NICOR

Myocardial Ischaemia National Audit Project

Heart attack in England, Wales and Northern Ireland

Annual Public Report April 2015 – March 2016

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 2015/16.

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

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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.

This report was published on **27th June 2017.**

To improve accessibility of this document, terms in the report that are underlined are defined in the glossary at the end of the report.

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 that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the National Clinical Audit Programme, comprising more than 30 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands.

Founded in 1826, UCL (University College London) was the first English university established after Oxford and Cambridge, the first to admit students regardless of race, class, religion or gender, and the first to provide systematic teaching of law, architecture and medicine. It is among the world's top universities, as reflected by performance in a range of international rankings and tables. UCL currently has 24,000 students from almost 140 countries, and more than 9,500 employees. Its annual income is over £800 million.

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The MINAP 2016 report looks at heart attack and its treatment in England, Wales, and Northern Ireland from 1 April 2015 – 31 March 2016. It captures the patient journey, from a call to the emergency services or self-presentation at an Emergency Department, through diagnosis and treatment at hospital, to the prescription of preventive medications on discharge.

Key findings

In the analyses, heart attack is categorised as either STEMI or nSTEMI, to address the appropriate patient pathway that has been activated.

ST-elevation myocardial infarction (STEMI) often requires immediate specialised treatment. A primary percutaneous coronary intervention (PCI) is the preferred reperfusion procedure. Compared with 2011, the proportion of patients with STEMI receiving PCI as their reperfusion therapy has increased in all nations.

Figure 1: The proportion of STEMI cases that received primary PCI as reperfusion therapy.

Country	2011	2016
England	82.0%	99.3%
Wales	30.0%	86.0%
Northern Ireland	99.0%	99.9%

Hospitals provide primary PCI to most patients presenting with STEMI within the recommended[1] timeframe of 150 minutes from call for help (call to balloon, CtB), and 120 minutes from arrival at hospital (door to balloon, DtB). Overall, 75% of patients are treated within 150 minutes of calling for help. The median time for CtB is 117 minutes in England, 127 minutes in Wales, and 107 minutes in Northern Ireland.

Four in every five patients with STEMI are taken by ambulance directly to a hospital capable of providing primary PCI. 89% of patients are treated with PCI within 90 minutes of arrival at hospital – the equivalent figure being 52% in 2005. Median DtB time for England is 40 minutes, with Wales and Northern Ireland achieving 41 minutes and 33 minutes respectively.

There has, however, been a slight lengthening of the median CtB time between 2010/11 and 2015/16. Given that median DtB has improved over that period, it follows that changes in the time spent outside hospital following the call for help has resulted in increasing CtB. The median call to door time (a measure of ambulance service response, treatment and transportation) has increased, year-on-year, by 10 minutes between 2010/11 and 2015/16.

Ideally patients with **non-ST elevation myocardial infarction** should be managed in a cardiac ward and be assessed by a cardiologist. In 2016, 57.5% of patients with nSTEMI were admitted to a cardiac ward compared with 49% in 2011; 96% were seen by a cardiologist in 2016 compared with 90% in 2011 and, of those eligible, 86% received an angiogram in 2016 compared with 68% in 2011.

In accordance with clinical guidelines, patients with nSTEMI at moderate to high risk should undergo angiography, with a view to PCI, within 72 hours of admission to hospital. The delay from admission to angiography for nSTEMI has not improved. For those admitted directly to hospitals that are capable of providing on-site angiography, 17.5% received an angiogram within 24 hours; 53% within 72 hours; 66.3% within 96 hours. In 2010/11 the equivalent figures were 21% within 24 hours, 55% within 72 hours and 67% within 96 hours. Centres have an opportunity to provide more timely treatment, which may lead to shorter lengths of stay, reducing the burden on the health system.

Recognising the need to improve this aspect of care, NHS England has introduced a Best Practice Tariff for angiography for those with nSTEMI in the 2016/17 financial year. Participating hospitals will receive a higher reimbursement for services where at least 60% of all nSTEMI patients receive angiography within 72 hours.

75% of patients are treated within **150 minutes** of calling for help.

1. National Institute for Health and Care Excellence Quality standard QS68, Acute coronary syndromes in adults, 2014.

Improvements to reporting

The MINAP Annual Report 2015 recommended continued investment in cardiac audit and improving data completeness. Data quality remains an important issue; rates of case ascertainment and data completeness, for nSTEMI episodes in particular, influence the ability of MINAP to provide accurate and reliable reports.

Data quality has improved year on year. Overall completeness of three key data fields (age, admission blood pressure, and heart rate) rose from 90.1% in 2014/15 to 91.5% in 2015/16. Data completeness of these 'risk adjustment' fields is essential for providing meaningful risk adjustment when reporting survival following heart attack. MINAP will publish a mortality outcomes report later in 2017 for those centres with data completeness of at least 90%.

Overall completeness of three key data fields (age, admission blood pressure, and heart rate) rose from **90.1% in 2014/15 to 91.5% in 2015/16.**

Recommendations

Policy Makers, Service Directors and Clinical Commissioning Groups (CCG), National Delivery Groups (Wales), Health and Social Care Board (NI), Professional Societies and National Charities should:

- Continue working closely with those that deliver care to ensure provision of the most accurate data for clinical audit
- Raise public awareness of the risk factors known to increase the chance of heart attack including: obesity, type 2 diabetes, hypertension, tobacco smoking & hyperlipidaemia
- Support initiatives to: mitigate known risk factors, publicise the signs and symptoms of heart attack, and encourage prompt responses at the onset of symptoms
- Work with service providers and centres more clearly to understand how they can provide better care. This might include facilitating meetings between neighbouring hospitals and Ambulance Trusts to share best practice and to consider reconfiguration of services

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

- Ensure that the MINAP report findings are widely disseminated to relevant clinical teams and acted upon
- Explore, understand and act upon variations in the care of people with both STEMI and nSTEMI
- Improve and maintain quality of care by comparing the performance of hospitals within their organisation, or their specific hospital with similar centres, and against published national standards
- Ensure nSTEMI patients at moderate to high risk have access to timely angiography
- Ensure there are sufficient resources allocated to clinical audit and associated quality improvement activity
- Ensure that MINAP findings are presented at board level and identified gaps in service provision are addressed by:
  - » Nominating a trust clinical lead to progress the work
  - » Working with teams to explore contributing factors
  - » Agreeing clear quality improvement action plans and implement changes by agreed deadlines

Leaders of ambulance trusts should:

- Continue to monitor and act upon the response to emergency calls and the prioritisation of heart attack
- Understand the effects of the provision of appropriate and equitable care for all who require their services
- Ensure the timeliness of care for patients with STEMI

Clinicians and Audit Teams should:

- Continue to ensure the data provided to MINAP are accurate and timely – being of high quality data, as outlined in the MINAP Minimum Data Standard
- Interrogate the data on a regular basis, and use the data to facilitate quality improvement initiatives aimed at targeting MINAP identified limitations in the care provision of people with STEMI and nSTEMI
- Work with the appointed Trust clinical lead to explore and address known limitations demonstrated by MINAP audit findings – including consideration of root cause analysis of cases where processes of care do not reach the expected standard
- Widely share successful QI initiatives resulting from MINAP work, for example through:
  - » RCP 'Tell us your story': https://www.rcplondon.ac.uk/projects/future-hospital-tell-us-your-story
  - » HQIP case studies: http://www.hqip.org.uk/resources/
- Remember that many important aspects of compassionate patient-centred care cannot be quantified or represented through clinical audit, but must not be ignored

1. Introduction

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). NICOR provides audit data to Department of Health, the Care Quality Commission and other regulatory bodies, to enable them to make informed decisions on the funding and provision of cardiovascular health services.

1.1. Audit provision

The Healthcare Quality Improvement Partnership (HQIP) commissions MINAP as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). MINAP is overseen by a Steering Group of key stakeholders, including patient representatives. The British Cardiovascular Society (BCS) provides clinical direction and support. A list of the steering group members is available on the NICOR website http://www.ucl.ac.uk/NICOR.

1.2. Aims of the audit

The data collected in the various national cardiac clinical audits allow NICOR to produce reports about cardiac care in the United Kingdom, at a national and individual centre level.

The aim of MINAP is to measure the processes and outcomes of care of every patient diagnosed with heart attack, from their call to the emergency services, or self-presentation to an Emergency Department, to the prescription of preventative medications on discharge from hospital. Largely this reflects hospital care, but often includes diagnosis and treatments before arrival at hospital. The audit describes aspects (process measures) of the quality of care of hospitals and of ambulance trusts, and is based on analyses of data that has been directly submitted by the participating organisations.

1.3. Non-audit benefits of MINAP

The annual report is not the only output resulting from the collection of MINAP data. NICOR engages with government bodies such as NHS England, NHS Digital, quality improvement authorities, and medical researchers to provide accurate and meaningful data that can be used to improve healthcare and services, and advance knowledge through clinical research.

1.3.1. Clinical Services Quality Measures (CSQM)

NICOR is participating in the development and implementation of NHS England's Clinical Services Quality Measures (CSQMs). CSQMs combine various aspects of care to produce composite measures that are designed to provide an at-a-glance indication of how well services are performing.

Cardiac CSQM will initially focus on the treatment of patients with heart attack, and MINAP will be an important source of relevant data.

The information will be useful by allowing:

- Patients to have easier access to information to see how their local hospitals are performing and what facilities are available in these hospitals
- Commissioners to have more insight into the quality of service provided by centres where they commission care on behalf of the populations they serve – including in some cases patient outcomes
- NHS staff to see how their centre performs against similar centres across the country

The NHS will benefit as centres use this information to implement improvements.

These measures will be available online at NHS Choices.[2]

1.3.2. Best Practice Tariff

NHS England and NHS Improvement have introduced a best practice tariff to encourage timely delivery of coronary angiography for people with nSTEMI, within 72 hours of admission.[3] Hospitals and trusts will use their MINAP data to determine the delay to coronary angiography and supply this information to commissioners within the Clinical Commissioning Groups (CCGs) to guide payment of hospital trusts for this procedure, based on performance.

1.3.3. Clinical research

Since MINAP was established in 1998 the data collected has been used as the basis for many peer-reviewed published studies. It has helped medical professionals, academics, and the public understand more about heart attack and how they are treated. A list of recently published studies using MINAP data can be found in the appendices.

1.4. About heart attack

The term 'heart attack' is normally used to describe the symptoms & clinical features associated with Acute Coronary Syndrome (ACS). ACS follows an abrupt reduction in the blood supply to a segment of heart muscle. This is a consequence of a slowly progressive build-up of fatty material (atheroma) within the wall of the coronary artery, occurring over years and often without symptoms, followed by a sudden disruption of the internal artery wall. Blood clots within the artery – a coronary thrombosis – and leads to a state of myocardial

2. My NHS https://www.nhs.uk/service-search/performance/results?resultsViewId=1086

3. 2016/17 National Tariff Payment System https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/509697/2016-17_National_Tariff_Payment_System.pdf

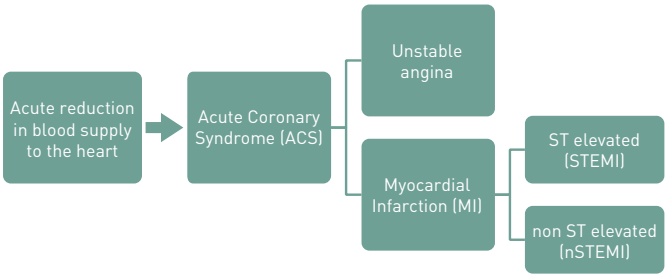
ischaemia. If ischaemia is prolonged, death of the heart muscle (myocardial infarction - MI) can occur.

To be effective at limiting heart muscle damage, treatment must start as soon as possible. Treatment of MI is driven by analysis of an electrocardiogram (ECG), which can be performed in an ambulance prior to arrival at hospital, looking specifically for ST-segment elevation.

The presence of ST elevation on the ECG suggests complete coronary occlusion and the need for immediate reperfusion therapy, such as primary PCI. Absence of ST elevation suggests that the coronary artery is only partly occluded, allowing time to investigate the coronary arteries by coronary angiography while providing medical treatments in the interim.

This presence or absence of ST elevation, coupled with confirmation by blood testing that infarction has occurred, leads to two possible final diagnoses of MI: ST-elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (nSTEMI).

Figure 2: Onset to diagnosis of patient



1.5. Guidelines and standards used

Cardiac care of heart attack is provided in accordance with, and with reference to, nationally accepted guidelines and standards of best practice.

The MINAP audit assesses care against the Quality Standards and Clinical Guidelines issued by NICE.

