pPCI within 150 minutes of calling for help for patients transferred to Heart Attack Centre		Eligible patients who received pPCI within 120 minutes of calling for help (call-to-balloon) with direct admission to Heart Attack Centre	Proportion of patients with direct admission to Heart Attack Centre
Year	2013/14													2014/15												
	DTB90 (%)	Out of (N)	DTB Median (minutes)	CTB150 All (%)	Out of (N)	CTB Median (minutes)	CTB150 Direct (%)	Out of (N)	CTB150 Transfer (%)	Out of (N)	CTB120 All (%)	Direct Admission (%)		DTB90 (%)	Out of (N)	DTB Median (minutes)	CTB150 All (%)	Out of (N)	CTB Median (minutes)	CTB150 Direct (%)	Out of (N)	CTB150 Transfer (%)	Out of (N)	CTB120 All (%)	Direct Admission (%)
William Harvey Hospital, Ashford	88.9	522	44	76.4	504	128.5	73.9	398	85.8	106	39.5	79.1		91.0	554	44	76.7	545	128	74.2	430	86.8	114	38.9	78.9
Worcestershire Royal Hospital, Worcester	88.5	200	48	77.2	184	124	77.9	172		<20	46.7	92.2		83.2	339	42	69.0	323	121	71.0	276	56.5	46	44.3	85.5
Worthing Hospital, Worthing		<20	96		<20	155		<20		<20		100.0			<20			<20			<20				
Wycombe Hospital, High Wycombe	96.6	58	26	90	50	95	88.9	45		<20	82.0	91.7		95.5	44	28	94.7	38	92	94.6	37		<20	81.6	97.4
Wythenshawe Hospital, Manchester	94.0	265	43	78.3	240	113.5	78.5	237		<20	60.0	97.8		83.2	357	47	67.1	337	127	67.5	335		<20	40.7	99.4
Wales	**86.8**	**491**	**46**	**75**	**424**	**119**	**80.8**	**381**	**23.3**	**43**	**52.1**	**83.3**		**78.9**	**835**	**45**	**66.6**	**697**	**126**	**72.4**	**605**				
Glan Clwyd Hospital, Rhyl		<20	81.5		<20	124		<20		<20		100.0		37.1	35	92.5	32.1	28	172	34.6	26		<20	17.9	92.9
Morriston Hospital, Swansea	82.1	95	51	61.8	89	132	63.2	76		<20	39.3	82.8		73.1	379	46	65.1	327	127	68.1	285	42.5	40	41.3	87.2
Royal Gwent Hospital, Newport		<20	94		<20	162		<20		<20		100.0		52.2	23	87		<20			<20		<20		
University Hospital of Wales, Cardiff	90.8	371	43	80.5	318	116	87.8	288	10	30	57.2	81.9		89.7	398	42	72.6	329	123	82.6	281	14.6	48	44.1	85.4
Northern Ireland	**93.9**	**375**	**37**	**83.7**	**326**	**100**	**91.5**	**259**	**53.7**	**67**	**67.8**	**72.9**													
Belfast City Hospital, Belfast		<20	52.5		<20	104		<20		<20		85.7			<20										
Royal Victoria Hospital, Belfast	95.2	352	35	84.4	308	99	92.9	241	53.7	67	69.2	71.4		93.9	540	36.5	82.5	497	105	88.4	337	70.0	160	62.8	67.8
Altnagelvin Area Hospital, Londonderry		<20	65		<20	139		<20		<20		100.0		83.8	117	34.5	73.2	112	120	76.4	106	n/a	<20	45.5	94.6
Craigavon Area Hospital, Portadown		<20	77.5		<20			<20		<20		100.0			<20			<20			<20		<20		

Table 2 Ambulance services in England, Wales and Northern Ireland

Performance of ambulance trusts with respect to delays to primary PCI for patients taken to hospital with STEMI. CTB = call-to-balloon interval; CTB150 = proportion treated by PCI in hospital within 150 minutes of call for help; CTB120 = proportion treated by PCI in hospital within 120 minutes of call for help

	Eligible patients that received primary PCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre	Eligible patients that received primary PCI within 120 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre	Number of all patients with STEMI that received primary PCI	Median call-to-balloon		Proportion of patients with STEMI that received pPCI compared to thrombolytic treatment	Number of STEMI patients that received either thrombolytic treatment or primary PCI	Eligible patients that received primary PCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre	Eligible patients that received primary PCI within 120 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre	Number of all patients with STEMI that received primary PCI	Median call-to-balloon
Year	2013/14					2014/15					
	CTB150 All (%)	CTB120 All (%)	Out of (N)	CTB Median (min)		PCI_share	Out_of_N	CTB150 All (%)	CTB120 All (%)	Out of (N)	CTB Median (min)
United Kingdom	**83.1**	**59.7**	**16154**	**112**		**69.8**	**13803**	**80.5**	**58.3**	8958	**111**
East Midlands Ambulance Service NHS Trust	86.8	67.2	1443	106		64.7	1242	84.6	61.7	728	110
East of England Ambulance Service NHS Trust	84.5	53.7	1577	118		39.8	628	77.1	77.1	227	97
Isle of Wight Healthcare NHS Trust (comes under South Central)			<20			14.9	47			<20	137
London Ambulance Service NHS Trust	87.1	65.0	1832	108		84.3	1092	85.5	56.6	909	115
North East Ambulance Service NHS Foundation Trust	91.1	81.4	1110	90		74.9	1634	87.1	76.2	1154	93
Northern Ireland Ambulance Service Health and Social Care Trust	83.7	67.7	325	100		69.5	2606	72.4	48.8	1646	118.5
North West Ambulance Service NHS Trust	80.1	57.6	1962	114		87.7	762	80.3	58.9	598	107.5
South Central Ambulance Service NHS Foundation Trust	90.0	74.4	981	99		75.7	630	88.2	75.7	456	95
South East Coast Ambulance Service NHS Foundation Trust	82.2	53.9	1377	118		76.6	1200	76.2	43.4	878	125
South Western Ambulance Service NHS Foundation Trust	77.2	52.2	1763	119		63.4	775	82.4	60.1	414	108
Welsh Ambulance Services NHS Trust	76.1	52.8	381	119		46.1	825	70.5	41.8	359	125
West Midlands Ambulance Service NHS Foundation Trust	85.4	60.0	1660	112		81.9	1565	80.6	58.9	1192	110
Yorkshire Ambulance Service NHS Trust	74.5	45.8	1735	125		49.8	797	78.0	56.9	390	113

