NICOR MINAP
Myocardial Ischaemia
National Audit Project

How the NHS cares for patients with heart attack

A summary for patients

This booklet is dedicated to all who have suffered a heart attack, those who know someone who has had a heart attack, and anyone interested in the quality of care for heart attack patients provided by the NHS.

NICOR is a partnership of clinicians, IT experts, statisticians, academics and managers which manages six cardiovascular clinical audits and several new technology registries. Its mission is to provide information to improve heart disease patients' quality of care, outcomes and help to reduce inequity in care.

The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement, and in particular to increase the impact of clinical audit in England and Wales. HQIP hosts the contract to manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP).

Founded in 1826, UCL 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. We are among the world's top universities, as reflected by performance in a range of international rankings and tables.

Contents

Key

 Glossary term (page 14)

1. About a heart attack

Heart attack is a condition where the blood supply and oxygen to the heart is restricted or reduced due to blockage by a blood clot in the coronary artery. This is also referred to as myocardial ischaemia. This may result in the damage to your heart muscle which is known as a heart attack.

Heart attack typically affects males with an average age of 65, and women who tend to be older (73 years of age on average). The symptoms of heart attack vary from one person to another - typical symptoms include chest pain or discomfort, feeling light-headed, dizzy or short of breath. More information on heart attack and treatment is available on the BHF website http://www.bhf.org.uk/heart-health/conditions/heart-attack.aspx

It is also important to remember that men and women can present with different symptoms and more information can be found at http://www.bhf.org.uk/publications/view-publication.aspx?ps=1000711

2. What is clinical audit and why do we need it?

Clinical audit is a method of assessing the quality of care that patients receive and more recently it has also been used to drive improvements in patient care. MINAP is a clinical audit looking at performance of all ambulance and hospital services in England, Wales and Belfast that provide care for patients with a heart attack.

MINAP was established in 2000 to support the delivery of a 10-year strategy for improving the care of patients with heart disease prevention and care and was developed in collaboration with the British Cardiovascular Society (the heart specialists' organisation), and involved patients, doctors, nurses, ambulance staff and the Department of Health.

*see Glossary on pages 14 and 15

3. What does MINAP mean to me?

Every patient has a right to expect a certain standard of care that is provided by the NHS, both locally and nationally. One can suffer a heart attack anywhere so it is important that the service provided within NHS is at the same or similar level anywhere in the country. Heart attack is usually followed by an emergency admission and what happens to you within the 150 minutes from the time you call for help in **STEMI** and within next 96 hours in **nSTEMI** is important to your recovery or even survival. MINAP provides information on how your or any hospital in England, Wales and Belfast that admits patients with ACS performed against national standards and gives you an opportunity to compare your local hospital's performance against the national average.

Primary PCI is a preferred treatment based on research evidence that is proven to lead to better outcomes, yet availability of this vital procedure is not readily available everywhere in the country (see Figure 7 page 12). The map provides a visual presentation of the rate of primary PCI per million population based on where the patient lives.

Missing data or poor quality of audit data have been shown to be associated with poorer services and subsequently patient outcomes. If your local hospital is not participating in clinical audit, you as a patient, will not be able to assess its quality of care. The hospital will not be able to identify areas which need to be improved so that they can act on them. MINAP is a driver for a continuous improvement in patient care, therefore it is essential that all hospitals continue to provide the data that underpins improvement in patient outcomes.

ST elevation myocardial infarction (STEMI) - A heart attack characterised by a specific abnormal appearance on the ECG (ST segment elevation) thought to be indicative of complete blockage of a coronary artery.

Non-ST elevation myocardial infarction (nSTEMI) - A heart attack that occurs in the absence of ST segment elevation on the ECG. In these patients urgent admission to hospital is mandated but immediate reperfusion therapy is not required.

Primary PCI - A technique to re-open the blocked coronary artery responsible for the heart attack.

4. How is the quality of care I receive measured and what are we learning?

MINAP was set up to measure whether the care described in national and international guidelines for heart attack care is provided by ambulance and hospital services. For example, the speed with which treatments for heart attack are delivered, and the drugs prescribed to help reduce the risk of a further heart attack, are important measures of the quality of care.