- QS68 Acute coronary syndrome in adults
- CG172 Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease
- CG167 Myocardial infarction with ST-segment elevation: acute management

Integral to care of heart attack is the Quality Standard 68 Acute coronary syndrome in adults. Six statements, listed below, provide guidance for the management of patients with ACS and provision of high quality coordinated care for patients with heart attack.

Figure 3. 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.

In addition, care for patients with heart attack is described in various international guidelines. The British Cardiovascular Society has formally endorsed guidelines set out by The European Society of Cardiology. They are:

- Acute myocardial infarction in patients presenting with ST-segment elevation[4] published in 2012. An update of these guidelines is expected to be published by the ESC in 2017
- 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation: Task Force for the Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology (ESC)

4. https://academic.oup.com/eurheartj/article/33/20/2569/447818/ESC-Guidelines-for-the-management-of-acute

Ambulance services provide the first medical treatment, they play a critical role in the diagnosis of a patient with heart attack

1.6. Service providers

Care of patients with heart attack involves many facets of health care. These include: ambulance services – call receivers, first responders, paramedics and emergency medical technicians; medical, nursing and other clinical and administrative staff within hospital accident and emergency departments, and medical assessment units; general physicians; cardiologists, nurses, cardiac physiologists, radiographers and other support staff working in interventional and non-interventional cardiac centres; clinical and non-clinical personnel providing cardiac rehabilitation classes; general practitioners and other primary care staff supporting patients in the community following heart attack.

1.7. Previous reports

MINAP Annual Report is now in its 15th year; NICOR has been producing reports on key cardiac provisions across England and Wales for over a decade. We are privileged to have a wealth of information that has enabled and supported key decisions made by the Department of Health, Welsh Government, NHS England, NHS Wales and Department of Health NI, for the better provision of cardiac and health services.

Reports from previous years, across all NICOR audits, are available online at the NICOR website www.ucl.ac.uk/nicor.

MINAP Annual Report is now in its 15th Year. NICOR has been producing reports on key cardiac provisions across England and Wales for over a decade.

2. Methodology

Hospitals participating in MINAP are requested to enter information for all patients with suspected heart attack. In the 2015/16 financial year, more than 94,000 cases were uploaded to the MINAP system.

Patient episodes are submitted from centres in England, Wales, Northern Ireland, Channel Islands and Isle of Man. These patient records are cleaned and anonymised by our data development team, before being sent to our analytical team for analysis and statistical review.

2.1. The dataset

The MINAP dataset, version 10.3.2, is designed to capture the entire patient pathway – from the time the patient calls for professional help to the point of discharge. The dataset includes patient demographics, medical history and clinical assessment, investigations, interventions, and treatment with medications before, during and after the hospital stay.

In 2017 the MINAP team hope to update the current dataset to account for the changes in best clinical practice for heart attack. Notably it will review and revise the capture of information regarding recommended medications at discharge, and the ESC recommendations for assessment and categorisation of left ventricle ejection fraction.

2.2. Case ascertainment

Case ascertainment is determined by expressing the number of cases submitted by each hospital participating in MINAP as a proportion of the number of cases coded as myocardial infarction in the hospital episode statistics (HES) data provided by NHS Digital, and patient episode database for Wales (PEDW) from NHS Wales Informatics Service.

MINAP records include the vast majority of patients having STEMI in England, Wales, and Northern Ireland. This is evidenced by the similarity in the number of patients with STEMI reported as receiving primary PCI in MINAP and the number of primary PCI cases in the National Audit of Percutaneous Coronary Intervention (NAPCI).

However nSTEMI is under-represented in MINAP. Partly this reflects the greater difficulty in diagnosing nSTEMI compared with diagnosing STEMI – the former, unlike the latter, not being associated with a characteristic ECG abnormality. However the ratio of STEMI to nSTEMI varies significantly between hospitals and may correlate with resources allocated to data collection and submission.

Case ascertainment for both STEMI and nSTEMI, by participating hospital, will form part of a supplementary report to be released later in 2017.

2.3. Data completeness and data quality

MINAP has a number of approaches to support improvements in data quality through the provision of written data quality guidance, the introduction of a MINAP minimum data standard, data validation exercises, and helpdesk support.

Overall completeness of three key data fields (age, admission blood pressure, and heart rate) rose from 90.1% in 2014/15 to 91.5% in 2015/16.

2.4. Inclusion criteria

MINAP covers all ACS of Type 1 (i.e. spontaneous) myocardial infarction, related to ischaemia due to a primary coronary event such as plaque erosion or rupture, fissuring, or dissection.

Included in analyses are patients with specific discharge diagnoses of:

- Myocardial infarction (ST elevation)
- Myocardial infarction (non ST elevation)
- Any patient that had ST elevation at any point in their journey regardless of their discharge diagnosis

2.5. Small numbers

MINAP does not report the exact number of cases for those centres that submit information on fewer than 20 cases, as there would be a small theoretical risk of identifying individuals. This practice is in line with the Office for National Statistics Confidentiality Guidance for publishing health statistics.[5]

2.6. Governance and patient involvement

MINAP is managed by a project team within NICOR and is clinically lead by Dr Clive Weston, supported by a steering group including among its membership representatives of professional societies – the British Cardiovascular Society (BCS) – patient representatives, clinicians from Wales, Northern Ireland and England, clinical academics, the British Heart Foundation, the clinical lead of the National Audit of Percutaneous Coronary Interventions, the Project Manager and Analyst. The MINAP Steering Group meets three to four times each year. The Chief Operating Officer of NICOR, and members of HQIP – the organisation that commissions the audit – are also invited to steering group meetings.

The Clinical Lead is appointed through agreement between NICOR and the BCS, and sits with the leads of the other NICOR cardiac audits in a Professional Liaison Group.

5. Review of the Dissemination of Health Statistics: Confidentiality Guidance (2006). http://www.ons.gov.uk/ons/guide-method/best-practice/disclosure-control-of-health-statistics/index.html

3. Analyses

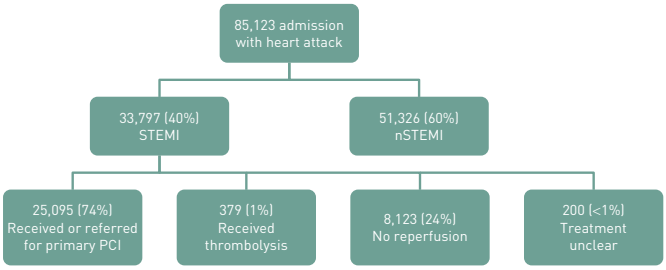
The following statistics are for heart attacks only and do not include those patients who were admitted with symptoms suggestive of heart attack but who were later given a different diagnosis. Patients under 20 years old are also excluded from the analysis.

The type of acute coronary syndrome, STEMI or nSTEMI, at discharge has been re-coded based on the presence of ST segment elevation on any ECG during the patient episode. Importantly, if ST segments are elevated on an ECG recorded by ambulance personnel but have normalised by the time of arrival at hospital, the patient is classified for the purpose of this analysis as STEMI in the analysis. Unless stated otherwise, all results reported refer to patients in the United Kingdom.

3.1. Characteristics of patients with heart attack

From April 2015 – March 2016 over 94,800 cases were submitted to the MINAP database from hospitals in England, Wales, Northern Ireland and Isle of Man. Of these 85,123 patients (90.6%) received a final diagnosis of heart attack.

Figure 4: Characteristics of patients with heart attack



Specifically, 33,797 patients were diagnosed with STEMI (39.7%), and 51,326 with nSTEMI (60.3%). For 62,830 (73.8%), this was their first diagnosis of heart attack. Approximately one quarter of all heart attacks occur in individuals who have suffered at least one such attack previously.

3.1.1. Age and sex

In cases of heart attack, men outnumber women by a ratio of 2:1. This ratio has not changed significantly over the past five years.

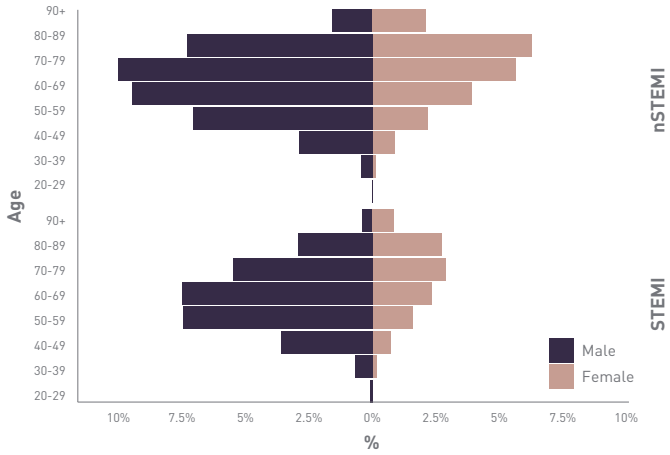
In England, 67% of all heart attack cases are male, and of all STEMI 71% are male. For both STEMI and nSTEMI, women tend to be older than men. These gender differences may reflect differences in prevalence of risk factors for coronary disease, differences in the precise mechanisms underlying ACS or the protective effects of naturally occurring oestrogens that tend to delay the onset of coronary events in women.

For both men and women, the median age of those experiencing nSTEMI is greater than of those with STEMI. Most patients with nSTEMI are 70 years of age or older.

Figure 5. Median Age (in years) by sex experiencing nSTEMI/STEMI

	Mean Age (y)	Median Age (y)
Male - STEMI	63.1	62.6
Female - STEMI	71.2	72.9
Male - nSTEMI	68.6	69
Female - nSTEMI	74.2	76

Figure 6: Age distribution of STEMI and nSTEMI



3.1.2. Pre-existing conditions and risk factors

Some factors contribute to the build-up of coronary atheroma and increase the likelihood of heart attack. Centres participating in MINAP are encouraged to collect a full medical history from their patients upon arrival at hospital.

The following statistics are generally restricted to patients who have no history of coronary artery bypass grafting (CABG), PCI, or previous AMI; that is, those who are not already known to have coronary artery disease. This represents 62,830 patient episodes.

Hypertension

[Data discrepancies: 874 unknown (1.4%), 6,540 not recorded (10.4%). The following analysis is restricted to patients with no history of coronary artery bypass grafting (CABG), percutaneous intervention (PCI), or previous acute myocardial infarction (AMI).]

High blood pressure (hypertension) is a risk factor for both heart attack and stroke. In MINAP hypertension is defined as a report by a patient, or evidence from others, of elevated blood pressure requiring medical treatment. In the 2015/16 MINAP data, a total of 25,672 patients (40.9%) had a history of high blood pressure at the time of their first heart attack.

With respect to gender, 37.7% of male patients (15,542) and 47.1% of female patients (9,976) had a history of hypertension. Given that females are on average older than males in MINAP, this likely reflects the increased prevalence of hypertension in older patients.

Hyperlipidaemia

[Data discrepancies: 1,266 unknown (2.0%), 6,753 not recorded (10.7%). The following analysis is restricted to patients with no history of coronary artery bypass grafting (CABG), percutaneous intervention (PCI), or previous acute myocardial infarction (AMI).]

In MINAP, hyperlipidaemia is defined as a report by a patient, or evidence from others, of prior elevation of blood cholesterol requiring dietary or drug treatment. In practice this may simply reflect the prior prescription of cholesterol lowering drugs before admission.

For those without a previous history of heart attack or coronary intervention 15,827 (28.9%) had a diagnosis of hyperlipidaemia at the time of their heart attack. Unlike hypertension there was no important difference between men, 10,443 (29.1%), and women, 5,251 (28.3%). This is consistent with findings in previous MINAP reports.

Diabetes

[Data discrepancies: 1,803 unknown (2.9%), 0 not recorded (0.0%). The following analysis is restricted to patients with no history of coronary artery bypass grafting (CABG), percutaneous intervention (PCI), or previous acute myocardial infarction (AMI).]

In MINAP, a history of diabetes is defined as a report by a patient, or evidence from others, of prior elevation of blood glucose requiring dietary or drug treatment.

In the 2015/16 data, the number of patients with a prior diagnosis of diabetes was approximately 20% overall, with 18.2% and 20.4% for men and women, respectively. This compares to 14% for males and 16.5% for females in 2005/6, showing an increase in the frequency of prior diagnosis of diabetes over the last decade. Furthermore, according to data from the Quality Outcomes Framework, the prevalence of diabetes in the UK was approximately 6.2%[6] in 2014. Patients with diabetes – predominantly type-2 diabetes – are therefore significantly over-represented in the MINAP dataset.

Tobacco Smoking

[Data discrepancies: 8,913 unknown (11.4%). The following analysis is for all heart attacks. Smoking data was not available for all patients.]