Table 3 Care of patients with nSTEMI in England, Wales and Northern Ireland

Management of patients admitted to hospital with nSTEMI

	Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography	Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year	2013/14					2014/15				
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
England, Wales & Northern Ireland	**94.4**	**55.6**	**48485**	**78.1**	**40758**	**94.8**	**56.9**	**49837**	**79.4**	**41892**
England	**94.3**	**55.6**	**45910**	**77.9**	**38676**	**95.1**	**55.0**	**45500**	**79.0**	**38099**
Addenbrooke's Hospital, Cambridge	86.1	55.2	373	50.5	303	85.5	54.0	413	52.3	352
Airedale General Hospital, Keighley	99.2	38.2	131	61.8	131	100.0	42.7	143	57.5	141
Alexandra Hospital, Redditch	99.3	12.2	147	73.2	138	98.0	26.0	100	85.7	91
Arrowe Park Hospital, Wirral	95.5	78.0	309	65.5	284	94.2	67.7	347	75.8	252
Barnet General Hospital, Greater London	95.9	77.8	270	72.3	264	97.4	88.2	304	78.7	282
Barnsley Hospital, Barnsley	100.0	59.4	180	56.7	157	98.3	94.8	58	38.6	57
Basildon Hospital, Basildon	99.6	77.9	276	66.0	253	98.3	76.7	232	46.7	227
Basingstoke and North Hampshire Hospital, Basingstoke	100.0	93.3	60	62.5	56	76.1	16.2	117	64.7	116
Bassetlaw Hospital, Worksop	84.1	61.2	170	84.5	116	88.9	63.9	180	90.1	111
Bedford Hospital, Bedford	97.8	83.3	90	91.4	81	100.0	81.4	86	97.6	82
Birmingham City Hospital, Birmingham	99.6	82.7	226	99.0	203	99.2	81.8	253	97.4	233
Birmingham Heartlands Hospital, Birmingham	99.4	79.9	527	97.5	521	99.1	86.5	430	95.0	423
Blackpool Victoria Hospital, Blackpool	93.1	29.2	609	66.0	586	92.7	26.1	522	68.2	500
Bradford Royal Infirmary, Bradford	90.5	46.5	462	72.4	380	92.4	32.9	550	70.4	439
Bristol Royal Infirmary, Bristol	99.4	58.9	168	92.6	149	100.0	65.3	144	95.1	144
Broomfield Hospital, Chelmsford	94.0	16.5	364	69.4	317	93.3	15.7	344	63.8	312
Calderdale Royal Hospital, Halifax	96.9	42.5	292	98.6	211	95.2	36.4	335	99.1	210
Castle Hill Hospital, Cottingham	97.9	91.6	514	95.7	414	98.9	94.1	528	97.2	435
Central Middlesex Hospital, Greater London	100.0	53.3	45	62.8	43			<20		<20
Charing Cross Hospital, London	100.0	94.3	35	100.0	35	100.0	69.5	82	79.0	81
Chelsea and Westminster Hospital, London	98.3	0.0	59	83.3	54	100.0	0.0	51	85.1	47

Cheltenham General Hospital, Cheltenham	76.9	38.5	39	93.3	30	81.8	18.2	22	45.5	22
Chesterfield Royal Hospital, Chesterfield	98.9	30.7	378	11.6	293	99.4	31.3	310	18.1	299
Chorley and South Ribble Hospital, Chorley	91.1	31.1	90	50.7	69	96.2	44.6	130	23.4	107
Colchester General Hospital, Colchester	96.1	72.2	306	98.5	198	95.6	69.5	295	95.3	212
Conquest Hospital, St Leonards on Sea	95.0	49.4	180	63.0	173	98.0	48.7	195	63.2	190
Countess of Chester Hospital, Chester	96.3	23.7	270	90.4	156	96.9	62.5	261	89.4	179
County Hospital Hereford, Hereford	97.2	50.5	107	76.7	103	93.3	50.0	104	80.0	100
Croydon University Hospital, Greater London	100.0	100.0	175	88.5	174	96.6	100.0	145	91.7	144
Cumberland Infirmary, Carlisle	89.7	28.3	350	96.3	243	90.2	27.6	203	98.6	145
Darent Valley Hospital, Dartford	97.3	54.1	331	66.4	330	98.1	56.1	262	65.0	257
Darlington Memorial Hospital, Darlington	97.7	43.1	174	87.1	140	96.4	40.4	223	75.2	165
Derriford Hospital, Plymouth	4.2	0.0	24	91.7	24	82.7	44.0	439	75.9	439
Dewsbury District Hospital, Deswbury	85.5	35.9	248	56.7	238	87.2	40.6	219	55.3	199
Diana, Princess of Wales Hospital, Grimsby	100.0	50.3	193	75.5	192	94.1	33.2	187	66.9	184
Doncaster Royal Infirmary, Doncaster	83.5	36.5	255	98.0	148	95.8	36.3	259	95.3	171
Dorset County Hospital, Dorchester	94.3	56.9	174	94.3	158	90.7	66.0	150	85.8	141
Ealing Hospital, Greater London	100.0	90.3	144	81.5	130	99.2	99.2	121	79.7	113
Eastbourne District General Hospital, Eastbourne	84.1	76.9	195	16.8	190	90.5	69.5	200	23.7	186
East Surrey Hospital, Redhill	97.8	47.8	232	97.5	160	98.8	32.5	243	98.9	183
Epsom Hospital, Greater London	93.9	47.4	114	59.6	89	89.7	69.8	126	80.7	83
Fairfield General Hospital, Bury	93.5	16.7	401	77.0	317	88.9	13.6	433	93.9	246
Freeman Hospital, Newcastle	100.0	97.3	848	100.0	845	100.0	97.2	870	100.0	869
Frenchay Hospital, Bristol	92.1	30.9	330	95.1	143	89.4	29.8	47	84.0	25
Frimley Park Hospital, Frimley	98.0	44.4	403	91.8	328	98.4	35.0	366	96.0	273
Furness General Hospital, Barrow-in-Furness	67.9	46.9	81	82.2	73	75.4	44.6	65	43.6	62
George Eliot Hospital, Nuneaton	100.0	34.8	46	100.0	41	98.8	26.3	80	86.7	60
Glenfield Hospital, Leicester	99.7	49.1	399	83.4	373	99.7	33.4	386	99.0	314
Gloucestershire Royal Hospital, Gloucester	97.0	67.2	67	85.7	49	88.2	45.6	68	38.1	63
Good Hope Hospital, Sutton Coldfield	100.0	47.3	281	100.0	225	100.0	82.8	303	99.1	227
Grantham and District Hospital, Grantham	98.4	63.4	123	93.8	81	96.1	59.7	77	79.6	54
Great Western Hospital, Swindon	87.4	33.4	404	94.3	261	91.6	41.9	418	99.6	250

	Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography	Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year	2013/14					2014/15				
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Hammersmith Hospital, London	100.0	100.0	381	100.0	381	100.0	88.5	434	95.6	427
Harefield Hospital, Harefield	93.2	98.2	279	93.6	233	89.7	97.8	223	98.7	222
Harrogate District Hospital, Harrogate	91.4	89.5	210	83.3	114	90.5	94.8	232	59.8	112
Hexham General Hospital, Hexham	43.2	0.0	37	100.0	29	18.5	1.9	54	97.8	45
Hillingdon Hospital, Greater London	89.5	61.7	324	70.7	287	91.8	45.9	303	81.9	216
Hinchingbrooke Hospital, Huntingdon	96.6	44.1	59	72.0	50	99.2	41.4	128	63.3	120
Homerton University Hospital, London	84.0	20.0	25	79.2	24			<20		<20
Horton General Hospital, Banbury	81.2	11.5	96	63.5	96	96.4	5.5	55	54.6	55
Huddersfield Royal Infirmary, Huddersfield	91.9	24.7	283	96.3	162	93.3	30.2	252	99.3	134
Hull Royal Infirmary, Hull	75.5	10.8	102		<20	71.4	0.0	84		<20
Ipswich Hospital, Ipswich	97.7	60.7	440	61.2	387	97.0	62.9	372	71.9	274
James Cook University Hospital, Middlesborough	99.6	94.3	720	93.3	717	99.9	90.5	706	94.6	706
James Paget University Hospital, Great Yarmouth	99.5	83.1	219	94.3	158	98.3	81.0	237	94.5	164
John Radcliffe Hospital, Oxford	88.6	28.1	324	63.6	324	93.0	30.2	272	63.7	270
Kent and Canterbury Hospital, Canterbury	90.3	79.6	103	3.9	103	89.5	76.8	95	12.8	94
Kettering General Hospital, Kettering	99.5	79.9	214	98.8	163	99.0	79.3	208	99.4	158
King George Hospital, Greater London	79.1	75.6	86	82.1	84	85.3	69.0	129	81.3	128
King's College Hospital, London	91.4	52.4	338	97.9	233	99.5	22.4	371	99.5	369
King's Mill Hospital, Sutton-in-Ashfield	100.0	11.5	244	95.5	243	100.0	15.1	271	88.9	271
Kingston Hospital, Greater London	88.4	1.3	155	71.4	98	86.1	0.0	72	44.2	43
Leeds General Infirmary, Leeds	100.0	96.7	747	79.5	723	100.0	97.8	778	77.2	762
Leighton Hospital, Crewe	93.6	53.4	264	75.3	235	97.3	38.2	220	85.4	123
Lincoln County Hospital, Lincoln	96.6	58.1	506	89.1	457	97.0	56.3	533	87.5	496
Lister Hospital, Stevenage	96.4	70.2	362	66.0	350	98.3	70.7	403	72.4	377
Liverpool Heart and Chest Hospital, Liverpool	99.4	79.4	160	94.2	156	100.0	97.2	612	Inconsistent data	