There are two main types of heart attack – one in which treatments need to be given promptly to open a blocked artery (STEMI), and one in which the artery is only partially blocked (nSTEMI), and where there is no immediate urgency. The medium to long term outcome depends on the care these patients receive.

STEMI

STEMI patients are given treatments to open the blocked coronary artery thereby reducing the amount of heart damage. If this treatment is to be of benefit it needs to be given as quickly as possible.

In recent years the scientific evidence have shown that the opening of the artery by mechanical means (primary PCI) leads to better outcomes following a heart attack than 'clot buster' (thrombolytic) treatment. Figure 1 shows that there has been a rapid increase in the use of primary PCI* in recent years, while the use of 'clot buster' treatment had steadily decreased. Because time to treatment is so important, 'clot buster' drugs tend to be given in more remote, rural areas of the country where travel times to a Heart Attack Centre are very long.

Heart Attack Centre - A hospital that provides coronary interventions for patients with acute coronary syndromes.

*see Glossary on pages 14 and 15

Figure 1. Use of reperfusion treatment for patients with a final diagnosis of STEMI, including those that received no reperfusion treatment*
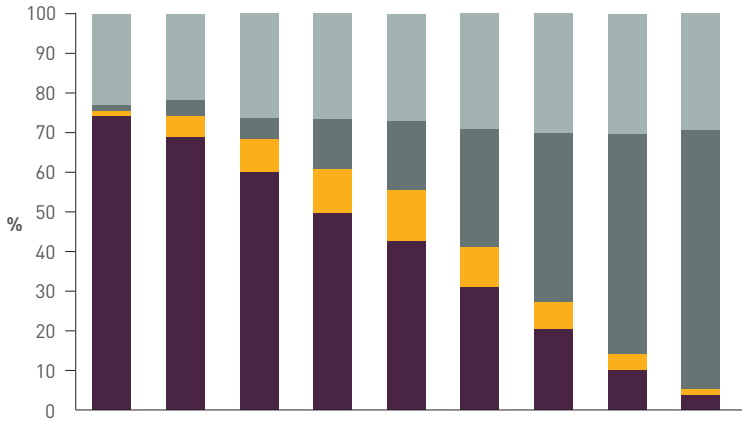
Years	2003-4	2004-5	2005-6	2006-7	2007-8	2008-9	2009-10	2010-11	2011-12
No reperfusion	23	21.6	26.3	26.7	27.1	29.3	29.9	30.2	29.5
Primary PCI	1.4	4.2	5.2	12.6	17.5	29.6	42.9	55.7	65.3
Pre-hospital thrombolysis*	1.4	5.4	8.6	11.1	12.7	10.2	6.6	3.7	1.3
In-hospital thrombolysis*	74.1	68.8	59.9	49.6	42.6	30.9	20.5	10.4	4

National guidelines recommend that primary PCI should be performed within 90 minutes of the patient's arrival at the Heart Attack Centre ('door-to-balloon time') and within 150 minutes of a patient's call for help ('call-to-balloon time'). Figure 2 on page 8 shows the % of patients treated within 90 minutes of arrival at the interventional hospital. More information on primary PCI can be found on page 20 of the main report.

nSTEMI

NICE guideline recommends that patients presenting with nSTEMI should be cared for by a cardiologist or specialist team as this leads to better outcomes for the patient.
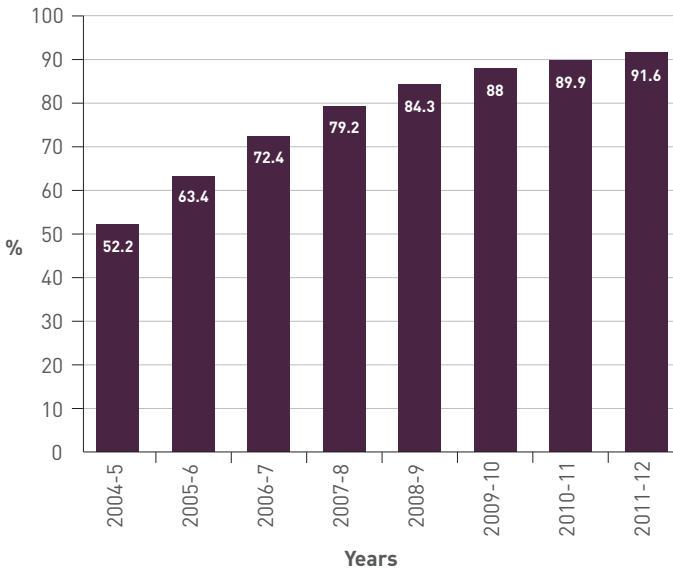
*see Glossary on pages 14 and 15

