Emergency assessment and treatment for a heart attack

Information for the public
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About this information

NICE clinical guidelines advise the NHS on caring for people with specific conditions or diseases and the treatments they should receive. The information applies to people using the NHS in England and Wales.

This information explains the advice about a type of heart attack called ST-segment elevation myocardial infarction (or STEMI for short) that is set out in NICE clinical guideline 167. NSTEMI is another type of heart attack. There is advice about NSTEMI, other heart conditions, and chest pain on the NICE website (www.nice.org.uk).

All of the treatment and care that NICE recommends is in line with the NHS Constitution (https://www.gov.uk/government/publications/the-nhs-constitution-for-england). NICE has also produced advice on improving the experience of care for adults using the NHS. For more information see ‘About care in the NHS’ on our website (www.nice.org.uk/nhscare).

Does this information apply to me?

Yes, if you are 18 or over and are believed to be having a STEMI.
ST-segment elevation myocardial infarction

ST-segment elevation myocardial infarction (STEMI) is a type of heart attack that needs emergency treatment. A person who has had a heart attack is normally offered an electrocardiogram (or ECG for short). An ECG is a quick, painless test that measures the rhythm and electrical activity of the heart. If the ECG shows certain changes, it can indicate that the person has a STEMI.

A STEMI happens when one or more of the coronary arteries (the main vessels that supply blood to the heart) become blocked by a blood clot. This means that the artery can't carry blood to the heart muscle, and it starts to die. Symptoms can include chest pain, shortness of breath, dizziness, sweating and nausea.

Your healthcare team

The various types of treatment described may be provided by a range of healthcare professionals who specialise in different treatments. These could include ambulance and accident and emergency staff, cardiologists (doctors who treat heart problems), cardiac physiologists (doctors who specialise in treating heart problems), radiographers and specialist nurses.

A member of your healthcare team should discuss STEMI with you and your family and carers, and explain the tests and treatments for it. You should have the opportunity to ask any questions you have – there is a list of questions you might like to ask to help you with this. Given the emergency situation, if you are unable to ask the questions yourself, your family or carers can do this for you. You can always ask any questions you have at a later date.

Some treatments described may not be suitable for you, depending on your exact circumstances. If you think that your treatment or care does not match this advice, talk to your healthcare team.

Assessment

If the ECG indicates that you have a STEMI you should be assessed immediately to see whether you are suitable for a type of treatment called coronary reperfusion therapy. This treatment for STEMI involves opening up the blocked arteries to restore the blood flow to the heart. The decision about whether to offer you coronary reperfusion therapy should not be based on your age, ethnicity or sex. If you have had a cardiac arrest (where the heart stops pumping blood, usually because it cannot contract properly), the decision about coronary reperfusion should not be based on whether or not you are unconscious.
If coronary reperfusion therapy is not suitable for you, you should still be offered drugs to reduce further damage to your heart and reduce the risk of another heart attack.

**Treatments to unblock the coronary arteries**

It is important that you are treated as soon as possible to minimise the damage to your heart. When deciding which treatment is best for you, your healthcare team will take into account when your symptoms started and how quickly the treatment can be given.

**Primary percutaneous coronary intervention**

**Symptoms started within the past 12 hours**

If your symptoms started 12 hours or less before your first contact with medical staff (this could be with an ambulance paramedic, or when you arrive at the hospital if you go to the emergency department yourself), you might be offered a treatment called primary percutaneous coronary intervention (or 'primary PCI'). The healthcare team should first offer you a procedure called coronary angiography. This will give them more information about the location and severity of the blockage in your arteries, and help them to decide whether primary PCI would be suitable.

**Symptoms started more than 12 hours ago**

If your first contact with medical staff is more than 12 hours after the symptoms started and your symptoms are ongoing, you might still be advised to have primary PCI, or another procedure such as coronary artery bypass surgery.

**Drugs to prevent blood clotting**

During primary PCI any blood clots may be removed using suction. You may also be given drugs to thin your blood and prevent further blood clots from forming. Depending on the drug, you might be advised to continue taking the drug in the months after having primary PCI. See Other NICE guidance for details of our guidance on ticagrelor and bivalirudin.