London Chest Hospital, London	100.0	94.6	279	53.3	227	99.8	92.8	400	76.2	395
Luton & Dunstable Hospital, Luton	99.6	9.3	472	90.3	259	95.3	3.4	386	94.1	202
Macclesfield District General Hospital, Macclesfield	92.4	40.3	119	76.0	100	96.4	43.8	137	88.5	96
Maidstone Hospital, Maidstone	97.4	41.4	116	68.7	115	99.2	31.7	120	70.0	120
Manchester Royal Infirmary, Manchester	100.0	27.9	104	89.4	94	100.0	21.5	93	89.2	83
Manor Hospital, Walsall	92.7	52.5	179	73.5	117	98.8	42.9	163	69.4	121
Medway Maritime Hospital, Gillingham	87.9	33.2	307	79.1	187	92.8	39.6	386	79.2	245
Milton Keynes General Hospital, Milton Keynes	98.1	67.3	52	74.4	43	92.3	88.5	26	56.0	25
Musgrove Park Hospital, Taunton	95.2	78.7	207	71.6	176	94.8	77.8	252	69.8	245
New Cross Hospital, Wolverhampton	100.0	22.5	306	89.0	300	99.5	25.8	364	84.1	358
Newham University Hospital, Greater London	98.4	97.4	191	62.6	182	98.4	99.5	187	72.5	178
Norfolk and Norwich University Hospital, Norwich	100.0	58.3	767	79.0	767	100.0	52.0	685	75.2	685
Northampton General Hospital, Northampton	94.4	74.9	501	62.3	486	95.9	70.3	364	85.7	272
North Devon District Hospital, Barnstaple	98.0	60.7	295	81.0	221	93.1	41.9	217	57.1	210
Northern General Hospital, Sheffield	93.5	60.7	527	63.3	523	99.4	59.1	489	72.8	482
North Manchester General Hospital, Manchester	97.5	29.5	200	92.3	156	97.0	25.1	235	100.0	151
North Middlesex Hospital, Greater London	95.1	2.5	243	66.7	198	96.3	0.0	80	75.8	66
North Tyneside General Hospital, North Shields	92.2	27.6	243	90.5	168	95.9	22.7	220	96.8	154
Northwick Park Hospital, Greater London	98.2	67.6	278	73.6	273	100.0	93.2	88	94.3	88
Papworth Hospital, Cambridge					<20	100.0	100.0	25	16.7	24
Peterborough City Hospital, Peterborough	93.9	58.1	461	33.7	457	92.5	77.9	335	90.3	238
Pilgrim Hospital, Boston	92.4	43.0	291	74.6	228	85.9	35.7	263	70.5	220
Pinderfields General Hospital, Wakefield	77.9	15.3	430	60.4	409	90.2	29.8	574	66.7	553
Poole Hospital, Poole	99.4	94.4	160	96.0	149	98.0	85.3	150	93.1	144
Princess Alexandra Hospital, Harlow	83.7	39.1	92	85.7	56	100.0	44.0	25	82.6	23
Princess Royal Hospital, Haywards Heath	91.0	91.0	78	66.7	78	92.2	83.1	77	64.5	76
Princess Royal Hospital, Telford	88.2	40.4	280	92.7	177	89.0	39.1	299	96.9	196
Princess Royal University Hospital, Orpington	100.0	36.1	36	81.2	32	97.3	16.4	73	68.1	69
Queen Alexandra Hospital, Portsmouth	99.6	64.1	237	82.7	237	100.0	96.9	162	75.2	161
Queen Elizabeth Hospital, Birmingham	97.0	57.8	135	80.3	127	91.3	69.6	46	75.6	45

	Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography		Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year	2013/14						2014/15				
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)		Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Queen Elizabeth Hospital, Gateshead	98.6	64.4	222	84.2	221		96.5	63.5	200	90.5	200
Queen Elizabeth Hospital, King's Lynn	86.3	4.4	476	83.1	290		83.3	0.8	382	92.1	178
Queen Elizabeth Hospital, Greater London	86.6	21.7	157	79.4	131		96.1	9.5	127	90.2	102
Queen Elizabeth The Queen Mother Hospital, Margate	79.7	73.2	123	31.7	123		97.0	51.5	101	75.8	62
Queen's Hospital, Burton-on-Trent	95.5	94.4	177	96.6	116		97.3	86.4	220	98.7	153
Queen's Hospital, Greater London	92.0	51.4	251	76.8	237		91.0	27.9	122	65.8	120
Rotherham Hospital, Rotherham	99.6	96.3	243	89.4	142		100.0	96.0	198	98.4	122
Royal Albert Edward Infirmary, Wigan	99.7	85.7	356	53.5	344		100.0	84.6	390	52.7	387
Royal Berkshire Hospital, Reading	96.6	64.3	294	75.6	270		97.6	55.5	290	77.3	260
Royal Blackburn Hospital, Blackburn	88.1	55.3	649	66.5	618		90.6	58.6	630	71.4	609
Royal Bolton Hospital, Bolton	100.0	64.8	253	94.1	185		99.6	60.9	271	95.4	194
Royal Bournemouth General Hospital, Bournemouth	96.5	98.0	347	93.8	321		97.3	71.5	474	74.3	459
Royal Brompton Hospital, London	95.0	83.2	161	100.0	155		92.1	88.1	177	100.0	177
Royal Cornwall Hospital, Truro	87.9	27.5	710	93.3	493		91.1	28.2	592	93.8	432
Royal Derby Hospital, Derby	96.7	92.3	181	99.4	181				<20		<20
Royal Devon & Exeter Hospital, Exeter	97.5	37.3	161	97.9	141		91.1	39.3	484	87.8	451
Royal Free Hospital, London	99.4	66.8	310	100.0	287		99.0	75.4	289	100.0	289
Royal Hampshire County Hospital, Winchester	95.7	0.0	117	54.0	113		92.4	0.0	119	45.3	106
Royal Lancaster Infirmary, Lancaster	100.0	42.1	197	94.0	167		97.1	47.1	104	88.3	94
Royal Liverpool University Hospital, Liverpool	97.0	67.9	268	63.3	259		96.3	62.7	217	63.4	216
Royal Oldham Hospital, Oldham	97.7	9.6	397	45.0	318		96.6	8.6	385	84.9	245
Royal Preston Hospital, Preston	85.9	24.4	78	51.7	60		84.0	25.5	94	26.7	86
Royal Shrewsbury Hospital, Shrewsbury	88.1	46.4	394	92.2	204		89.0	43.0	372	93.1	188
Royal Surrey County Hospital, Guildford	94.3	25.7	70	64.1	64		92.8	14.5	83	63.4	82
Royal Sussex County Hospital, Brighton	94.8	51.6	153	65.5	148		96.5	64.7	170	68.9	167