In 2011/12, 93% of nSTEMI patients were seen by a cardiologist or member of their team in England, 81% in Wales and 100% in Belfast. Data for Wales are incomplete.

Specialist involvement is important because patients are more likely to receive 'evidence-based' treatments. Figure 3 shows an increase in patients being referred for or receiving coronary angiogram*.

Figure 2. Percentage of all patients with admission diagnosis of STEMI that received primary PCI within 90 minutes of arrival at the heart attack centre
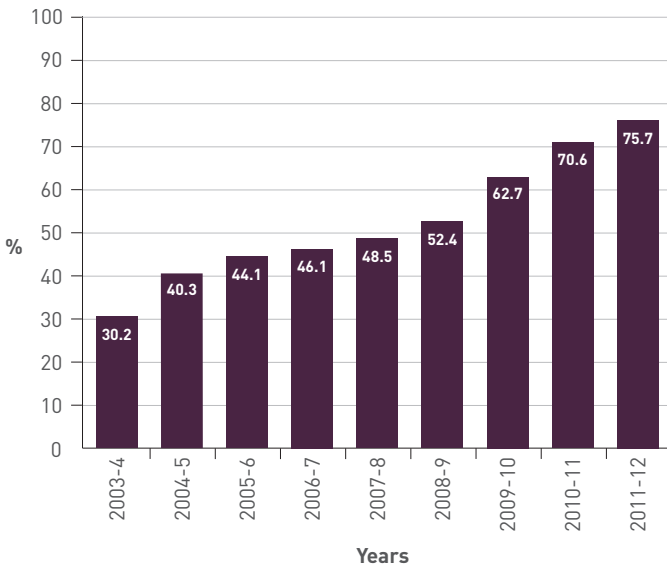

*see Glossary on pages 14 and 15

> **While most patients with nSTEMI do not require immediate angiography, this test is recommended for those judged by their specialist to be at moderate to high risk. The maximum acceptable delay to angiogram is 96 hours from the time of admission at the hospital.**

> **Angiogram** – An X-ray investigation performed under a local anaesthetic that produces images of the flow of blood within an artery

Figure 3. Percentage of patients with nSTEMI who were referred for or had angiogram

Figure 3. Percentage of patients with nSTEMI who were referred for or had angiogram

Year	%
2003-4	30.2
2004-5	40.3
2005-6	44.1
2006-7	46.1
2007-8	48.5
2008-9	52.4
2009-10	62.7
2010-11	70.6
2011-12	75.7

Although 71% of patients with nSTEMI received an angiogram within 96 hours, 29% of patients underwent the test after the maximum recommended time interval.
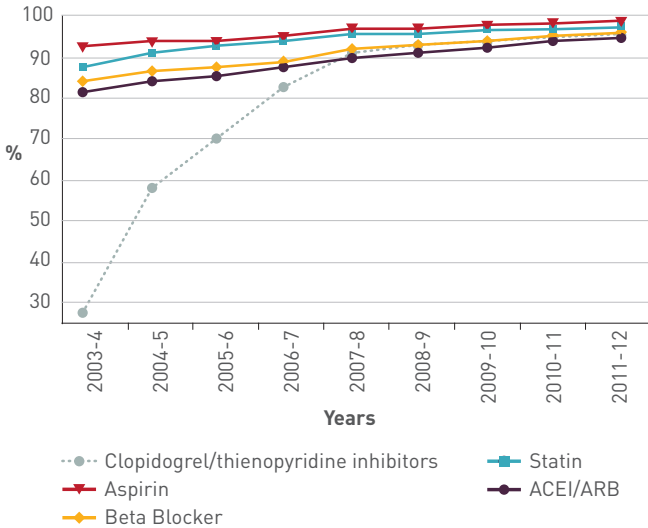
> **Secondary prevention medication** - Medication that reduces the risk of further heart attack, or the risk of complications such as heart failure.