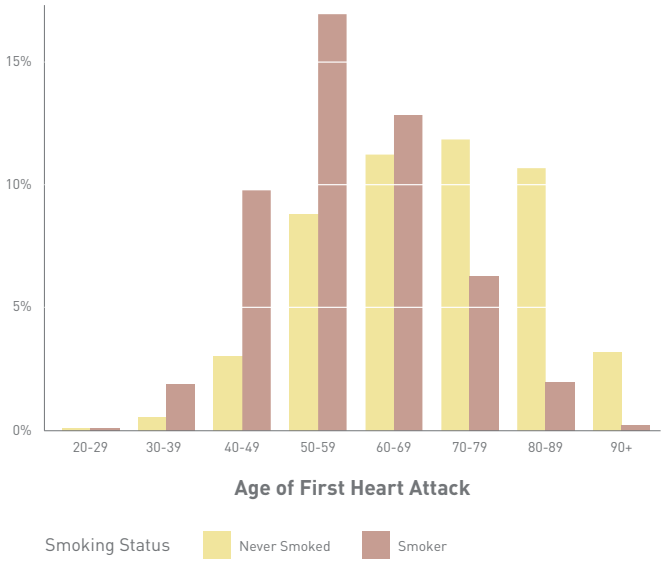
The prevalence of tobacco smoking remains high, with 21,344 (27.2%) patients admitting at the time of heart attack that they were current smokers. 25,606 (32.6%) had been a smoker but had given up by the time of their heart attack, and 22,675 (28.9%) reported that they had never smoked. There has been a slight fall from approximately 32% currently smoking in 2010/11.

Figure 7. Median age (in years) by smoking status and discharge diagnosis

	Male nSTEMI	Female nSTEMI	Male STEMI	Female STEMI
Never Smoked	67.0	78.0	64.0	76.0
Current Smoker	57.0	62.0	55.0	61.6

As observed in the 2014/15 MINAP report, there appears to be a strong correlation between current smoking, and a younger age at the time of heart attack – a difference of as much as ten years at onset compared with non-smokers. The age distribution for heart attack is shifted to the left (younger age ranges) in patients who smoke.

Figure 8: Impact of smoking on age of first heart attack



Interesting information can be observed with respect to the effect of quitting smoking. In the graph below, the age of first heart attack is presented for those who are current smokers,

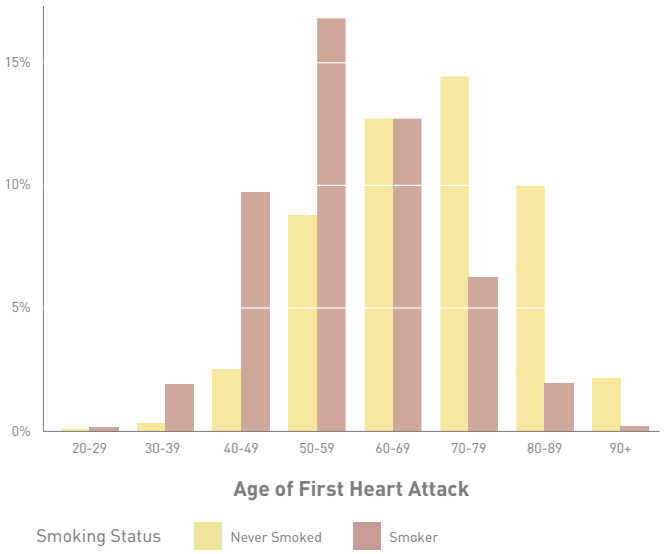
6. Diabetes Prevalence 2014. https://www.diabetes.org.uk/Professionals/Position-statements-reports/Statistics/Diabetes-prevalence-2014/

and those who were smokers and had quit before the cardiac event. One interpretation is that while stopping smoking did not prevent a heart attack in those patients who quit, it was associated with a postponement of the heart attack.

Figure 9: Impact of quitting smoking on age of first heart attack

Body Mass Index

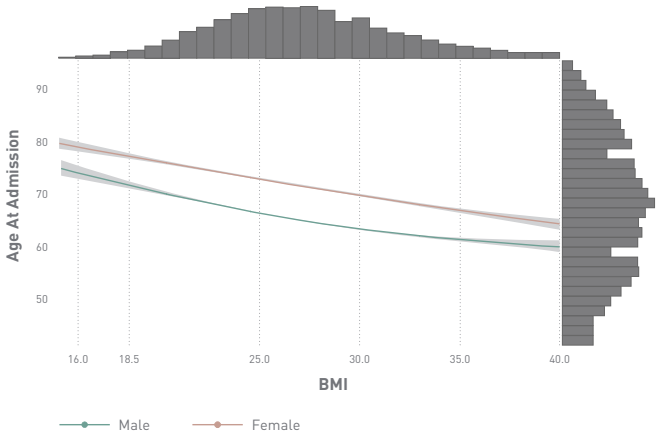
[Data discrepancies: The BMI is calculated using the height



and weight recorded at admission. The following analysis is for patients with their first heart attack, the sample size is approximately 25,898 out of a possible 62,446 (41.5%) heart attack episodes.]

Body Mass Index (BMI) has not been discussed in previous MINAP reports. However, the MINAP database does allow collection of each patient's height and weight, from which the BMI – weight (kg) / height $(m)^2$ – can be calculated. The accepted range of BMI is: Underweight – BMI under 18.5; Healthy weight – BMI 18.5 – 25; Overweight – BMI over 25.

Figure 10: Age of onset of heart attack against body mass index (BMI) - histograms show distribution of age and BMI



There appears to be a correlation between BMI and age of admission for a first heart attack for both men and women, with younger age at time of heart attack associated with higher BMI.

Recurrent heart attacks

Approximately one quarter of patients who had a heart attack in 2015/16 were not experiencing it for the first time. These patients differ from those experiencing their first heart attack. There is a greater prevalence of diabetes in those experiencing recurrent heart attacks – 38.1% vs 18.9%, a greater prevalence of diagnosed hypertension – 65% vs 41%, a greater prevalence of diagnosed hyperlipidaemia – 48.6% vs 29%. There were however fewer current smokers among the recurrent heart attack group – 22% vs 34%.

3.2. Results by clinical diagnosis

The following sections separate STEMI from nSTEMI patients to present findings that are relevant to the specific clinical condition and pathway that is activated following the initial diagnosis.

3.3. Care of patients with STEMI

Once ST elevation is identified on an ECG in a patient with symptoms consistent with heart attack they should be categorised as STEMI and have reperfusion, the restoration of blood flow, as soon as possible. Compared with 2011, the proportion of patients with STEMI receiving PCI as their reperfusion therapy has increased in all nations. A small proportion of patients are given thrombolytic treatment instead, as described later in this report.

3.3.1. Primary PCI

A percutaneous coronary intervention (PCI) is the preferred reperfusion technique to reopen a blocked coronary artery in the presence of ST elevation. This is carried out as an emergency treatment. It must be performed as soon as possible after diagnosis to prevent, or reduce, permanent damage of heart muscle and subsequent heart failure.

Figure 11. For STEMI cases receiving reperfusion therapy, the proportion receiving primary PCI

Country	2011	2016
England	82%	99.3%
Wales	30%	86.0%
Northern Ireland	99%	99.9%
Overall	81%	98.4%

Timing is critical in Primary PCI treatment, a breakdown of the process is illustrated on the next page.

Figure 12: Delay in treatment of STEMI

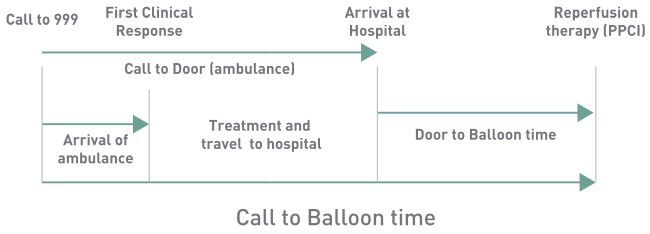
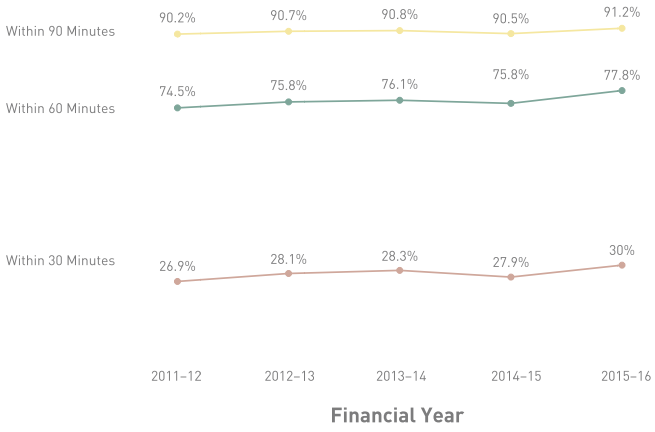


Figure 13: Door to Balloon times for patients with STEMI



3.3.2. Performance times

All service providers are audited against best practice standards for providing primary PCI for STEMI. Analyses conducted should be considered with reference to the following statement from QS68:

Statement 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.*

Hospitals are providing primary PCI to the majority of their patients within the NICE recommended[7] timeframe of 150 minutes from call for help (call to balloon, CtB), and 120 minutes from arrival at hospital (door to balloon, DtB).

Door to Balloon time

The target is to provide primary PCI within 90 minutes of a patient's arrival at the primary PCI centre - the door to balloon (DtB) time.

Overall, the median DtB is 40 minutes. That is, 50% of patients are treated with primary PCI within 40 minutes of arrival at hospital, compared to 41 minutes in 2015. 25% of patients receive treatment within 29 minutes, and 75% within 59 minutes. The Median DtB time for England is 40 minutes, with Wales and Northern Ireland achieving 41 minutes and 33 minutes respectively.

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 88.9%, a small increase from 88.6% in 2014/15 and a significant improvement compared with 52% in 2005.

Despite prolongation of overall CtB – see below – the median DtB has improved slightly in the past 5 years.

Call to balloon time

The median call to balloon time for 2015/16 was 118 minutes in the UK. That is, 50% of patients receiving primary PCI do so within 118 minutes of calling for help. The median CtB time in England is 117 minutes, in Wales 127 minutes, and in Northern Ireland 108 minutes. Overall, 80% of patients are treated within 150 minutes.

Four in every five patients with STEMI are taken by ambulance directly to a hospital capable of providing primary PCI. Where a patient is instead taken to a non-interventional hospital for assessment prior to transfer for primary PCI, the overall CtB is longer. In such cases only 46.5% of patients achieve a CtB of 150 minutes. The decision to take the patient to a non-interventional centre rather than directly to an interventional centre may be based upon difficulties in diagnosis due to atypical symptoms or less obvious ECG changes.

There is a definite trend for the overall median CtB to increase over the last 5 years. The table on the next page shows Call to Door, DtB and CtB times for all STEMI patients receiving primary PCI, regardless of method of arrival at hospital. See also the table in section 4.3.5 which restricts analysis to those patients transported directly by ambulance to hospital for primary PCI.

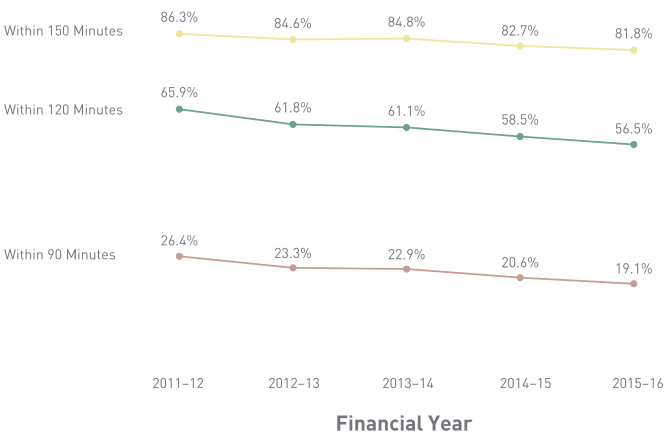
7. NICE Quality standard QS68, Acute coronary syndromes in adults, 2014.

Timely pPCI and angiography significantly improve patient outcomes

Figure 14. Median (minutes) call to door, door to balloon, and call to balloon times for those patients with STEMI who underwent primary PCI regardless of method of arrival at hospital

	Call to Door (min)	Door to Balloon (min)	Call to Balloon (min)
2012	64	41	112
2013	66	40	113
2014	67	40	114
2015	69	40	116
2016	72	40	118

Figure 15: Call to balloon time for patients with STEMI



3.3.3. Thrombolytic treatment

Thrombolytic treatment, administration of intravenous medication that dissolves clots, was once the preferred treatment option for STEMI. It is infrequently used in the United Kingdom, except where timely access to primary PCI is not available.

When thrombolysis was best practice it was also subject to standards of delivery – a 60 minute call to needle (CtN) time. CtN times for those hospitals providing thrombolytic treatment are displayed below. Some of the patients may have received thrombolysis from ambulance paramedics prior to arrival at hospital.