Royal United Hospital Bath, Bath	69.1	24.5	269	67.9	193	91.1	25.7	304	97.8	178
Royal Victoria Infirmary, Newcastle	99.3	91.1	292	92.1	242	98.8	85.7	328	88.7	301
Russells Hall Hospital, Dudley	100.0	94.8	212	56.6	205	100.0	90.7	162	69.4	160
Salford Royal Hospital, Salford	89.8	55.3	304	95.6	182	93.3	59.1	269	95.1	164
Salisbury District Hospital, Salisbury	100.0	96.5	259	79.8	247	97.1	54.2	312	75.8	285
Sandwell General Hospital, West Bromwich	99.6	89.2	231	99.5	210	100.0	93.1	262	99.2	248
Scunthorpe General Hospital, Scunthorpe	89.1	15.9	138	38.3	115	92.6	27.9	190	53.6	181
Solihull Hospital, Solihull	98.6	60.8	143	90.1	142	98.3	83.3	114	90.3	113
Southampton General Hospital, Southampton	99.5	86.3	430	72.6	430	100.0	88.1	445	70.3	445
Southend University Hospital, Westcliffe-on-Sea	92.4	71.4	367	98.9	177	96.8	75.3	401	97.0	203
Southmead Hospital, Bristol	89.1	21.7	221	95.9	97	91.1	22.9	484	92.8	236
Southport and Formby District General Hospital, Southport	96.2	34.6	182	89.1	174	96.7	32.9	152	87.1	147
South Tyneside District Hospital, South Shields	99.0	53.6	194	88.7	133	99.2	37.2	129	87.8	90
Stafford Hospital, Stafford	98.7	59.0	78	63.5	74	100.0	51.2	43	72.5	40
Stepping Hill Hospital, Stockport	84.0	31.0	732	35.5	662	81.4	15.7	726	42.0	638
St George's Hospital, Greater London	100.0	96.2	26	96.2	26			<20		<20
St Helier Hospital, Greater London	75.5	22.1	163	57.9	140	90.8	36.7	98	68.5	73
St Mary's Hospital, Newport	99.3	84.8	151	58.7	150	99.2	77.6	125	65.0	123
St Mary's Hospital, London	100.0	97.1	69	100.0	69	99.1	81.4	113	89.9	109
Stoke Mandeville Hospital, Aylesbury	42.9	42.9	42	66.7	36			<20		<20
St Peter's Hospital, Chertsey	100.0	95.3	193	99.0	193	100.0	98.6	276	99.3	273
St Richard's Hospital, Chichester	97.3	24.3	222	83.7	172	97.4	52.3	151	86.7	90
St Thomas' Hospital, London	100.0	73.1	201	98.3	179	100.0	64.9	188	100.0	168
Sunderland Royal Hospital, Sunderland	99.0	92.7	205	89.8	196	98.5	95.1	205	97.0	197
Tameside General Hospital, Ashton Under Lyne	84.4	7.3	302	49.1	267	95.3	6.7	150	70.8	130
Torbay Hospital, Torquay	95.6	59.9	294	83.5	255	97.5	74.5	282	84.3	255
Tunbridge Wells Hospital, Tunbridge Wells	97.7	49.7	177	75.4	171	96.6	58.8	119	73.0	111
University College Hospital, London	94.2	11.5	52	34.0	50	94.7	5.3	76	57.9	76
University College Hospital [Heart Hospital], London	98.3	95.7	116	88.8	116	98.0	94.0	100	85.0	100
University Hospital Aintree, Liverpool	97.3	82.0	373	97.5	242	97.8	72.1	408	97.4	265

	Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography		Proportion of nSTEMI patients seen by a cardiologist or a member of team	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who were referred for or had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year	2013/14						2014/15				
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)		Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
University Hospital Coventry, Coventry	100.0	98.0	50	91.8	49		100.0	90.9	33	81.8	33
University Hospital Lewisham, London	95.5	47.4	133	96.5	86		97.4	38.9	113	97.8	89
University Hospital of Hartlepool, Hartlepool	82.3	34.2	79	100.0	57						
University Hospital of North Durham, Durham	85.8	35.2	437	58.7	436		91.2	42.1	442	87.3	299
University Hospital of North Staffordshire, Stoke-on-Trent	97.0	87.0	499	80.3	487		95.9	87.3	410	80.7	409
University Hospital of North Tees, Stockton-on-Tees	87.5	50.5	368	95.6	225		85.2	25.1	454	95.2	271
University Hospital Queen's Medical Centre, Nottingham	83.0	59.9	289	88.0	234		92.9	61.4	140	88.4	138
Wansbeck General Hospital, Ashington	93.8	27.1	258	97.8	183		93.6	30.0	267	98.0	198
Warrington Hospital, Warrington	97.8	64.0	361	91.3	241		98.2	60.4	391	86.5	259
Watford General Hospital, Watford	98.3	27.1	361	96.7	270		96.9	13.0	322	91.9	233
West Cumberland Hospital, Whitehaven	94.2	69.0	171	77.6	152		96.0	61.2	201	85.6	173
West Middlesex University Hospital, Greater London	87.7	87.7	73	91.3	69		67.5	65.1	83	96.2	78
Weston General Hospital, Weston-super-Mare	92.0	0.0	125	86.4	118		87.5	0.0	192	80.7	166
West Suffolk Hospital, Bury St Edmunds	94.2	16.7	294	84.1	214		96.5	21.5	260	85.5	193
Wexham Park Hospital, Slough	94.2	81.8	121	86.0	100		88.5	72.2	381	68.3	360
Whipps Cross Hospital, Greater London	92.9	10.7	112	60.2	103		97.1	2.9	34	60.7	28
Whiston Hospital, Prescot	98.3	65.3	363	89.5	219		99.5	60.4	439	94.9	253
Whittington Hospital, London	100.0	76.2	101	56.1	98		98.8	76.7	86	64.0	86
William Harvey Hospital, Ashford	85.6	60.4	250	62.2	246		93.5	84.1	201	55.0	191
Worcestershire Royal Hospital, Worcester	100.0	94.2	69	97.1	69		100.0	67.7	251	96.2	239
Worthing Hospital, Worthing	96.2	76.6	235	93.3	163		97.1	81.4	311	96.7	213
Wycombe Hospital, High Wycombe	98.8	96.4	166	79.5	161		100.0	97.0	164	82.3	158
Wythenshawe Hospital, Manchester	96.0	26.0	100	80.5	82		98.3	22.1	240	58.4	185
Yeovil District Hospital, Yeovil	97.8	52.7	184	55.4	177		99.4	47.8	180	48.3	180