Use of **secondary prevention medication** after the acute event improves outcomes for patients (both STEMI and nSTEMI). Figure 4 shows that use of the recommended drugs is very high (over 95%).

Figure 4. All patients with a heart attack who were prescribed secondary prevention medication on discharge from hospital

Legend:
- ·········● Clopidogrel/thienopyridine inhibitors
- ▼ Aspirin
- ◆ Beta Blocker
- ■ Statin
- ● ACEI/ARB

Ambulance Services

Ambulance services collaborate closely with hospitals to improve care. Ambulance staff play a vital role in the early phase of heart attack, in assessing the patient, making an initial diagnosis and giving pain relief, and then ensuring the patient is taken rapidly to the most appropriate hospital.

Because the response of the ambulance service also influences the speed with which patients receive treatment, we record information on 'call-to-balloon time' for each ambulance Trust (see table 6 on page 53 in the main report).

Patient outcomes

Over the last 8 years there has been gradual reduction in the reported death rates for patients in the MINAP dataset, both for STEMI (Figure 5) and nSTEMI (Figure 6).

Dataset – is a collection of specific data items developed in order to allow for the quality of care to be measured against the set standards.

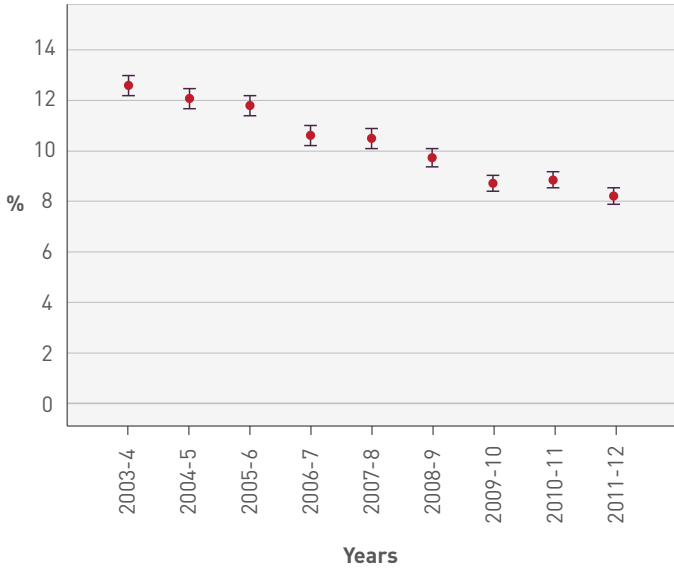**Figure 5. This graph shows percentage of patients with STEMI that died within 30 days of a hospital admission**
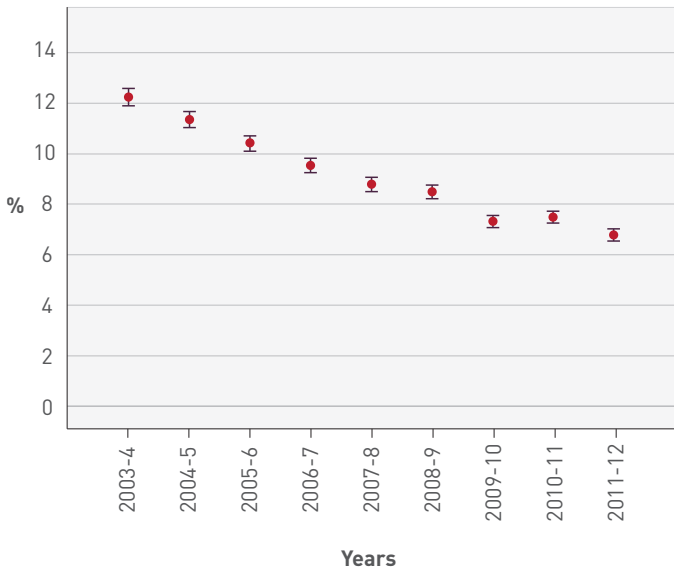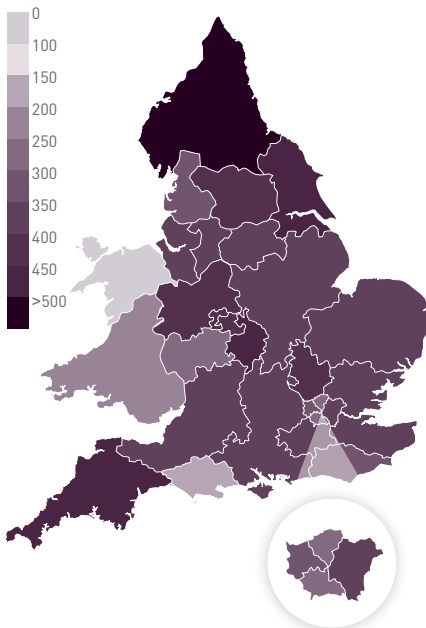