The table on the next page contains information on the hospitals with the greatest use of thrombolytic treatment. Other hospitals did report use of such drugs for the management of STEMI, but fall below our small numbers cut off.

Figure 16. Call to needle times for hospitals that perform thrombolysis.

Hospital	Median of CtN (min)	Thrombolysis within 60 mins	Eligible patients for CTN60 (N)
Glan Clwyd	53	66.7%	33
Ysbyty Gwynedd	93	17.6%	17
Jersey General	72.5	21.4%	14
Wrexham Maelor	45	62.2%	45

3.3.4. No reperfusion

In some patients with STEMI, treatment to restore coronary blood flow 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 because the treatment is not suitable for the patient (e.g. they are at increased risk of bleeding), or because, having undergone an urgent angiogram, the angiogram shows that the coronary artery is not sufficiently obstructed as to warrant intervention.

Figure 17. Reason for no reperfusion, for STEMI patients in England, Wales and Northern Ireland.

Reason for no reperfusion	Number	Percentage
Administrative failure	49	0.60%
Elective decision	1388	17.09%
Ineligible ECG	1937	23.85%
None	1092	13.44%
Other	1300	16.00%
Patient refused treatment	65	0.80%
Risk of haemorrhage	79	0.97%
Too late	1701	20.94%
Uncontrolled hypertension	3	0.04%
Unknown	41	0.50%
Missing	468	5.76%
Total	8123	100.00%

Late presentation is shown by this report to be a major reason why no reperfusion treatment was given. Just over 20% of STEMI cases that are not given reperfusion treatment do not receive it because they arrive too late to benefit from the intervention.

3.3.5. Ambulance performance

Ambulance services provide the earliest care to the majority of patients with heart attack. Ambulance personnel are frequently responsible for the recognition of patients' symptoms as those of heart attack, and for performing and interpreting the ECG – recognising those with ST elevation and therefore in need of immediate transfer to a hospital capable of providing primary PCI.

In England and Wales, ambulance service performance is expressed as the median call-to-balloon time for patients with STEMI who later receive a primary PCI in hospital and who received care from ambulance personnel during assessment and transport to hospital. This marker of performance is therefore partly influenced by the timely response of the receiving hospital, as well as the rapidity of response, assessment, diagnosis, prehospital treatment and transport to hospital by the ambulance service.

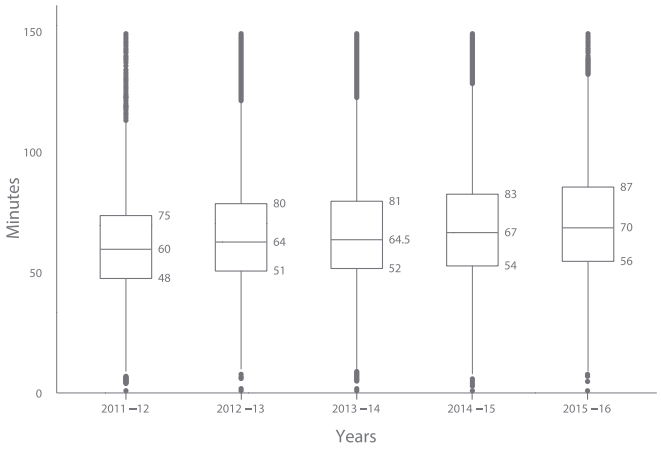
In England, the median time for patients with STEMI transported to hospital by ambulance to receive primary PCI was 111 minutes following call for help, with the median for individual services ranging from 97 to 129 minutes. 80% of patients had a CtB within 150 minutes and 57% within 120 minutes, although these figures varied between ambulance trusts. A table of performance of ambulance trusts can be viewed in the appendix.

Figure 18. Median call to door, door to balloon and call to balloon times for those patients with STEMI transported directly to hospital by ambulance and who underwent primary PCI

	Call to Door (min)	Door to Balloon (min)	Call to Balloon (min)
2012	60	42	107
2013	63	41	110
2014	64	41	111
2015	67	41	113
2016	70	40	115

Additionally, MINAP collects information that allows a measurement of the 'call to door time' the interval from the receipt of a call for help and arrival at hospital for patients managed by ambulance services, and who later undergo primary PCI for STEMI. There has been a year-on-year increase in this interval, the cause of which is uncertain. The increase in delay may reflect a "roll-out" of primary PCI services during the last few years to more rural areas with corresponding increases in distance and transport times between home and hospital. It might also reflect changes in the categorisation of urgent 999 ambulance calls from people reporting symptoms of possible heart attack.

Figure 19: Box plots showing median and interquartile range (with mean) for call to door time



3.4. Care of patients with nSTEMI

Patients with nSTEMI who, by definition, lack the ST elevation on ECG that is demonstrative of a complete occlusion of a coronary artery requiring immediate PCI, generally do not require urgent reperfusion therapy. With adequate monitoring and various drug treatments their symptoms often settle. However, diagnostic coronary angiography is still recommended soon after admission in order to gauge the extent of coronary disease. If PCI to the artery is judged to be responsible for the heart attack (and indeed to other coronary arteries) it is possible it can be performed at the time of the angiogram.

In the absence of ST elevation, patients are frequently admitted to the nearest hospital. If that hospital is not capable of providing diagnostic angiography, patients will require subsequent transfer to an interventional centre for angiography.

3.4.1. Angiography

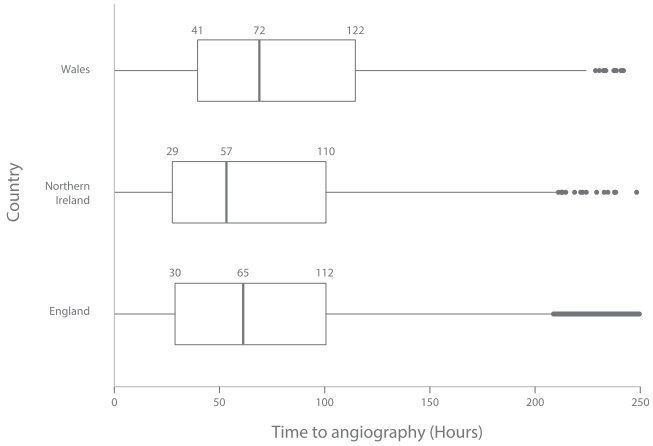
Statement 2: *Adults with nSTEMI or unstable angina who have an intermediate or higher risk of future adverse cardiovascular events are offered coronary angiography (with follow-on PCI if appropriate) within 72 hours of first admission to hospital.*

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 or recurrent heart attack 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.

Figure 20. Median time to angiography for patients with nSTEMI admitted directly to a hospital capable of performing angiography (in hours)

	Number of patients	Lower-quartile	Median	Upper-quartile
England	17322	30	65	112
Northern Ireland	566	29	57	110
Wales	624	41	72	122

Figure 21 : Time (hours) of delay to angiography by country



Importantly, recorded delays from admission to angiography for nSTEMI have not improved. For those admitted directly to hospitals that are capable of providing on-site angiography, 17 .5% received an angiogram within 24 hours; 53% within 72 hours; 66.3% within 96 hours. In 2010/11 the equivalent figures were 21% within 24 hours, 55% within 72 hours and 67% within 96 hours.

For patients admitted to a hospital without angiography facilities, or to a hospital with such facilities yet that has an arrangement to transfer nSTEMI patients to a neighbouring interventional hospital, the delay to angiography is likely to be even greater.

Management of nSTEMI and the provision of timely angiography is a clear example of where care for patients can be improved.

Recognising the need to improve this aspect of care, NHS England is introducing a Best Practice Tariff for angiography in nSTEMI in the 2016-17 financial year (see 2.3.2 above). Participating hospitals will receive a higher reimbursement for service where at least 60% of all nSTEMI patients receive angiography within 72 hours.

3.4.2. In hospital management

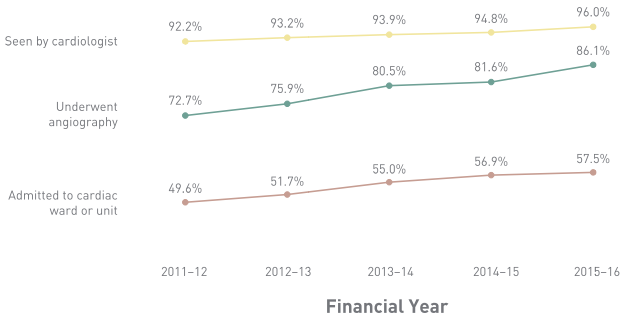
There is evidence that specialist involvement is important in determining the likelihood of receiving evidence-based treatments. Ideally admission should be to a cardiac facility, where nursing staff have expert cardiac experience and access to cardiac advice.

Figure 22. Care of patients with nSTEMI 2015/16

	Number of patients	Percentage
Patients with nSTEMI	51326	100.00%
Seen by Cardiologist	49283	96.02%
Admitted to cardiac ward or unit	29529	57.53%
Eligible for angiography	42773	83.34%
Underwent angiography	36843	86.14%
Underwent angiography before discharge	35915	83.97%

The figure below demonstrates the care of nSTEMI patients recorded in MINAP has been steadily improving over the last five years.

Figure 23: Care of nSTEMI patients 2011-2016



3.5. Heart attack patients at discharge

There is good evidence for all types of ACS, both STEMI and nSTEMI, that certain medicines prescribed at discharge from hospital and taken thereafter, reduce the risk of further heart attacks. To these 'Secondary Prevention' medication should be added various dietary changes, cessation of tobacco smoking and participation in a cardiac rehabilitation programme, as a 'portfolio' of interventions to minimise the probability of another heart attack.

Analyses reported in this section refer to STEMI and nSTEMI, combined.

3.5.1. Length of stay

Analysis and reporting of length of stay is only for patients with a direct admission, i.e. those patients that did not have a transfer during their episode. Patients who experience transfer between hospitals during their management are likely to have overall lengths of stay that are far greater than those reported here.

The following is calculated for patients in the participating centres who either self presented or were directly admitted via emergency service; it also includes patients who died in hospital.

Figure 24. Length of stay in days by diagnosis

	Lower quartile	Median	Upper quartile
STEMI	2	3	5
nSTEMI	3	5	9

Tables detailing length of stay for specific centres and nations can be found in the appendix documents.

3.5.2. Discharge medications

NICE clinical guideline CG172[8] recommends that all patients who have had acute MI should be offered the following drugs providing there are no contraindications.

- Angiotensin converting enzyme (ACE) inhibitors
- Dual antiplatelet therapy (aspirin & a second antiplatelet agent such as ticagrelor or a thienopyridine inhibitors, e.g. clopidogrel or prasugrel)
- Beta-blockers
- Statins
- Aldosterone antagonists (in those with evidence of systolic heart failure)
- Angiotensin receptor blockers (ARB) (not normally in combination with ACE inhibitors)

A variety of medications have been shown to reduce the risk of subsequent heart attacks

8. https://www.nice.org.uk/guidance/cg172/

Clinicians, commissioners, healthcare regulators, patients

MINAP currently measures the prescription of the medications listed below following an acute coronary event.

Patients are excluded from analysis of the use of secondary prevention medication if it does not appear that they survived to discharge or if they were transferred to another hospital prior to discharge (even though secondary prevention medication is often started soon after initial admission).

In addition some patients are ineligible to receive a particular medication, or they decline to take the medication prescribed. Thus, the numbers of patient records eligible for analysis are specific to each medication and these numbers may be substantially lower than the total number of heart attack patients seen or treated.

Figure 25: Specific prescription rates at discharge for eligible patients in MINAP 2015/16

Medication	Eligible	Ineligible	Percent prescribed	Total prescribed
ACE inhibitor/ ARB	53857	9687	94.70%	51003
Aspirin	57912	5632	98.37%	56969
Beta blocker	55129	8415	96.58%	53243
Statin	58247	5297	97.43%	56752
Thienopyridine inhibitor or ticagrelor	57034	6510	97.24%	55461

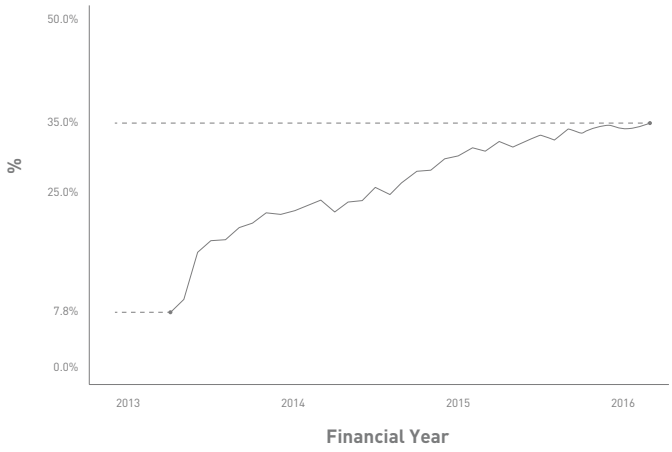
This can also be expressed in terms of the number of patients who received all the drugs for which they were eligible. The table in the appendices demonstrates how many patients are prescribed all of the medication recommended by NICE for which they are eligible. Overall 57,506 of 63,544 (90.5%) patients received all the drugs for which they were eligible.