York District Hospital, York	97.9	25.5	341	100.0	230	97.7	18.5	351	97.5	235
Wales	85.3	66.1	2225	79.7	1741	87.6	70.9	2726	76.9	2306
Glan Clwyd Hospital, Rhyl	90.5	73.3	105	88.1	67	84.1	71.9	295	84.5	181
Glangwili General Hospital, Carmarthen	96.0	92.9	99	Incomplete data		96.5	61.1	113	Incomplete data	
Llandough Hospital, Llandough	25.7	1.3	152	78.8	118	22.6	0.0	115	72.6	95
Morriston Hospital, Swansea	98.9	96.3	187	98.1	154	100.0	94.8	77	93.8	64
Nevill Hall Hospital, Abergavenny	92.1	77.5	227	92.9	127	95.0	85.5	159	60.0	155
Prince Charles Hospital, Merthyr Tydfil	99.3	86.1	144	65.3	144	98.4	88.0	184	66.3	172
Prince Philip Hospital, Llanelli	69.2	92.3	26	0.0	22	95.5	40.9	22	4.6	22
Princess of Wales Hospital, Bridgend	98.5	51.5	132	88.5	122	100.0	66.1	121	82.3	113
Royal Glamorgan Hospital, Llantrisant	98.2	72.7	55	49.1	53	80.5	61.0	164	86.7	128
Royal Gwent Hospital, Newport	92.0	55.2	364	98.8	251	94.7	77.6	263	79.3	246
Singleton Hospital, Swansea	96.8	6.5	31	87.1	31					<20
University Hospital of Wales, Cardiff	92.1	69.7	241	74.4	227	96.1	87.0	538	90.4	512
Withybush General Hospital, Haverfordwest	50.0	54.4	160	79.4	131	61.8	61.2	170	83.6	128
Wrexham Maelor Hospital, Wrexham	86.4	84.5	258	98.2	165	87.7	86.3	277	99.4	166
Ysbyty Gwynedd, Bangor	**90.9**	**25.0**	**44**	**87.5**	**32**	**91.2**	**35.8**	**215**	**67.7**	**201**
Northern Ireland	99.8	95.1	407	92.7	341	99.4	87.8	1563	94.3	1439
Belfast City Hospital, Belfast	100.0	100.0	111	89.3	103	98.4	99.2	124	89.3	121
Mater Infirmorum Hospital, Belfast	100.0	92.1	140	92.3	104	97.0	95.5	132	91.1	112
Royal Victoria Hospital, Belfast	99.4	94.2	156	95.5	134	100.0	93.1	159	95.0	140
Altnagelvin Area Hospital						100.0	92.3	194	94.8	191
Antrim Area Hospital						100.0	91.6	263	100.0	241
Causeway Hospital						100.0	94.1	101	98.9	93
Craigavon Area Hospital						100.0	66.7	195	90.6	181
Daisy Hill Hospital						100.0	73.1	93	94.4	89
Downe Hospital								<20		<20
Lagan Valley Hospital						100.0	91.3	23	95.0	20
South West Acute Hospital (enniskillen)						**97.9**	**81.4**	**97**	**80.9**	**94**
Ulster Hospital						99.40	91.57	166	100.0	145
Other										
Noble's Hospital, Isle of Mann						93.5	73.9	46	63.04	46

Table 4 Secondary prevention medication by eligibility in England, Wales and Northern Ireland

Performance of hospitals with respect to prescription of secondary prevention medication at time of discharge home to patients with either STEMI or nSTEMI. Performance is not reported when there are fewer than 20 eligible patients.

Year	2013/14		2014/15	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
England, Wales & Northern Ireland	**87.8**	**60428**	**90.5**	**62212**
England	**88.3**	**57301**	**91.5**	**57858**
Addenbrooke's Hospital, Cambridge	83.0	247	83.1	236
Airedale General Hospital, Keighley	96.5	143	98.0	149
Alexandra Hospital, Redditch	66.9	142	81.2	101
Arrowe Park Hospital, Wirral	65.5	214	93.3	238
Barnet General Hospital, Greater London	80.6	228	97.5	242
Barnsley Hospital, Barnsley	60.8	127	80.8	73
Basildon Hospital, Basildon	93.8	841	93.5	947
Basingstoke and North Hampshire Hospital, Basingstoke	95.5	113	88.2	187
Bassetlaw Hospital, Worksop	97.8	139	100.0	182
Bedford Hospital, Bedford	86.8	88	90.8	98
Birmingham City Hospital, Birmingham	99.7	292	100.0	311
Birmingham Heartlands Hospital, Birmingham	90.5	763	90.6	713
Blackpool Victoria Hospital, Blackpool	95.3	1334	98.8	1326
Bradford Royal Infirmary, Bradford	98.1	629	99.0	706
Bristol Royal Infirmary, Bristol	77.1	713	75.7	757
Broomfield Hospital, Chelmsford	93.5	287	87.5	271
Calderdale Royal Hospital, Halifax	92.8	444	97.3	482
Castle Hill Hospital, Cottingham	77.3	1005	77.4	1053
Cheltenham General Hospital, Cheltenham	88.2	110	73.2	97
Chesterfield Royal Hospital, Chesterfield	89.8	470	98.8	402
Chorley and South Ribble Hospital, Chorley	78.1	65	61.2	85
Colchester General Hospital, Colchester	84.2	280	87.9	272
Conquest Hospital, St Leonards on Sea	96.6	270	99.6	267

Countess of Chester Hospital, Chester	91.0	158	92.2	115
County Hospital Hereford, Hereford	84.1	70	88.7	106
Croydon University Hospital, Greater London	80.1	187	88.2	152
Cumberland Infirmary, Carlisle	78.4	498	86.1	387
Darent Valley Hospital, Dartford	88.1	311	81.7	257
Darlington Memorial Hospital, Darlington	89.6	81	82.1	117
Derriford Hospital, Plymouth	89.5	204	84.7	613
Dewsbury District Hospital, Deswbury	72.7	389	90.9	416
Diana, Princess of Wales Hospital, Grimsby	70.2	95	90.7	107
Doncaster Royal Infirmary, Doncaster	88.8	265	100.0	311
Dorset County Hospital, Dorchester	92.5	202	94.7	170
Ealing Hospital, Greater London	71.1	116	86.7	90
Eastbourne District General Hospital, Eastbourne	85.4	274	100.0	293
East Surrey Hospital, Redhill	89.7	217	98.3	238
Epsom Hospital, Greater London	21.4	51	100.0	51
Fairfield General Hospital, Bury	97.0	449	96.7	399
Freeman Hospital, Newcastle	100.0	1643	99.9	1668
Frenchay Hospital, Bristol	88.3	272	88.9	45
Frimley Park Hospital, Frimley	90.6	641	99.8	571
George Eliot Hospital, Nuneaton	90.9	44	89.3	75
Glenfield Hospital, Leicester	96.9	765	99.9	743
Gloucestershire Royal Hospital, Gloucester	82.7	54	53.5	58
Good Hope Hospital, Sutton Coldfield	95.0	199	100.0	207
Grantham and District Hospital, Grantham	97.8	45	97.1	35
Great Western Hospital, Swindon	89.6	392	92.7	396
Hammersmith Hospital, London	98.2	739	96.7	797
Harefield Hospital, Harefield	84.7	1064	87.1	989
Harrogate District Hospital, Harrogate	98.3	234	99.6	237
Hillingdon Hospital, Greater London	96.3	173	98.6	145
Hinchingbrooke Hospital, Huntingdon		<20	86.1	43
Horton General Hospital, Banbury	86.0	58	68.1	47