Figure 6. This graph shows percentage of patients with nSTEMI that died within 30 days of a hospital admission

Access to primary PCI

Primary PCI is the 'gold standard' treatment for patients with STEMI and most patients now have access to this treatment where they live. The number of patients treated with PCI per million population is shown in figure 7. Because this treatment needs to be provided in a hospital that performs a large number of procedures, some patients will be treated outside their local geographical area.

Figure 7. This map shows number of primary PCIs per million population by Cardiac Network

0
100
150
200
250
300
350
400
450
>500

1. http://www.ucl.ac.uk/nicor/audits/minap/publicreports/pdfs/2012minappublicreportv2

*see Glossary on pages 14 and 15

5. How can I check how my local NHS is performing?

Every year MINAP publishes a Public Report[1] which contains detailed information on every ambulance service and hospital treating heart attack patients, allowing you to compare your local service to the national picture.

6. How does MINAP collect data?

MINAP data is collected by the individual hospitals that admit patients

> **Database** - a data structure that stores organised information.

with heart attack and submit their data electronically to a central national **database**. The information is transmitted onto the database securely and your personal information is only available to specified individuals that hold encryption* keys.

7. What information is collected about me?

We collect all the clinical information that is relevant to your heart attack from the moment you called for help to your discharge from hospital. We always collect your personal information (i.e. your name, date of birth, NHS number, etc.) which is then used to obtain details of your health outcomes via the Office for National Statistics. Because MINAP is one of a set of linked 'cardiac audits' addressing

different parts of the patient pathway, we are able to link your records to other audits, enabling a more complete picture of the care you have received.

We have permission to collect and hold personal information about you without your specific consent from the Ethics and Confidentiality Committee (ECC).[2] ECC considers applications from organisations that collect patient identifiable information where it is not practicable to obtain patient consent. As MINAP concerns information about patients treated as an emergency, often at a very frightening time for patients and their loved ones, the ECC have acknowledged that obtaining patient consent under such conditions is unrealistic. The inclusion of all patients with ACS admissions, and therefore getting a true picture for all patients, ambulance and hospital services, is essential to inform further improvements in care.

8. Can I be identified from the published data?

Patient identifiable information is only available to a limited number of individuals at the National Institute for

Anonymised data – any information that is collected and from which it is virtually impossible to identify an individual.
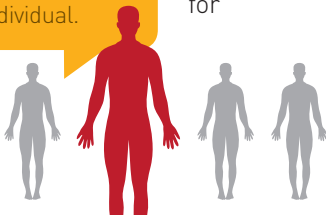
Cardiovascular Outcomes and Research (NICOR) - of which MINAP is part - who adhere to the principles of the Data Protection Act 1998. Other NICOR staff will only see your clinical information in **anonymised** or **pseudonymised** form where it is necessary to improve data quality and analysis.