Ticagrelor

Ticagrelor is a relatively recent addition to drug treatments following heart attack, having been formally appraised by NICE in 2011.[9]

It can be seen in the graph below the increased prescription (approximately 10% in absolute terms) of ticagrelor over the last two years.

Figure 26: Patients discharged on Ticagrelor



3.6. Improving analysis and data accessibility

The NICOR Technical and Analytical team are currently developing an interactive reporting portal for each NICOR audit domain, including MINAP.

This will provide hospitals, clinicians, commissioners, healthcare regulators, patients and the public with a better understanding of the audit outputs. By presenting them in an interactive visual context, specific information will be accessed in an effective and timely manner. It is hoped that in the future the annual reports produced by NICOR will be condensed, with the analytical outputs available exclusively via this online portal. This reporting system will be supported by a move towards a quarterly data validation cycle, allowing information to be more readily available, providing 'real time' outputs.

9. NICE Technology Appraisal TA236. https://www.nice.org.uk/guidance/ta236

4. Outcomes

The present report contains information and analyses relating primarily to "performance measures". The advantage of such an approach to quality of care is processes of care are largely within the control of the participating centres and so may prove a ready focus for quality improvement initiatives. Further, through making explicit process measures, patients may understand what to expect during the management of 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.

A supplementary outcomes report will be published in the forthcoming year containing "raw" and partially adjusted 30-day mortality/survival rates following STEMI.

5. Recommendations

Policy Makers, Service Directors and Clinical Commissioning Groups (CCG), National Delivery Groups (Wales), Health and Social Care Board (NI), Professional Societies and National Charities should:

- Continue working closely with those that deliver care to ensure provision of the most accurate data for clinical audit
- Raise public awareness of the risk factors known to increase the chance of heart attack including: obesity, type 2 diabetes, hypertension, tobacco smoking & hyperlipidaemia
- Support initiatives to: mitigate known risk factors, publicise the signs and symptoms of heart attack, and encourage prompt responses at the onset of symptoms
- Work with service providers and centres more clearly to understand how they can provide better care. This might include facilitating meetings between neighbouring hospitals and Ambulance Trusts to share best practice and to consider reconfiguration of services

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

- Ensure that the MINAP report findings are widely disseminated to relevant clinical teams and acted upon
- Explore, understand and act upon variations in the care of people with both STEMI and nSTEMI
- Improve and maintain quality of care by comparing the performance of hospitals within their organisation, or their specific hospital with similar centres, and against published national standards
- Ensure nSTEMI patients at moderate to high risk have access to timely angiography
- Ensure there are sufficient resources allocated to clinical audit and associated quality improvement activity
- Ensure that MINAP findings are presented at board level and identified gaps in service provision are addressed by:
  - » Nominating a trust clinical lead to progress the work
  - » Working with teams to explore contributing factors
  - » Agreeing clear quality improvement action plans and implementing changes by agreed deadlines

Leaders of ambulance trusts should:

- Continue to monitor and act upon the response to emergency calls and the prioritisation of heart attack
- Understand the effects of the provision of appropriate and equitable care for all who require their services
- Ensure the timeliness of care for patients with STEMI

Clinicians and Audit Teams should:

- Continue to ensure the data provided to MINAP are accurate and timely – being of high quality data, as outlined in the MINAP Minimum Data Standard
- Interrogate the data on a regular basis, and use the data to facilitate quality improvement initiatives aimed at targeting MINAP identified limitations in the care provision of people with STEMI and nSTEMI
- Work with the appointed Trust clinical lead to explore and address known limitations demonstrated by MINAP audit findings – including consideration of root cause analysis of cases where processes of care do not reach the expected standard
- Widely share successful QI initiatives resulting from MINAP work, for example through:
  - » RCP 'Tell us your story': https://www.rcplondon.ac.uk/projects/future-hospital-tell-us-your-story
  - » HQIP case studies: http://www.hqip.org.uk/resources/
- Remember that many important aspects of compassionate patient-centred care cannot be quantified or represented through clinical audit, but must not be ignored

Appendix 1: Glossary

ACE inhibitors - A class of drug used after a heart attack to treat and prevent 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.

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.

Call to Door (CtD) – In heart attack treatment, the interval between the call for professional help and arrival at the hospital.

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.

Clinical Commissioning Group – CCGs are overseen by NHS England. They manage primary care commissioning, including holding the NHS Contracts for GP practices. Each CCG has a constitution and is run by its governing body.

Coronary artery bypass grafting (CABG) – A surgical procedure where blood is diverted from narrow or blocked arteries by connecting or grafting a healthy artery or vein in its place.

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.

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.

Ineligible ECG - An ineligible ECG is one that shows neither unequivocal ST elevation nor left bundle branch block in those patients being considered for reperfusion therapy.

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).

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.

Thienopyridines – A class of drugs that includes clopidogrel and prasugrel. It is often prescribed following the placement of a coronary stent.

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.

Ticagrelor – A platelet aggregation inhibitor. It is used in the prevention of thrombotic events such as stroke or heart attack. It is commonly prescribed in conjunction with aspirin.

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: Publications using MINAP data in 2016

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 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.

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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
Year	2015 - 2016											
	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, Wales & Northern Ireland	**88.9**	**21030**	**40**	**74.9**	**19805**	**118**	**80.9**	**16283**	**46.5**	**3453**	**50.1**	**77.4**
England	**89.0**	**19216**	**40**	**75.2**	**18240**	**117**	**81.2**	**15038**	**46.8**	**3135**	**51.1**	**78.2**
Basildon Hospital	97.2	652	30	83.3	642	118	84.2	486	80.8	156	51.7	74.7
Basingstoke And North Hampshire Hospital	77.2	123	40	66.7	105	108.5	69.1	97		<20	56.2	82.1
Birmingham City Hospital	94.6	167	51	94.0	150	103	93.5	138		<20	75.3	83.2
Birmingham Heartlands Hospital	88.1	371	51	85.3	347	113	88.7	302	62.2	45	59.4	81.7
Blackpool Victoria Hospital	90.9	616	49	73.5	563	129	78.1	466	51.6	97	37.3	76.0
Bradford Royal Infirmary		<20			<20			<20		<20		100.0
Bristol Royal Infirmary	91.0	579	33	58.9	579	134	73.6	420	20.3	158	35.2	71.5
Calderdale Royal Hospital		<20			<20			<20		<20		66.7

	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
Year	2015 - 2016											
	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 (%)
Castle Hill Hospital	96.7	514	31	72.0	500	113	86.2	412	4.7	85	56.0	80.2
Cheltenham General Hospital	79.1	91	43	72.6	84	119.5	70.0	70		<20	48.8	78.0
Conquest Hospital	79.8	94	50	76.5	81	113	82.4	74		<20	58.0	80.9
Cumberland Infirmary	84.1	182	45	69.6	158	126		<20		<20	39.9	91.2
Darent Valley Hospital		<20			<20			<20		<20		50.0
Derriford Hospital	74.4	219	48	67.6	213	115		<20		<20	46.0	89.5
Eastbourne District General Hospital	93.2	73	47	77.8	72	118	77.4	62		<20	51.4	84.9
East Surrey Hospital		<20			<20			<20		<20		50.0%
Freeman Hospital	98.8	718	22	83.3	672	99	93.8	496	53.2	173	69.9	69.4
Frimley Park Hospital	93.9	247	29	89.0	218	100	91.7	205		<20	71.6	83.0
Glenfield Hospital	82.0	389	52	79.4	354	114		<20		<20	55.9	92.0
Hammersmith Hospital	90.7	450	48	64.9	450	129	79.4	315	31.1	135	41.6	69.8
Harefield Hospital	94.8	540	28	84.8	533	106	91.9	394	64.8	139	68.3	73.7
James Cook University Hospital	91.3	517	32	88.0	516	97.5	91.2	421	73.7	95	72.1	78.3
John Radcliffe Hospital	92.5	293	26	84.9	251	109	86.1	215	82.6	23	61.0	77.1
Kettering General Hospital	93.9	247	34	89.5	219	104	90.1	201		<20	67.6	80.6
King's College Hospital	83.6	324	42	71.2	278	130	75.2	254	29.2	24	41.4	80.9

	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
Year	2015 - 2016											
	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 (%)
Leeds General Infirmary	86.5	1080	47	65.1	1079	131	79.0	767	29.3	304	36.1	69.2
Lincoln County Hospital	95.0	320	32	84.6	306	120.5	85.8	282	70.8	24	47.4	88.4
Lister Hospital	94.9	291	32	91.0	267	103	90.9	263		<20	74.2	93.1
Liverpool Heart And Chest Hospital	87.0	949	33	68.0	940	110	88.8	519	42.3	421	54.6	54.7
London Chest Hospital	92.3	26	42.5	76.0	25	121	80.0	20		<20	48.0	76.9
Manchester Royal Infirmary	86.8	583	47	65.0	565	129	81.7	366	34.2	199	39.5	62.1
Medway Maritime Hospital		<20			<20			<20<		<20		66.7
Musgrove Park Hospital	96.8	156	28	88.7	150	105	89.0	136		<20	70.7	86.5
New Cross Hospital	82.9	550	49.5	68.4	538	121.5	74.1	448	40.0	90	46.3	80.2
Norfolk And Norwich University Hospital	93.5	402	38	75.0	400	129	77.2	377	39.1	23	37.0	92.3
Northampton General Hospital		<20			<20			<20		<20		63.6
Northern General Hospital	86.8	508	47	63.6	489	133	73.1	353	38.6	132	34.4	69.3
Northwick Park Hospital		<20			<20			<20		<20		66.7
Nottingham City Hospital	88.9	262	44	83.5	242	110	85.0	227		<20	62.4	92.8
Papworth Hospital	94.8	439	37	78.1	439	120	74.9	319	86.7	120	49.0	72.7
Poole Hospital		<20			<20			<20		<20		50.0
Queen Alexandra Hospital	88.2	374	40	82.1	347	114	85.5	318	44.8	29	58.2	84.8

	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
Year	2015 - 2016											
	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 (%)
Queen Elizabeth Hospital	88.0	216	39	92.9	196	90	92.8	195		<20	77.6	87.0
Royal Albert Edward Infirmary		<20			<20			<20		<20		100.0
Royal Berkshire Hospital	92.6	148	28	92.4	144	88		<20		<20	88.2	97.3
Royal Blackburn Hospital		<20			<20			<20		<20		64.3
Royal Bournemouth General Hospital	81.3	304	40	74.2	267	117.5	76.1	259		<20	51.7	87.2
Royal Brompton Hospital		<20			<20			<20		<20		14.3
Royal Cornwall Hospital	86.9	237	46	74.0	227	128		<20		<20	37.9	96.2
Royal Devon & Exeter Hospital	79.7	281	43	55.2	268	140	55.1	265		<20	29.5	94.3
Royal Free Hospital	92.1	277	49	83.2	274	114	85.2	250	57.1	21	58.0	86.6
Royal Sussex County Hospital	86.5	349	38	80.8	349	112	81.1	323	76.9	26	58.2	89.1
Royal United Hospital Bath	91.9	62	35	82.3	62	108.5	81.4	59		<20	61.3	93.6
Salisbury District Hospital	69.2	26	48		<20			<20		<20	47.1	80.8
Sandwell General Hospital	90.0	50	63.5	93.0	43	112	91.9	37		<20	62.8	74.0
Southampton General Hospital	94.1	168	48	87.5	168	110	88.3	163		<20	63.7	90.5
Southmead Hospital		<20			<20			<20		<20		75.0
St Bartholomew's Hospital	95.3	661	44	68.1	658	125	85.4	444	32.2	214	42.4	67.2
St George's Hospital	89.8	442	49	83.9	423	114	83.6	366	86.0	57	57.5	83.9