Year	2013/14		2014/15	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Huddersfield Royal Infirmary, Huddersfield	88.1	295	93.4	242
Hull Royal Infirmary, Hull	29.6	73	41.9	62
Ipswich Hospital, Ipswich	82.3	185	93.9	325
James Cook University Hospital, Middlesborough	97.8	1356	99.1	1375
James Paget University Hospital, Great Yarmouth	100.0	76	97.7	86
John Radcliffe Hospital, Oxford	87.1	705	72.9	553
Kent and Canterbury Hospital, Canterbury	81.6	76	86.2	65
Kettering General Hospital, Kettering	98.5	486	99.2	529
King George Hospital, Greater London	81.0	65	97.8	92
King's College Hospital, London	68.7	624	95.1	592
King's Mill Hospital, Sutton-in-Ashfield	92.6	217	89.7	262
Kingston Hospital, Greater London	76.6	130	42.0	50
Leeds General Infirmary, Leeds	80.8	1020	98.3	1078
Leighton Hospital, Crewe	84.6	198	78.8	198
Lincoln County Hospital, Lincoln	97.3	908	99.1	955
Lister Hospital, Stevenage	87.1	411	80.5	624
Liverpool Heart and Chest Hospital, Liverpool	97.9	1038	99.2	1525
London Chest Hospital, London	86.9	871	96.7	1014
Luton & Dunstable Hospital, Luton	86.9	300	83.2	280
Macclesfield District General Hospital, Macclesfield	84.5	102	96.1	127
Maidstone Hospital, Maidstone	56.1	109	50.9	106
Manchester Royal Infirmary, Manchester	84.2	354	94.3	456
Manor Hospital, Walsall	52.6	124	89.3	122
Medway Maritime Hospital, Gillingham	81.4	309	89.5	389
Musgrove Park Hospital, Taunton	84.3	374	88.5	381
New Cross Hospital, Wolverhampton	98.7	914	100.0	924
Newham University Hospital, Greater London	50.3	157	50.3	163
Norfolk and Norwich University Hospital, Norwich	99.3	1192	99.9	1096
Northampton General Hospital, Northampton	99.3	443	100.0	278

North Devon District Hospital, Barnstaple	84.9	128	82.2	73
Northern General Hospital, Sheffield	97.1	872	99.9	763
North Manchester General Hospital, Manchester	98.5	199	97.8	228
North Middlesex Hospital, Greater London	46.2	201	56.5	62
North Tyneside General Hospital, North Shields	66.3	89	95.2	62
Northwick Park Hospital, Greater London	55.5	270	73.9	88
Nottingham City Hospital, Nottingham	83.1	418	75.6	492
Papworth Hospital, Cambridge	90.2	687	81.6	689
Peterborough City Hospital, Peterborough	89.1	343	94.2	208
Pilgrim Hospital, Boston	88.6	113	92.9	98
Pinderfields General Hospital, Wakefield	81.7	445	88.9	703
Princess Alexandra Hospital, Harlow	59.8	88	80.0	25
Princess Royal Hospital, Haywards Heath	67.4	95	79.0	95
Princess Royal Hospital, Telford	95.3	200	100.0	198
Princess Royal University Hospital, Orpington	65.6	32	63.4	71
Queen Alexandra Hospital, Portsmouth	92.0	610	98.0	556
Queen Elizabeth Hospital, Birmingham	92.0	328	99.1	233
Queen Elizabeth Hospital, Gateshead	93.7	95	98.7	74
Queen Elizabeth Hospital, King's Lynn	91.0	211	98.4	190
Queen Elizabeth Hospital, Greater London	97.0	138	94.3	123
Queen Elizabeth The Queen Mother Hospital, Margate	55.7	61	84.0	81
Queen's Hospital, Burton-on-Trent	89.8	102	98.7	157
Queen's Hospital, Greater London	76.8	189	90.5	105
Rotherham Hospital, Rotherham	97.9	285	100.0	245
Royal Albert Edward Infirmary, Wigan	98.9	350	100.0	402
Royal Berkshire Hospital, Reading	93.3	450	99.4	488
Royal Blackburn Hospital, Blackburn	88.0	600	92.1	636
Royal Bolton Hospital, Bolton	95.5	303	99.1	330
Royal Bournemouth General Hospital, Bournemouth	92.5	668	98.6	761
Royal Brompton Hospital, London	69.0	184	61.4	197
Royal Cornwall Hospital, Truro	87.0	769	91.0	692
Royal Derby Hospital, Derby	91.0	453	96.1	51

Year	2013/14		2014/15	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Royal Devon & Exeter Hospital, Exeter	94.1	408	84.4	720
Royal Free Hospital, London	99.1	462	98.5	516
Royal Hampshire County Hospital, Winchester	98.3	63	100.0	67
Royal Lancaster Infirmary, Lancaster	91.6	103	91.5	59
Royal Liverpool University Hospital, Liverpool	84.1	144	96.5	115
Royal Oldham Hospital, Oldham	94.2	431	90.8	370
Royal Preston Hospital, Preston	70.4	56	69.9	73
Royal Shrewsbury Hospital, Shrewsbury	96.8	292	100.0	265
Royal Surrey County Hospital, Guildford	74.4	43	58.2	55
Royal Sussex County Hospital, Brighton	86.8	500	87.7	497
Royal United Hospital Bath, Bath	80.7	350	95.1	348
Royal Victoria Infirmary, Newcastle	94.9	81	100.0	66
Russells Hall Hospital, Dudley	92.1	129	97.3	75
Salford Royal Hospital, Salford	94.3	301	96.7	269
Salisbury District Hospital, Salisbury	98.9	280	61.3	318
Sandwell General Hospital, West Bromwich	99.7	334	100.0	354
Scunthorpe General Hospital, Scunthorpe	29.6	140	95.4	151
Solihull Hospital, Solihull	87.1	63	80.9	68
Southampton General Hospital, Southampton	87.5	691	91.6	645
Southend University Hospital, Westcliffe-on-Sea	74.1	355	100.0	384
Southmead Hospital, Bristol	93.0	190	80.3	431
Southport and Formby District General Hospital, Southport	85.3	34	94.3	35
South Tyneside District Hospital, South Shields	86.3	121	91.7	72
Stafford Hospital, Stafford	54.8	74	44.7	38
Stepping Hill Hospital, Stockport	79.3	672	70.1	661
St George's Hospital, Greater London	99.0	515	99.6	478
St Helier Hospital, Greater London	54.8	79	98.3	58
St Mary's Hospital, Newport	95.9	74	100.0	51
St Peter's Hospital, Chertsey	99.5	212	100.0	284

St Richard's Hospital, Chichester	55.2	117	76.0	100
St Thomas' Hospital, London	98.5	342	97.2	321
Sunderland Royal Hospital, Sunderland	77.8	205	77.8	225
Tameside General Hospital, Ashton Under Lyne	84.6	296	71.9	146
Torbay Hospital, Torquay	90.7	435	91.4	408
Tunbridge Wells Hospital, Tunbridge Wells	56.4	167	68.8	125
University College Hospital, London	87.5	50	78.4	74
University College Hospital [Heart Hospital], London	85.3	262	87.2	226
University Hospital Aintree, Liverpool	94.6	213	96.8	220
University Hospital Coventry, Coventry	86.9	425	93.9	392
University Hospital Lewisham, London	92.9	116	96.1	76
University Hospital of North Durham, Durham	77.9	164	89.4	161
University Hospital of North Staffordshire, Stoke-on-Trent	75.6	1055	75.6	829
University Hospital of North Tees, Stockton-on-Tees	92.5	124	96.3	161
University Hospital Queen's Medical Centre, Nottingham	87.0	46	96.4	28
Wansbeck General Hospital, Ashington	87.0	76	100.0	54
Warrington Hospital, Warrington	96.6	207	92.9	226
Watford General Hospital, Watford	85.6	366	78.2	293
West Cumberland Hospital, Whitehaven	64.9	37	73.9	46
West Middlesex University Hospital, Greater London	80.5	87	83.8	80
Weston General Hospital, Weston-super-Mare	87.9	99	69.3	150
West Suffolk Hospital, Bury St Edmunds	79.8	118	98.0	101
Wexham Park Hospital, Slough	56.3	142	76.5	302
Whipps Cross Hospital, Greater London	75.6	86	54.8	31
Whiston Hospital, Prescot	92.3	179	99.0	200
Whittington Hospital, London	84.0	90	93.8	80
William Harvey Hospital, Ashford	89.6	779	92.7	736
Worcestershire Royal Hospital, Worcester	95.8	287	100.0	585
Worthing Hospital, Worthing	92.9	232	95.8	309
Wycombe Hospital, High Wycombe	92.5	208	94.8	173
Wythenshawe Hospital, Manchester	97.5	366	76.5	587