Any information in MINAP is reported in aggregate form where identification of an individual is not possible. Patient level data can be provided to external researchers only in anonymised form, under very strict guidelines. Any information that could lead to identification of an individual patient is removed.

Pseudonymised data – information that is collected about you but with a special unique code that allows for your information to be linked to another dataset without disclosing any personal details.

9. How can I be sure that data and the results are reliable?

MINAP is supported by a small team that provides support to ambulance and hospital services to ensure that patient information is recorded correctly. We also run an annual data validation study to assess the reliability of the data and give

2. http://www.nigb.nhs.uk/ecc

feedback to hospitals. Our database has been designed in a way that minimises errors and ensures the consistency of the data.

We also regularly hold workshops with patients and health care professionals around the country to thank them for their help and highlight the importance of MINAP and how it is used to improve patient care.

10. MINAP data and research

Anonymised MINAP data are also available to experienced researchers who are interested in gaining further understanding of Acute Coronary Syndrome. For more information on some of the projects and publications that have resulted from the use of MINAP data please see part 4 on page 96 of the main report.

11. Where can I get more information?

This booklet is a short introduction to MINAP and more detailed information is available in our full report at: http://www.ucl.ac.uk/nicor/audits/minap/publicreports/pdfs/2012minappublicreportv2.

If you need specific information about the report or have any comments on this booklet please contact us at minap-nicor@ucl.ac.uk; we are very interested to hear your views, suggestions or if you would like to get involved.

Other sources of information are available in the main report.

Glossary

Acute coronary syndrome – This term covers all cardiac episodes that result from sudden and spontaneous blockage or near blockage of a coronary artery, often resulting in some degree of cardiac damage. The degree of damage and the type of syndrome (heart attack) that results from the blockage depends on the size and position of the artery and the amount of clot that develops within the artery.

Angiogram – A diagnostic 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). Narrowings and complete blockages within the arteries can be identified during the angiogram and this allows decisions to be made regarding treatment. This is achieved by injecting an isotope or die in the artery.

Anonymised data – Any information that is collected and from which it is virtually impossible to identify an individual.

Database - A data structure that stores organised information.

Dataset – Is a collection of specific data items with precise definitions to allow hospitals to enter the data accurately and to allow comparisons between hospitals.

Encryption - A form a security that turns information into an unreadable coded message.

Heart Attack Centre - A hospital that provides coronary interventions for patients with acute coronary syndromes.

Non-ST elevation myocardial infarction (nSTEMI) - A heart attack that occurs in the absence of ST segment elevation on the ECG. In these patients urgent admission to hospital is mandated but immediate reperfusion therapy is not required.

Primary PCI - A technique to re-open the blocked coronary artery responsible for the heart attack. A fine catheter (tube) is passed, under local anaesthetic, from an artery in the leg or arm into the blocked heart artery. A small inflatable balloon is then passed through the catheter and across the blockage, allowing the artery to be re-opened by temporary inflation of the balloon. This part of the technique is called angioplasty and when used as the initial treatment for heart attack can be referred to as 'primary angioplasty'.

Pseudonymised data – Information that is collected about you but with a special unique code that allows for your information to be linked to another dataset without disclosing any personal details.

Reperfusion - The term used to cover both techniques - thrombolytic treatment and primary PCI - to re-open blocked artery as an emergency.

Secondary prevention medication - Medication that reduces the risk of further heart attack, or the risk of complications such as heart failure. These medications are usually initially prescribed to all patients who can tolerate them.

ST elevation myocardial infarction (STEMI) - A heart attack characterized by a specific abnormal appearance on the ECG (ST segment elevation) thought to be indicative of complete occlusion of a coronary artery.

Thrombolysis - A therapy that consists of giving drugs (the so-called 'clot-busters'), which act rapidly to dissolve the blood clot that has blocked the artery. Thrombolysis can be given in an ambulance (pre-hospital thrombolysis) or after arrival at the hospital (in-hospital thrombolysis).

Better outcomes, better lifestyles – working with patients for continuous improvement

If you have concerns about your local hospital or ambulance service performance, please contact Healthwatch.
More information at: **http://www.healthwatch.co.uk/**