**Fibrinolysis**

If your symptoms started 12 hours or less before your first contact with medical staff but primary PCI cannot be offered in time (for example, your circumstances mean that you are unable to get to a hospital that carries out the procedure), you should be offered fibrinolysis. This is the use of drugs to break down blood clots (known as ‘clot-busting’ drugs). You should also be given a drug called an
antithrombin (a 'blood-thinning' drug) at the same time, which helps the clot-busting drugs to work better.

**What happens after fibrinolysis**

After fibrinolysis you should be offered an ECG 60 to 90 minutes later to check whether the treatment has worked. If the doctors think the fibrinolysis hasn't worked well enough, you should immediately be offered coronary angiography, and then PCI if appropriate. However, you should not be offered more fibrinolysis.

If treatment with fibrinolysis has been successful, you should be given advice about further suitable treatment before a decision is made about what the next steps should be. For example, you may be offered coronary angiography before you leave hospital.

If you have persistent myocardial ischaemia after fibrinolysis, you may be offered coronary angiography with PCI. Persistent myocardial ischaemia is a long-lasting reduction in the supply of oxygen to the heart muscle caused by a blockage in one of the heart’s arteries. This may cause ongoing symptoms.

**Information**

The emergency treatment of your STEMI is only the first step in your recovery. You may need help for other conditions and for lifestyle changes, and you should be given all the information you need so that you can be fully involved in decisions about your care. You should be offered information (including written information), advice, support and treatment on the following:

- how to improve your lifestyle to help prevent another heart attack – for example, stopping smoking if you are a smoker, and exercising and improving your diet to reduce your blood pressure
- conditions that can increase the risk of having heart attacks, such as diabetes and high blood pressure
- indications of a possible heart problem, such as chest pain.

NICE has also written information about what care you can expect in the NHS. See [Other NICE guidance](#) for details of our guidance.
Questions to ask about STEMI

These questions may help you discuss your condition or the treatments you have been offered with your healthcare team.

About your condition

- Can you tell me more about my heart attack?
- Are there any support organisations in my local area?
- Can you provide any information for my family/carers?
- Why has this happened to me?

Treatments

- How will I be assessed to see if I am suitable for coronary reperfusion therapy?
- Can you tell me why you have decided to offer me this particular type of treatment?
- What are the benefits and risks of this treatment?
- What will it involve?
- How will it help me?
- What are my options for taking treatments other than the one you have offered me?
- Is there some other information (like a leaflet, DVD or a website I can go to) about the treatment that I can have?
- Will I need to take medication after I go home? If so, how long will I need to take it for?
- What should I do if I get any side effects? (For example, should I call my GP, or go to the emergency department at a hospital?)
- What should I do if I get chest pain?

Lifestyle

- Would it help my condition if I made some changes to my lifestyle?
• Do I need to lose weight? Can I get help with this?
• Can I get help with changing my diet?
• How will it affect my heart if I carry on smoking?
• When will I be able to resume sexual activity?
• How much alcohol is it safe to drink?
• When will it be safe for me to drive/fly?
• Can I continue to go to the gym and do sports?
• My job is very physical – will I be able to carry on working normally?
• Will I be able to get any help for stress and anxiety?

No treatment

• What will happen if I choose not to take my medication?

For family members, friends or carers

• What can I/we do to help and support the person with STEMI?
• Is there any additional support that I/we as carer(s) might benefit from or be entitled to?

Following up on your treatment

• When should I start to feel better and what should I do if I don't start to feel better by then?

Medical terms explained

Coronary angiography

A thin flexible tube (catheter) is inserted into the arteries via the arm or groin. A special dye is passed through the catheter and shows up narrowed or blocked areas in the coronary arteries on an X-ray.
Percutaneous coronary intervention (PCI or angioplasty)

A procedure to stretch and hold open the narrowed or blocked part of the coronary artery. A balloon attached to a thin flexible tube (catheter) is inflated to open up the narrowed artery. Following this, a small metal tube (called a stent), is inserted and left inside the artery to keep it open and allow the blood to flow more easily. Primary PCI is PCI when used for the emergency treatment of STEMI.

Sources of advice and support

- British Heart Foundation, Heart Helpline 0300 330 3311
  www.bhf.org.uk

You can also go to NHS Choices (www.nhs.uk) for more information.

NICE is not responsible for the quality or accuracy of any information or advice provided by these organisations.

Other NICE guidance


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