Year	2013/14		2014/15	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Yeovil District Hospital, Yeovil	29.4	127	32.8	119
York District Hospital, York	87.4	413	99.6	445
Wales	**73.2**	**2067**	**66.4**	**2501**
Glan Clwyd Hospital, Rhyl	76.5	169	94.2	363
Llandough Hospital, Llandough	71.4	34	59.4	32
Morriston Hospital, Swansea	26.5	597	14.2	367
Nevill Hall Hospital, Abergavenny	76.5	123	51.1	92
Prince Charles Hospital, Merthyr Tydfil	64.3	42	53.3	75
Princess of Wales Hospital, Bridgend	82.1	28	91.2	34
Royal Glamorgan Hospital, Llantrisant		<20	54.2	96
Royal Gwent Hospital, Newport	91.6	343	58.1	277
University Hospital of Wales, Cardiff	81.1	518	82.6	877
Withybush General Hospital, Haverfordwest	82.1	39	87.5	40
Wrexham Maelor Hospital, Wrexham	83.0	94	83.7	104
Ysbyty Gwynedd, Bangor	54.2	24	46.6	118
Northern Ireland*	**89.9**	**1060**	**91.7**	**1814**
Belfast City Hospital, Belfast	94.5	128	97.9	140
Mater Infirmorum Hospital, Belfast	88.5	123	92.9	126
Royal Victoria Hospital, Belfast	96.3	273	99.1	233
Altnagelvin Area Hospital	95.0	100	76.9	286
Antrim Area Hospital	72.0	93	89.2	212
Causeway Hospital	96.0	36	92.6	108
Craigavon Area Hospital	91.0	178	97.6	294
Daisy Hill Hospital	89.2	74	100.0	73
Lagan Valley Hospital	No data for this period		97.5	40
South West Acute Hospital (Enniskillen)	50.8	59	75.2	121
Noble's Hospital, Isle of Mann		<20	35.0	20

*Some participating hospitals in Northern Ireland began data collection mid-2013, this may skew their results for 2013-14.

Table 5 Length of stay for STEMI and nSTEMI patients in England, Wales and Northern Ireland

Median length of stay (LOS) for patients with nSTEMI and STEMI.

Year	2014/15		
	LOS nSTEMI	LOS STEMI	LOS all patients
England, Wales & Northern Ireland	**5**	**3**	**4**
England	**5**	**3**	**4**
Addenbrooke's Hospital, Cambridge	6	6	6
Airedale General Hospital, Keighley	8	10	8
Alexandra Hospital, Redditch	5	4	5
Arrowe Park Hospital, Wirral	5.5	8.5	6
Barnet General Hospital, Greater London	6	4	6
Barnsley Hospital, Barnsley	5	5	5
Basildon Hospital, Basildon	6	3	3
Basingstoke and North Hampshire Hospital, Basingstoke	3	2	2
Bassetlaw Hospital, Worksop	7	6	7
Bedford Hospital, Bedford	4	5	4
Birmingham City Hospital, Birmingham	5	3	4
Birmingham Heartlands Hospital, Birmingham	4	3	4
Blackpool Victoria Hospital, Blackpool	7	3	4
Bradford Royal Infirmary, Bradford	4	4.5	4
Bristol Royal Infirmary, Bristol	5	3	3
Broomfield Hospital, Chelmsford	7	8.5	7
Calderdale Royal Hospital, Halifax	4	3	4
Castle Hill Hospital, Cottingham	5	3	3
Central Middlesex Hospital, Greater London	7	n/a	7
Charing Cross Hospital, London	4.5	4.5	4.5
Chelsea and Westminster Hospital, London	3	16.5	4
Cheltenham General Hospital, Cheltenham	4	3	3
Chesterfield Royal Hospital, Chesterfield	4	4	4
Chorley and South Ribble Hospital, Chorley	6	6	6

Year	2014/15		
	LOS nSTEMI	LOS STEMI	LOS all patients
Colchester General Hospital, Colchester	6	10	7
Conquest Hospital, St Leonards on Sea	6	3	5
Countess of Chester Hospital, Chester	7	6	7
County Hospital Hereford, Hereford	5	4.5	5
Croydon University Hospital, Greater London	5	4	5
Cumberland Infirmary, Carlisle	5	4	4
Darent Valley Hospital, Dartford	5	4	5
Darlington Memorial Hospital, Darlington	6	5	6
Derriford Hospital, Plymouth	5	3	4
Dewsbury District Hospital, Deswbury	5	6	5
Diana, Princess of Wales Hospital, Grimsby	7	9.5	7
Doncaster Royal Infirmary, Doncaster	5	5	5
Dorset County Hospital, Dorchester	4	2.5	4
Ealing Hospital, Greater London	5	4	5
Eastbourne District General Hospital, Eastbourne	3.5	2.5	3
East Surrey Hospital, Redhill	6	5	6
Epsom Hospital, Greater London	5	3	4.5
Fairfield General Hospital, Bury	5	5	5
Freeman Hospital, Newcastle	2	2	2
Frenchay Hospital, Bristol	5	5	5
Frimley Park Hospital, Frimley	4	3	3
Furness General Hospital, Barrow-in-Furness	5	2	4.5
George Eliot Hospital, Nuneaton	5.5	3.5	5
Glenfield Hospital, Leicester	7	3	4
Gloucestershire Royal Hospital, Gloucester	6	8	6
Good Hope Hospital, Sutton Coldfield	7	6	7
Grantham and District Hospital, Grantham	8	4.5	8
Great Western Hospital, Swindon	4	3	4
Hammersmith Hospital, London	5	3	3

Harefield Hospital, Harefield	4	3	3
Harrogate District Hospital, Harrogate	5	5	5
Hexham General Hospital, Hexham	3.5	6	4
Hillingdon Hospital, Greater London	4.5	6	5
Hinchingbrooke Hospital, Huntingdon	7.5	9	8
Homerton University Hospital, London	<20 records		
Horton General Hospital, Banbury	4	7.5	5
Huddersfield Royal Infirmary, Huddersfield	5	3	5
Hull Royal Infirmary, Hull	3	4	3.5
Ipswich Hospital, Ipswich	6	4	6
James Cook University Hospital, Middlesborough	3	2	2
James Paget University Hospital, Great Yarmouth	5	5.5	5
John Radcliffe Hospital, Oxford	4	3	3
Kent and Canterbury Hospital, Canterbury	5	6	5
Kettering General Hospital, Kettering	2	2	2
King George Hospital, Greater London	6	1	6
King's College Hospital, London	6	4	4
King's Mill Hospital, Sutton-in-Ashfield	5	4.5	5
Kingston Hospital, Greater London	6	6.5	6
Leeds General Infirmary, Leeds	5	3	4
Leighton Hospital, Crewe	5	4	5
Lincoln County Hospital, Lincoln	5	2	3
Lister Hospital, Stevenage	5	2	3
Liverpool Heart and Chest Hospital, Liverpool	3	3	3
London Chest Hospital, London	5	3	3
Luton & Dunstable Hospital, Luton	6	9	7
Macclesfield District General Hospital, Macclesfield	5	4	5
Maidstone Hospital, Maidstone	6	6	6
Manchester Royal Infirmary, Manchester	6	3	4
Manor Hospital, Walsall	6	10	6
Medway Maritime Hospital, Gillingham	6	5	6