	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
Year	2015/16											
	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 (%)
St Peter's Hospital	94.3	88	31.5	97.7	88	83		<20		<20	87.5	78.4
St Thomas' Hospital	86.7	135	53	69.3	127	126	85.4	96	19.4	31	44.1	71.1
Sunderland Royal Hospital	40.5	42	52	31.8	22	140		<20		<20	9.1	59.5
The Great Western Hospital	89.1	46	43	88.6	44	95		<20		<20	72.7	91.3
Torbay Hospital	77.2	162	46	76.9	143	113		<20		<20	53.2	88.3
Tunbridge Wells Hospital		<20			<20			<20		<20		33.3
University Hospital Coventry	87.5	400	39	81.7	376	102	83.2	334	66.7	39	62.8	82.3
University Hospital Of North Staffordshire	87.5	288	47	76.6	274	120	80.5	221	60.4	53	47.8	75.7
Watford General Hospital		<20			<20			<20		<20		50.0
Wexham Park Hospital	94.4	36	14.5	94.4	36	83	94.3	35		<20	86.1	80.6
William Harvey Hospital	83.5	642	43	64.9	589	132	65.8	527	57.6	59	27.0	82.1
Worcestershire Royal Hospital	89.2	344	37	74.4	297	118	79.2	269	28.6	28	50.5	82.0
Worthing Hospital		<20			<20			<20		<20		64.3
Wycombe Hospital	94.2	52	25.5	91.7	48	89.5	93.5	46		<20	75.0	88.5
Wythenshawe Hospital	79.2	308	47	67.4	279	124	67.2	274		<20	37.3	94.2
York District Hospital		<20			<20			<20		<20		100.0
Wales	**87.0**	**1001**	**41**	**66.6**	**863**	**127**	**74.4**	**706**	**31.6**	**155**	**42.0**	**70.7**

	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
Year	2015/16											
	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 (%)
Glan Clwyd Hospital	85.4	130	36	65.8	117	121	71.8	103		<20	43.6	82.3
Morriston Hospital	83.6	428	46	59.6	408	140	64.4	315	42.9	91	33.6	71.3
Royal Gwent Hospital		<20			<20			<20		<20		55.6
University Hospital Of Wales	91.5	434	38	76.3	333	118	87.3	283	14.0	50	52.0	67.1
Northern Ireland	**91.0**	**813**	**33**	**77.1**	**702**	**108**	**83.7**	**539**	**55.2**	**163**	**58.8**	**66.9**
Altnagelvin Area Hospital	84.7	163	28.5	73.6	144	112		<20		<20	50.7	89.0
Craigavon Area Hospital		<20			<20			<20		<20		46.7.
Royal Victoria Hospital	93.4	635	34	78.1	552	107	87.7	389	55.2	163	61.1	61.1%

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 who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly to Heart Attack Centre)	Eligible patients who received pPCI within 120 minutes of calling for help (call-to-balloon) including those admitted directly to Heart Attack Centre)	Number of all patients with STEMI who received pPCI	Median call to balloon
Year	2015/16			
Ambulance	CtB150 All (%)	CtB120 All (%)	Out of (N)	CtB Median (min)
East of England Ambulance Service NHS Trust	89.7%	73.1	271	103
London Ambulance Service NHS Trust	79.0%	53.7	1037	116
Northern Ireland Ambulance Service Health and Social Care Trust	77.1%	59.0	685	108
Isle of Wight Healthcare NHS Trust (comes under South Central)			<20	133.5
North East Ambulance Service NHS Foundation Trust	86.0%	72.2	1082	97
North West Ambulance Service NHS Trust	72.1%	42.0	1140	124
Yorkshire Ambulance Service NHS Trust	76.9%	59.8	386	110
East Midlands Ambulance Service NHS Trust	83.7%	54.2	685	114
South Central Ambulance Service NHS Foundation Trust	88.4%	71.7	474	99
South East Coast Ambulance Service NHS Foundation Trust	69.2%	35.0	882	129
South Western Ambulance Service NHS Foundation Trust	80.9%	59.7	481	108
Welsh Ambulance Services NHS Trust	75.6%	50.7	438	117.5
West Midlands Ambulance Service NHS Foundation Trust	78.3%	57.3	1276	112

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	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year	2015/16				
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
England, Wales & Northern Ireland	**96.0**	**57.5%**	**51326**	**84.0**	**42773**
England	**96.2**	**55.8**	**47039**	**83.6**	**39082**
Addenbrooke's Hospital	94.1	51.0	406	87.6	233
Airedale General Hospital	100.0	45.4	163	69.8	159
Alexandra Hospital	100.0	32.9	167	98.4	121
Arrowe Park Hospital	95.5	62.9	353	87.8	238
Barnet General Hospital	93.3	88.2	297	69.9	279
Barnsley Hospital	100.0	87.8	41	51.2	41
Basildon Hospital	98.2	78.6	276	25.9	270
Basingstoke And North Hampshire Hospital	99.7	25.5	310	78.1	306
Bassetlaw Hospital	92.7	72.9	177	90.2	112
Bedford Hospital	100.0	89.3	103	100.0	99
Birmingham City Hospital	100.0	72.6	288	98.5	270
Birmingham Heartlands Hospital	98.7	87.4	469	95.7	468
Blackpool Victoria Hospital	94.0	42.2	503	68.0	503
Bradford Royal Infirmary	98.0	32.3	552	82.9	391
Bristol Royal Infirmary	100.0	68.0	122	94.1	118
Broomfield Hospital	94.7	17.1	380	61.3	346
Calderdale Royal Hospital	98.8	46.0	333	98.3	234
Castle Hill Hospital	99.8	97.4	542	98.3	468
Charing Cross Hospital	100.0	62.6	107	86.5	104
Chelsea And Westminster Hospital	100.0	0.0	55	62.3	53

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Cheltenham General Hospital	91.2	55.8	113	33.6	110
Chesterfield Royal Hospital	99.3	25.0	280	46.5	243
Chorley And South Ribble Hospital	88.6	37.1	105	31.7	79
Colchester General Hospital	97.3	72.2	259	93.0	186
Conquest Hospital	98.0	73.5	196	63.4	183
Countess Of Chester Hospital	96.8	79.3	309	94.9	175
County Hospital Hereford	98.1	60.8	107	80.8	104
Croydon University Hospital	98.3	98.8	173	77.7	166
Cumberland Infirmary	94.6	31.9	260	97.3	184
Darent Valley Hospital	97.7	47.5	261	60.6	256
Darlington Memorial Hospital	95.2	45.7	186	97.5	122
Derriford Hospital	93.0	63.0	386	86.3	386
Dewsbury District Hospital	94.3	25.1	175	67.5	160
Diana, Princess Of Wales Hospital	92.9	22.3	184	75.9	174
Doncaster Royal Infirmary	93.6	39.7	297	94.7	169
Ealing Hospital	97.0	92.1	101	73.3	86
East Surrey Hospital	96.9	32.2	261	99.0	194
Eastbourne District General Hospital	93.5	78.6	154	24.1	141
Epsom Hospital	97.0	73.3	131	87.8	90
Fairfield General Hospital	90.1	11.0	382	96.2	238
Freeman Hospital	100.0	98.5	855	99.8	855
Frimley Park Hospital	97.8	39.6	323	97.3	259
Furness General Hospital	98.0	37.6	101	0.0	89
George Eliot Hospital	60.9	50.0	46	88.9	45
Glenfield Hospital	99.8	100.0	396	100.0	342
Gloucestershire Royal Hospital	91.9	66.9	160	47.4	133

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Good Hope Hospital	99.7	85.3	307	100.0	246
Grantham And District Hospital	95.5	33.3	66	44.4	54
Hammersmith Hospital	100.0	88.7	521	94.4	515
Harefield Hospital	82.2	97.8	230	97.4	230
Harrogate District Hospital	92.0	93.1	175	72.2	97
Hillingdon Hospital	95.5	40.7	312	96.5	198
Hinchingbrooke Hospital	99.4	44.6	157	79.7	118
Horton General Hospital	100.0	2.1	47	86.4	44
Huddersfield Royal Infirmary	92.7	42.9	287	99.3	151
Hull Royal Infirmary	82.0	0.0	100		<20
James Cook University Hospital	100.0	96.6	742	91.4	742
James Paget University Hospital	96.4	73.8	275	73.2	190
John Radcliffe Hospital	99.5	41.3	189	76.9	186
Kent And Canterbury Hospital	89.0	62.4	109	44.8	67
Kettering General Hospital	100.0	87.5	128	99.1	106
King George Hospital	91.7	55.4	121	89.1	119
King's College Hospital	83.3	22.2	342	97.7	342
King's Mill Hospital	99.6	12.2	229	94.8	229
Kingston Hospital	94.5	0.0	199	94.8	115
Leeds General Infirmary	99.9	95.3	748	77.5	721
Leighton Hospital	99.2	49.6	242	77.3	132
Lincoln County Hospital	100.0	59.1	501	91.1	485
Lister Hospital	98.4	51.0	384	63.7	375
Liverpool Heart And Chest Hospital	100.0	26.6	1281	99.7	1279
Luton & Dunstable Hospital	99.5	3.1	386	87.4	167
Macclesfield District General Hospital	93.7	64.0	111	91.5	82

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Maidstone Hospital	93.7	37.0	127	77.1	122
Manchester Royal Infirmary	100.0	19.6	107	85.9	106
Manor Hospital	98.9	54.6	185	83.2	125
Medway Maritime Hospital	93.5	40.8	338	84.2	221
Milton Keynes General Hospital	98.9	50.0	88	84.3	83
Musgrove Park Hospital	95.9	85.0	293	78.6	280
New Cross Hospital	98.3	26.1	356	90.0	311
Newham University Hospital	99.4	99.4	169	91.4	139
Norfolk And Norwich University Hospital	100.0	58.8	633	80.7	633
North Devon District Hospital	94.7	40.7	226	86.4	184
North Manchester General Hospital	96.0	38.6	176	99.2	126
North Middlesex Hospital	94.7	0.0	133	74.1	112
North Tyneside General Hospital	97.2	45.1	71	79.7	59
Northampton General Hospital	96.1	73.9	329	98.6	210
Northern General Hospital	98.7	74.9	554	72.9	547
Northumbria Specialist Emergency Care Hospital	95.3	89.0	380	50.8	321
Northwick Park Hospital	99.7	26.6	369	77.4	363
Nottingham City Hospital			<20		<20
Papworth Hospital	100.0	100.0	23	9.1	22
Peterborough City Hospital	97.7	75.5	298	95.2	210
Pilgrim Hospital	93.4	30.3	211	31.9	182
Pinderfields General Hospital	97.6	39.7	378	79.2	361
Poole Hospital	99.7	94.0	282	88.3	282
Princess Alexandra Hospital	96.3	8.1	272	81.5	189
Princess Royal Hospital (Haywards Heath)			<20		<20
Princess Royal Hospital (Telford)	94.1	45.5	303	91.4	208

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Princess Royal University Hospital (Bromley)	93.8	3.7	81	79.5	73
Queen Alexandra Hospital	100.0	98.5	129	85.2	128
Queen Elizabeth Hospital (Birmingham)	84.7	51.6	287	82.8	273
Queen Elizabeth Hospital (Gateshead)	98.6	53.1	211	88.5	208
Queen Elizabeth Hospital (King's Lynn)	88.0	1.1	365	94.9	196
Queen Elizabeth Hospital (Woolwich)	94.9	27.6	98	95.2	83
Queen Elizabeth The Queen Mother Hospital	80.8	32.1	156	79.9	154
Queen's Hospital (Burton)	98.5	84.2	196	97.9	145
Queen's Hospital (Romford)	94.5	20.3	128	92.9	126
Rotherham Hospital	99.6	95.9	246	97.7	171
Royal Albert Edward Infirmary	99.1	78.9	441	94.7	266
Royal Berkshire Hospital	98.5	46.2	329	63.2	261
Royal Blackburn Hospital	94.2	55.8	660	73.9	633
Royal Bolton Hospital	98.2	61.2	276	97.6	209
Royal Bournemouth General Hospital	99.4	82.4	488	75.6	484
Royal Brompton Hospital	97.1	89.8	137	98.5	137
Royal Cornwall Hospital	92.2	33.2	683	91.9	492
Royal Devon & Exeter Hospital	94.6	49.2	368	91.9	346
Royal Free Hospital	98.1	81.3	268	100.0	268
Royal Hampshire County Hospital	97.7	0.0	131	49.6	127
Royal Lancaster Infirmary	95.2	60.8	166	80.8	146
Royal Liverpool University Hospital	99.1	63.5	230	72.3	227
Royal London Hospital	98.7	34.6	78	73.1	67
Royal Oldham Hospital	94.4	13.8	429	92.8	251
Royal Preston Hospital	89.5	34.3	105	36.1	72