Year	2014/15		
	LOS nSTEMI	LOS STEMI	LOS all patients
Milton Keynes General Hospital, Milton Keynes	6	5	6
Musgrove Park Hospital, Taunton	3	3	3
New Cross Hospital, Wolverhampton	5	3	3
Newham University Hospital, Greater London	6	5	6
Norfolk and Norwich University Hospital, Norwich	4	3	3
Northampton General Hospital, Northampton	4	3	4
North Devon District Hospital, Barnstaple	5	7	5
Northern General Hospital, Sheffield	5	4	4
North Manchester General Hospital, Manchester	6	5	5.5
North Middlesex Hospital, Greater London	8	6	8
North Tyneside General Hospital, North Shields	6	17	6
Northwick Park Hospital, Greater London	6	4	5
Nottingham City Hospital, Nottingham	7	2	2
Papworth Hospital, Cambridge	4	3	3
Peterborough City Hospital, Peterborough	6	5	5.5
Pilgrim Hospital, Boston	8	7.5	8
Pinderfields General Hospital, Wakefield	5	6	5
Poole Hospital, Poole	5.5	6	6
Princess Alexandra Hospital, Harlow	9	14.5	9
Princess Royal Hospital, Haywards Heath	4	3	4
Princess Royal Hospital, Telford	6	7.5	6
Princess Royal University Hospital, Orpington	8	5	8
Queen Alexandra Hospital, Portsmouth	4	3	3
Queen Elizabeth Hospital, Birmingham	4.5	3	3
Queen Elizabeth Hospital, Gateshead	5	7	6
Queen Elizabeth Hospital, King's Lynn	7	4	7
Queen Elizabeth Hospital, Greater London	7	5.5	7
Queen Elizabeth The Queen Mother Hospital, Margate	6	5	6
Queen's Hospital, Burton-on-Trent	4	3	4

Queen's Hospital, Greater London	6	5	6
Rotherham Hospital, Rotherham	5	4	5
Royal Albert Edward Infirmary, Wigan	5	4	4
Royal Berkshire Hospital, Reading	3	3	3
Royal Blackburn Hospital, Blackburn	4	5	4
Royal Bolton Hospital, Bolton	6	5	6
Royal Bournemouth General Hospital, Bournemouth	5	3	4
Royal Brompton Hospital, London	4	2	3
Royal Cornwall Hospital, Truro	5	3	4
Royal Derby Hospital, Derby	3	3	3
Royal Devon & Exeter Hospital, Exeter	5	3	4
Royal Free Hospital, London	4	3	3
Royal Hampshire County Hospital, Winchester	4	10	5
Royal Lancaster Infirmary, Lancaster	6	13	6
Royal Liverpool University Hospital, Liverpool	6	12	7
Royal Oldham Hospital, Oldham	6	5	6
Royal Preston Hospital, Preston	8	9	8
Royal Shrewsbury Hospital, Shrewsbury	5	4	5
Royal Surrey County Hospital, Guildford	6	4.5	6
Royal Sussex County Hospital, Brighton	4	3	3
Royal United Hospital Bath, Bath	8	5	7
Royal Victoria Infirmary, Newcastle	9.5	3	7
Russells Hall Hospital, Dudley	5	4	5
Salford Royal Hospital, Salford	6	6	6
Salisbury District Hospital, Salisbury	4	3	4
Sandwell General Hospital, West Bromwich	4	2	3
Scunthorpe General Hospital, Scunthorpe	7	6	7
Solihull Hospital, Solihull	9	14	9
Southampton General Hospital, Southampton	4	3	3
Southend University Hospital, Westcliffe-on-Sea	7	9	7
Southmead Hospital, Bristol	8	6	8

Year	2014/15		
	LOS nSTEMI	LOS STEMI	LOS all patients
Southport and Formby District General Hospital, Southport	5.5	9	7
South Tyneside District Hospital, South Shields	5	9	5
Stafford Hospital, Stafford	5	4.5	5
Stepping Hill Hospital, Stockport	8	8	8
St George's Hospital, Greater London	6	3	3
St Helier Hospital, Greater London	6	5	5
St Mary's Hospital, Newport	5	7	5
St Mary's Hospital, London	8	3	6.5
Stoke Mandeville Hospital, Aylesbury	<20 records		
St Peter's Hospital, Chertsey	2	2	2
St Richard's Hospital, Chichester	4	5.5	4
St Thomas' Hospital, London	4	3	4
Sunderland Royal Hospital, Sunderland	3	3	3
Tameside General Hospital, Ashton Under Lyne	8	7	8
Torbay Hospital, Torquay	4	3	3
Tunbridge Wells Hospital, Tunbridge Wells	3	3.5	3
University College Hospital, London	6	16	6
University College Hospital [Heart Hospital], London	3	3	3
University Hospital Aintree, Liverpool	7	9.5	7
University Hospital Coventry, Coventry	2	2	2
University Hospital Lewisham, London	8	7	8
University Hospital of Hartlepool, Hartlepool	<20 records		
University Hospital of North Durham, Durham	7	3	6
University Hospital of North Staffordshire, Stoke-on-Trent	4	3	3
University Hospital of North Tees, Stockton-on-Tees	5	2	5
University Hospital Queen's Medical Centre, Nottingham	3	3	3
Wansbeck General Hospital, Ashington	5	9.5	6
Warrington Hospital, Warrington	7	11	7
Watford General Hospital, Watford	4	3	4

West Cumberland Hospital, Whitehaven	5	3	5
West Middlesex University Hospital, Greater London	6	5	6
Weston General Hospital, Weston-super-Mare	7	5	6.5
West Suffolk Hospital, Bury St Edmunds	7	8	7
Wexham Park Hospital, Slough	5	3	4
Whipps Cross Hospital, Greater London	9	1	8.5
Whiston Hospital, Prescot	6	4	5
Whittington Hospital, London	6	3	6
William Harvey Hospital, Ashford	6	3	3
Worcestershire Royal Hospital, Worcester	3	3	3
Worthing Hospital, Worthing	4	3	4
Wycombe Hospital, High Wycombe	2	2	2
Wythenshawe Hospital, Manchester	5	3	4
Yeovil District Hospital, Yeovil	6	5.5	6
York District Hospital, York	5	7	5
Wales	**5**	**3**	**4**
Glan Clwyd Hospital, Rhyl	4	3	4
Glangwili General Hospital, Carmarthen	5	7	5
Llandough Hospital, Llandough	8	3	7.5
Morriston Hospital, Swansea	5.5	3	3
Nevill Hall Hospital, Abergavenny	8	8	8
Prince Charles Hospital, Merthyr Tydfil	9	7	8
Prince Philip Hospital, Llanelli	4	4	4
Princess of Wales Hospital, Bridgend	5	10	6
Royal Glamorgan Hospital, Llantrisant	8	5	7
Royal Gwent Hospital, Newport	7	5	7
Singleton Hospital, Swansea	<20 records		
University Hospital of Wales, Cardiff	5	4	4
Withybush General Hospital, Haverfordwest	6	2.5	6
Wrexham Maelor Hospital, Wrexham	5	8	5
Ysbyty Gwynedd, Bangor	8.5	6	7

Year	2014/15		
	LOS nSTEMI	LOS STEMI	LOS all patients
Northern Ireland	5	2	3
Belfast City Hospital, Belfast	5	4	4.5
Mater Infirmorum Hospital, Belfast	5	3	4
Royal Victoria Hospital, Belfast	4	4	4
Altnagelvin Area Hospital	3	2	2
Antrim Area Hospital	6	5	6
Causeway Hospital	5	4	5
Craigavon Area Hospital	6	5	6
Daisy Hill Hospital	7	4	6
Downe Hospital	6	6	6
Lagan Valley Hospital	6	7	6
South West Acute Hospital (enniskillen)	5	4	5
Ulster Hospital	8	5	6
Other			
Noble's Hospital, Isle of Mann	6	3.5	4