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Royal Shrewsbury Hospital	95.4	41.6	346	91.5	176
Royal Surrey County Hospital	94.4	61.1	72	69.0	71
Royal Sussex County Hospital	96.2	67.4	132	74.0	127
Royal United Hospital Bath	90.7	31.1	193	85.6	139
Royal Victoria Infirmary	98.4	87.0	368	90.1	334
Russells Hall Hospital	100.0	97.9	235	64.5	231
Salford Royal Hospital	91.7	62.8	360	96.4	221
Salisbury District Hospital	98.6	29.5	278	87.8	229
Sandwell General Hospital	100.0	79.6	54	100.0	50
Scarborough General Hospital	98.8	57.1	168	54.6	143
Scunthorpe General Hospital	79.0	30.1	229	74.1	174
Solihull Hospital	98.9	82.0	89	89.9	89
South Tyneside District Hospital	100.0	36.0	111	94.2	86
Southampton General Hospital	99.1	87.3	440	74.1	440
Southend University Hospital	94.0	71.5	432	90.5	199
Southmead Hospital	91.8	11.4	449	90.7	248
Southport And Formby District General	96.4	29.3	140	83.5	133
St Bartholomew's Hospital	99.8	96.5	596	92.1	585
St George's Hospital	100.0	64.1	39	79.0	38
St Helier Hospital	91.4	30.7	140	80.9	94
St Mary's Hospital (Newport)	98.3	71.2	59	66.1	59
St Mary's Hospital (Paddington)	100.0	68.2	157	86.9	153
St Peter's Hospital	100.0	94.6	280	98.2	275
St Richard's Hospital	97.2	58.6	145	95.7	93
St Thomas' Hospital	100.0	84.0	194	98.3	173
Stepping Hill Hospital	90.9	26.2	340	69.0	284

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Stoke Mandeville Hospital	76.9	0.0	26		<20
Sunderland Royal Hospital	99.2	92.2	245	94.0	234
Tameside General Hospital	95.2	39.2	209	68.7	179
The Great Western Hospital	89.1	41.3	414	98.2	283
The Ipswich Hospital	98.4	64.3	370	99.2	240
Torbay Hospital	88.0	42.6	333	70.7	297
Tunbridge Wells Hospital	96.0	59.2	174	80.4	163
University College Hospital Gower Street	94.2	0.0	139	64.1	131
University Hospital Aintree	97.5	66.2	393	85.1	276
University Hospital Coventry			←20		<20
University Hospital Lewisham	96.7	53.3	30	100.0	24
University Hospital Of North Durham	98.6	57.0	365	97.6	249
University Hospital Of North Staffordshire	98.4	94.3	507	81.6	504
University Hospital Of North Tees	81.8	5.1	435	94.7	284
University Hospital Queen's Medical Centre	70.9	54.6	55	89.1	55
Wansbeck General Hospital	95.6	26.7	45	100.0	39
Warrington Hospital	97.3	60.0	375	89.4	255
Warwick Hospital	98.6	60.0	70	68.3	60
Watford General Hospital	94.0	2.6	430	68.4	414
West Cumberland Hospital	93.1	55.5	173	74.6	126
West Middlesex University Hospital	48.0	45.3	75	96.0	75
West Suffolk Hospital	96.2	19.2	260	95.1	182
Weston General Hospital	98.1	0.0	104	91.4	93
Wexham Park Hospital	98.6	97.2	426	79.8	312
Whipps Cross Hospital	100.0	0.0	36	91.4	35
Whiston Hospital	98.9	63.6	472	96.0	275

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Whittington Hospital	100.0	77.9	86	80.7	83
William Harvey Hospital	94.0	67.3	199	82.8	180
Worcestershire Royal Hospital	100.0	60.3	267	97.9	234
Worthing Hospital	92.7	78.1	329	98.6	209
Wycombe Hospital	99.5	94.6	186	72.9	181
Wythenshawe Hospital	97.4	8.4	155	74.6	126
Yeovil District Hospital	100.0	49.5	200	55.3	199
York District Hospital	97.8	23.0	313	96.2	237
Wales	91.2	67.4	2619	82.1	2146
Glan Clwyd Hospital	93.9	64.6	280	94.9	175
Glangwili General Hospital	98.6	64.1	145	66.2	139
Llandough Hospital	25.2	0.0	115	86.1	86
Morriston Hospital			<20		<20
Nevill Hall Hospital	93.9	78.5	65	78.1	64
Prince Charles Hospital	98.1	83.7	159	73.1	156
Prince Philip Hospital	95.5	40.9	44	9.8	41
Princess Of Wales Hospital	98.6	54.6	143	22.6	137
Royal Glamorgan Hospital	85.3	65.9	170	76.0	146
Royal Gwent Hospital	96.6	62.3	146	85.3	143
University Hospital Of Wales	97.3	89.2	599	99.8	530
Withybush General Hospital	93.3	55.6	178	98.4	125
Wrexham Maelor Hospital	89.1	84.8	348	97.6	205
Ysbyty Gwynedd	91.4	38.5	208	73.5	181
Northern Ireland	**99.5**	**90.6**	**1650**	**95.9**	**1528**
Altnagelvin Area Hospital	100.0	95.3	214	96.2	212
Antrim Area Hospital	99.7	97.0	300	98.9	269

	Proportion of nSTEMI patients seen by a cardiologist	Proportion of nSTEMI patients admitted to cardiac unit or ward	Number of all nSTEMI patients	Proportion of nSTEMI patients who had angiography during admission	Number of all nSTEMI patients eligible for angiography
Year			2015/16		
	Seen By Cardiologist (%)	Admitted To Cardiac Ward (%)	Out of (N)	Had Angiography Before Discharge (%)	Out of (N)
Belfast City Hospital	100.0	93.6	62	95.0	60
Causeway Hospital	99.2	99.2	120	95.7	115
Craigavon Area Hospital	100.0	70.5	210	96.3	187
Daisy Hill Hospital	100.0	68.5	73	95.7	70
Downe Hospital	90.9	31.8	22	100.0	20
Lagan Valley Hospital	100.0	100.0	36	93.8	32
Mater Infirmorum Hospital	97.3	93.2	148	89.3	140
Royal Victoria Hospital	100.0	93.6	203	100.0	180
South West Acute Hospital	100.0	91.8	73	84.7	72
Ulster Hospital	99.5	98.9	189	97.1	171
Other					
Jersey General Hospital			<20		<20
Noble's Hospital (Isle Of Man)			<20		<20

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. Patients are excluded if they were transferred to another hospital or if they died in hospital.

Year	2015/2016	
Hospital	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 and Northern Ireland	**90.5**	**63,544**
England	**91.1**	**58,993**
Addenbrooke's Hospital	93.7	221
Airedale General Hospital	100.0	143
Alexandra Hospital	97.7	171
Arrowe Park Hospital	93.2	236
Barnet General Hospital	97.2	251
Barnsley Hospital	72.9	70
Basildon Hospital	96.3	995
Basingstoke And North Hampshire Hospital	88.1	421
Bassetlaw Hospital	100.0	188
Bedford Hospital	95.8	120
Birmingham City Hospital	100.0	429
Birmingham Heartlands Hospital	94.6	807
Blackpool Victoria Hospital	98.0	1292
Bradford Royal Infirmary	100.0	677
Bristol Royal Infirmary	81.4	749
Broomfield Hospital	86.4	280
Calderdale Royal Hospital	94.7	505
Castle Hill Hospital	76.8	1079
Charing Cross Hospital		<20
Chelsea And Westminster Hospital		<20
Cheltenham General Hospital	83.3	197

Year	2015/2016	
Hospital	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Chesterfield Royal Hospital	99.5	369
Chorley And South Ribble Hospital	70.2	57
Colchester General Hospital	89.6	230
Conquest Hospital	97.8	269
Countess Of Chester Hospital	90.9	142
County Hospital Hereford	90.0	110
Croydon University Hospital	88.6	175
Cumberland Infirmary	82.6	420
Darent Valley Hospital	81.5	243
Darlington Memorial Hospital	86.1	86
Derriford Hospital	54.4	608
Dewsbury District Hospital	90.6	244
Diana, Princess Of Wales Hospital	100.0	84
Doncaster Royal Infirmary	99.7	379
Ealing Hospital	88.0	83
East Surrey Hospital	94.8	231
Eastbourne District General Hospital	99.6	242
Epsom Hospital	81.8	55
Fairfield General Hospital	88.7	355
Freeman Hospital	100.0	1623
Frimley Park Hospital	99.5	550
Furness General Hospital	91.3	23
George Eliot Hospital	80.0	55
Glenfield Hospital	93.3	803
Gloucestershire Royal Hospital	75.6	160
Good Hope Hospital	100.0	209
Grantham And District Hospital	100.0	27

Year	2015-2016	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Hammersmith Hospital	95.8	1004
Harefield Hospital	84.8	1032
Harrogate District Hospital	99.5	186
Hillingdon Hospital	100.0	127
Hinchingbrooke Hospital	84.1	44
Horton General Hospital	90.5	42
Huddersfield Royal Infirmary	89.4	282
Hull Royal Infirmary	31.8	88
James Cook University Hospital	99.6	1357
James Paget University Hospital	91.7	109
John Radcliffe Hospital	82.7	502
Kent And Canterbury Hospital	59.2	103
Kettering General Hospital	99.5	409
King George Hospital	69.8	96
King's College Hospital	95.6	613
King's Mill Hospital	98.9	260
Kingston Hospital	100.0	109
Leeds General Infirmary	99.6	1099
Leighton Hospital	75.0	224
Lincoln County Hospital	100.0	876
Lister Hospital	71.4	675
Liverpool Heart And Chest Hospital	99.9	2081
Luton & Dunstable Hospital	77.3	317
Macclesfield District General Hospital	89.6	96
Maidstone Hospital	56.2	105
Manchester Royal Infirmary	93.7	554
Manor Hospital	88.3	128

Year	2015-2016	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Medway Maritime Hospital	81.5	345
Milton Keynes General Hospital	56.7	90
Musgrove Park Hospital	93.7	457
New Cross Hospital	99.7	988
Newham University Hospital	96.9	161
Norfolk And Norwich University Hospital	100.0	1080
North Devon District Hospital	100.0	72
North Manchester General Hospital	96.9	159
North Middlesex Hospital	64.9	114
North Tyneside General Hospital		<20
Northampton General Hospital	100.0	278
Northern General Hospital	99.5	810
Northumbria Specialist Emergency Care Hospital	96.0	74
Northwick Park Hospital	68.5	349
Nottingham City Hospital	67.8	369
Papworth Hospital	80.3	628
Peterborough City Hospital	100.0	131
Pilgrim Hospital	97.1	69
Pinderfields General Hospital	88.9	494
Poole Hospital		<20
Princess Alexandra Hospital	92.5	201
Princess Royal Hospital (Haywards Heath)	91.7	24
Princess Royal Hospital (Telford)	100.0	212
Princess Royal University Hospital (Bromley)	60.0	80
Queen Alexandra Hospital	93.9	543
Queen Elizabeth Hospital (Birmingham)	93.4	517
Queen Elizabeth Hospital (Gateshead)	100.0	80
Queen Elizabeth Hospital (King's Lynn)	94.4	177

Year	2015-2016	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Queen Elizabeth Hospital (Woolwich)	93.5	92
Queen Elizabeth The Queen Mother Hospital	48.0	127
Queen's Hospital (Burton)	100.0	153
Queen's Hospital (Romford)	69.1	110
Rotherham Hospital	100.0	287
Royal Albert Edward Infirmary	100.0	396
Royal Berkshire Hospital	98.5	522
Royal Blackburn Hospital	92.1	636
Royal Bolton Hospital	98.5	266
Royal Bournemouth General Hospital	99.8	811
Royal Brompton Hospital	73.9	138
Royal Cornwall Hospital	70.1	750
Royal Devon & Exeter Hospital	89.7	648
Royal Free Hospital	98.9	552
Royal Hampshire County Hospital	100.0	65
Royal Lancaster Infirmary	93.4	91
Royal Liverpool University Hospital	86.0	93
Royal London Hospital	86.2	29
Royal Oldham Hospital	94.1	424
Royal Preston Hospital	60.2	83
Royal Shrewsbury Hospital	100.0	228
Royal Surrey County Hospital	66.7	45
Royal Sussex County Hospital	89.8	519
Royal United Hospital Bath	83.1	254
Royal Victoria Infirmary	94.4	144
Russells Hall Hospital	99.1	112
Salford Royal Hospital	97.5	322

Year	2015-2016	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Salisbury District Hospital	89.5	295
Sandwell General Hospital	100.0	102
Scarborough General Hospital	92.0	50
Scunthorpe General Hospital	99.0	204
Solihull Hospital	98.5	66
South Tyneside District Hospital	98.3	59
Southampton General Hospital	95.7	658
Southend University Hospital	87.8	352
Southmead Hospital	79.2	404
Southport And Formby District General	79.0	38
St Bartholomew's Hospital	95.8	1069
St George's Hospital	98.9	461
St Helier Hospital	87.3	79
St Mary's Hospital (Newport)	100.0	25
St Mary's Hospital (Paddington)		<20
St Peter's Hospital	100.0	356
St Richard's Hospital	98.9	92
St Thomas' Hospital	99.4	358
Stepping Hill Hospital	69.4	324
Stoke Mandeville Hospital		<20
Sunderland Royal Hospital	85.0	279
Tameside General Hospital	77.1	210
The Great Western Hospital	91.1	394
The Ipswich Hospital	95.6	320
Torbay Hospital	87.9	462
Tunbridge Wells Hospital	83.2	167
University College Hospital Gower Street	89.9	89

Year	2015-2016	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
University Hospital Aintree	99.0	202
University Hospital Coventry	94.6	389
University Hospital Lewisham	100.0	25
University Hospital Of North Durham	85.7	133
University Hospital Of North Staffordshire	81.1	873
University Hospital Of North Tees	98.6	147
University Hospital Queen's Medical Centre		<20
Wansbeck General Hospital		<20
Warrington Hospital	91.2	215
Warwick Hospital	63.4	71
Watford General Hospital	54.5	334
West Cumberland Hospital	80.8	78
West Middlesex University Hospital	95.5	66
West Suffolk Hospital	98.9	94
Weston General Hospital	93.6	78
Wexham Park Hospital	74.8	460
Whipps Cross Hospital	76.0	25
Whiston Hospital	99.1	229
Whittington Hospital	97.4	76
William Harvey Hospital	83.0	766
Worcestershire Royal Hospital	100.0	592
Worthing Hospital	94.3	318
Wycombe Hospital	97.6	206
Wythenshawe Hospital	83.8	433
Yeovil District Hospital	43.8	121
York District Hospital	97.7	396
Northern Ireland	**92.6**	**1979**
Altnagelvin Area Hospital	84.6	325

Year	2015-2016	
	Proportion of patients who received all secondary prevention medication for which they were eligible (%)	Number of patients eligible to receive secondary prevention medication (N)
Antrim Area Hospital	94.5	256
Belfast City Hospital	91.6	95
Causeway Hospital	95.3	128
Craigavon Area Hospital	97.4	312
Daisy Hill Hospital	97.1	68
Downe Hospital		<20
Lagan Valley Hospital	100.0	51
Mater Infirmorum Hospital	84.7	202
Royal Victoria Hospital	97.8	275
South West Acute Hospital (Enniskillen)	82.1	67
Ulster Hospital	95.4	195
Wales	**75.4**	**2511**
Glan Clwyd Hospital	76.3	443
Glangwili General Hospital	100.0	23
Llandough Hospital	42.5	40
Morriston Hospital	54.3	306
Nevill Hall Hospital	73.3	30
Prince Charles Hospital	53.4	73
Prince Philip Hospital		<20
Princess Of Wales Hospital	89.1	46
Royal Glamorgan Hospital	77.0	100
Royal Gwent Hospital	83.4	169
University Hospital Of Wales	84.6	956
Withybush General Hospital	84.1	44
Wrexham Maelor Hospital	82.6	149
Ysbyty Gwynedd	40.6	106
Other		
Jersey General Hospital	87.5	56
Noble's Hospital (Isle Of Man)		<20

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 - analysis exlucdes those transferred between hospitals.

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS All cases
England			
Addenbrooke's Hospital	6	6	6
Airedale General Hospital	8	5.5	7
Alexandra Hospital	6	5.5	6
Arrowe Park Hospital	4	3	4
Barnet General Hospital	4	15	4
Barnsley Hospital	4.5	4	4
Basildon Hospital	6	3	3
Basingstoke And North Hampshire Hospital	2	2	2
Bassetlaw Hospital	8	9.5	9
Bedford Hospital	4	4.5	4
Birmingham City Hospital	4	2	3
Birmingham Heartlands Hospital	5	3	4
Blackpool Victoria Hospital	8	3	4
Bradford Royal Infirmary	5	5	5
Bristol Royal Infirmary	5	3	3
Broomfield Hospital	6	3.5	6
Calderdale Royal Hospital	5	5	5
Castle Hill Hospital	4	3	3
Charing Cross Hospital	9	0	8.5
Chelsea And Westminster Hospital	4	4	4
Cheltenham General Hospital	5	3	4
Chesterfield Royal Hospital	6	5	6
Chorley And South Ribble Hospital	5	7	5
Colchester General Hospital	6	5	6
Conquest Hospital	5	3	5

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS All cases
Countess Of Chester Hospital	6	7	6
County Hospital Hereford	4.5	4	4
Croydon University Hospital	6	12.5	6
Cumberland Infirmary	4.5	3	4
Darent Valley Hospital	5	4	5
Darlington Memorial Hospital	5	5.5	5
Derriford Hospital	5	3	4
Dewsbury District Hospital	2	NA	2
Diana, Princess Of Wales Hospital	8	5	8
Doncaster Royal Infirmary	5	5	5
Ealing Hospital	3.5	5	4
Eastbourne District General Hospital	3	3	3
East Surrey Hospital	5	4	5
Epsom Hospital	7.5	14	8
Fairfield General Hospital	6	6	6
Freeman Hospital	1.5	2	2
Frimley Park Hospital	3	3	3
Furness General Hospital	6	6	6
George Eliot Hospital	4	6	5
Glenfield Hospital	7	3	5
Gloucestershire Royal Hospital	5	5	5
Good Hope Hospital	7	6.5	7
Grantham And District Hospital	4.5	5	4.5
Hammersmith Hospital	4	2	3
Harefield Hospital	3	3	3
Harrogate District Hospital	4	5	4
Hillingdon Hospital	6	7.5	6
Hinchingbrooke Hospital	6	4	6

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS all patients
Horton General Hospital	3	3.5	3
Huddersfield Royal Infirmary	4	4	4
Hull Royal Infirmary	4	6	4
James Cook University Hospital	3	2	2
James Paget University Hospital	5	10	5
John Radcliffe Hospital	4	3	3
Kent And Canterbury Hospital	5	4	5
Kettering General Hospital	2	2	2
King George Hospital	5.5	5	5
King's College Hospital	6	3	4
King's Mill Hospital	5	4	5
Kingston Hospital	8	4	8
Leeds General Infirmary	4	3	3
Leighton Hospital	5	5.5	5
Lincoln County Hospital	5	2	3
Lister Hospital	4	3	3
Liverpool Heart And Chest Hospital	2	3	3
London Chest Hospital	49	2	2.5
Luton & Dunstable Hospital	8	6	8
Macclesfield District General Hospital	4	5.5	4
Maidstone Hospital	7	5	6
Manchester Royal Infirmary	7	3	3
Manor Hospital	5	8.5	5
Medway Maritime Hospital	7	6	7
Milton Keynes General Hospital	6	6.5	6
Musgrove Park Hospital	3	3	3
New Cross Hospital	5	3	3
Newham University Hospital	6	6	6

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS all patients
Norfolk And Norwich University Hospital	4	3	3
Northampton General Hospital	4	2	4
North Devon District Hospital	4	5	4.5
Northern General Hospital	5	3	4
North Manchester General Hospital	6	7	6
North Middlesex Hospital	7	5	6.5
North Tyneside General Hospital	7	7	7
Northumbria Specialist Emergency Care Hospital	3	5	3
Northwick Park Hospital	5	5	5
Nottingham City Hospital	3	2	2
Papworth Hospital	5	3	3
Peterborough City Hospital	6	5	6
Pilgrim Hospital	6	7	6
Pinderfields General Hospital	6	6	6
Poole Hospital	9.5	11	11
Princess Alexandra Hospital	8	9	8
Princess Royal Hospital (Haywards Heath)	3	3	3
Princess Royal Hospital (Telford)	5	3	5
Princess Royal University Hospital (Bromley)	6	9	6
Queen Alexandra Hospital	3	3	3
Queen Elizabeth Hospital (Birmingham)	5	3	4
Queen Elizabeth Hospital (Gateshead)	5	12.5	5
Queen Elizabeth Hospital (King's Lynn)	7	6.5	7
Queen Elizabeth Hospital (Woolwich)	8	7	8
Queen Elizabeth The Queen Mother Hospital	6	6	6
Queen's Hospital (Burton)	4.5	5	5
Queen's Hospital (Romford)	6	4	6
Rotherham Hospital	6	5	5

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS all patients
Royal Albert Edward Infirmary	5	3	4
Royal Berkshire Hospital	3	3	3
Royal Blackburn Hospital	4	3	4
Royal Bolton Hospital	7	9	7
Royal Bournemouth General Hospital	4.5	3	3
Royal Brompton Hospital	2.5	4	3
Royal Cornwall Hospital	5	3	4
Royal Devon & Exeter Hospital	5	3	4
Royal Free Hospital	4	3	3
Royal Hampshire County Hospital	5	9.5	5
Royal Lancaster Infirmary	5	5	5
Royal Liverpool University Hospital	7	8.5	7
Royal London Hospital	6	1	5.5
Royal Oldham Hospital	7	9	7
Royal Preston Hospital	7	7	7
Royal Shrewsbury Hospital	5	6.5	5
Royal Surrey County Hospital	6	6.5	6
Royal Sussex County Hospital	4	3	3
Royal United Hospital Bath	9	4	7
Royal Victoria Infirmary	4	8	5
Russells Hall Hospital	5	4.5	5
Salford Royal Hospital	7	5.5	7
Salisbury District Hospital	4	3	4
Sandwell General Hospital	4	2	3
Scarborough General Hospital	6	4.5	6
Scunthorpe General Hospital	7	8	7
Solihull Hospital	7	4.5	7
Southampton General Hospital	4	3	3

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS all patients
Southend University Hospital	6	6	6
Southmead Hospital	7	6	7
Southport And Formby District General	7	9	7
South Tyneside District Hospital	5	11.5	6
St Bartholomew's Hospital	4	3	3
Stepping Hill Hospital	8	10	8
St George's Hospital	3	3	3
St Helier Hospital	6	13	6
St Mary's Hospital (Newport)	5	5	5
St Mary's Hospital (Paddington)	8	16	8.5
Stoke Mandeville Hospital	16	17	16
St Peter's Hospital	3	3	3
St Richard's Hospital	5	5	5
St Thomas' Hospital	4	3	4
Sunderland Royal Hospital	3	3	3
Tameside General Hospital	9	10	9
The Great Western Hospital	5	3	5
The Ipswich Hospital	5	5	5
Torbay Hospital	3	3	3
Tunbridge Wells Hospital	4	5	4
University College Hospital Gower Street	5	1	4
University Hospital Aintree	7	7	7
University Hospital Coventry	2.5	2	2
University Hospital Lewisham	6	4	5.5
University Hospital Of North Durham	7	9.5	7
University Hospital Of North Staffordshire	4	3	3
University Hospital Of North Tees	6	2	6
University Hospital Queen's Medical Centre	2	3	2

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS all patients
Wansbeck General Hospital	4.5	12	5
Warrington Hospital	7	10	7
Warwick Hospital	5	4.5	5
Watford General Hospital	5	3	5
West Cumberland Hospital	5.5	6	6
West Middlesex University Hospital	5	33	5
Weston General Hospital	6	11	6.5
West Suffolk Hospital	8	7	8
Wexham Park Hospital	3	3	3
Whipps Cross Hospital	8	8	8
Whiston Hospital	6	6.5	6
Whittington Hospital	5.5	5	5.5
William Harvey Hospital	6	3	3
Worcestershire Royal Hospital	4	3	3
Worthing Hospital	4	6	4
Wycombe Hospital	2	2	2
Wythenshawe Hospital	5	3	3
Yeovil District Hospital	6	6	6
York District Hospital	5	6.5	5
Wales			
Glan Clwyd Hospital	4	3	4
Glangwili General Hospital	4.5	1	3.5
Llandough Hospital	6	11	8
Morriston Hospital	6	3	3
Nevill Hall Hospital	8.5	9	9
Prince Charles Hospital	8	7	8
Prince Philip Hospital	5	20	5.5
Princess Of Wales Hospital	9.5	3.5	7

Year	2015/16		
	LOS nSTEMI	LOS STEMI	LOS all patients
Royal Glamorgan Hospital	6	4	6
Royal Gwent Hospital	7	6	7
University Hospital Of Wales	5	3	4
Withybush General Hospital	7	25	7
Wrexham Maelor Hospital	6.5	4	6
Ysbyty Gwynedd	8	5	6
Northern Ireland			
Altnagelvin Area Hospital	3	2	2
Antrim Area Hospital	7	7	7
Belfast City Hospital	4	32	4
Causeway Hospital	7	4.5	7
Craigavon Area Hospital	6	6	6
Daisy Hill Hospital	8	7	8
Downe Hospital	8	8	8
Lagan Valley Hospital	6.5	5.5	6.5
Mater Infirmorum Hospital	5	4	5
Royal Victoria Hospital	4	3	3
South West Acute Hospital	4	4.5	4
Ulster Hospital	7	4	6
Other			
Jersey General Hospital	8	3	3
Noble's Hospital (Isle Of Man)	4	2	3