



Your anaesthetic for heart surgery

This leaflet gives you information about your anaesthetic for adult heart (cardiac) surgery and what you can expect before, during and after your operation.

The team in the pre-assessment clinic, your anaesthetist and your surgeon will provide details about your specific treatment, benefits and risks.

There is a lot of information to take in, as this type of surgery is more complex than other types of surgery. You should read this leaflet together with any other information provided by your hospital.

How should I prepare for heart surgery?

Research has shown that fitter patients recover more quickly from surgery. If you do not need urgent treatment, you should think about improving any existing medical conditions and try to do what you can to get as fit as possible before your surgery. Below is a summary of the steps that you can take to improve your health and there is also useful information on preparing for surgery in our Fitter Better Sooner toolkit (www.rcoa.ac.uk/fitter-better-sooner).

Smoking

We know that if you smoke you are more likely to have complications after surgery. The good news is that stopping smoking even for a short time before surgery can improve wound healing, make your lungs work better and shorten your stay in hospital. Your GP practice or your local Stop Smoking Service (www.nhs.uk/quit-smoking) will be able to offer help in reducing or stopping smoking, so ask them about the best options for you.

You can find additional information on smoking and surgery here: ASH briefing: Smoking and surgery (www.ash.org.uk).



Your anaesthetic for heart surgery

Alcohol

Alcohol has many effects on the body. It makes the liver less able to make the building blocks necessary for healing. Make sure you are drinking within the recommended daily limits, or lower, to improve your body's ability to heal after surgery. You can find useful information on how to reduce alcohol and the benefits to you on the NHS Better Health website (www.nhs.uk/better-health/drink-less).



Diet

Try to eat a healthy diet to best prepare your body for recovery after surgery.

If you are overweight, losing weight can help reduce the stress on your heart and lungs. It may also lower your blood pressure, improve your diabetic control, reduce your risk of blood clots after surgery and help you exercise more easily.



Discuss with your GP what resources and help are available to you. More information on anaesthesia and your weight can be found here: www.rcoa.ac.uk/YourWeight2020.pdf

Exercise

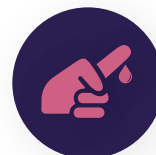
Exercise can help prepare your heart and lungs for the extra work around the time of an operation. Please discuss with your GP or surgeon exactly what it is safe for you to do.

However, even if you are advised not to do any extra physical activity, your surgery can still be provided safely.



Existing medical conditions

If you have existing medical conditions, eg diabetes, high blood pressure, asthma or other lung conditions, check with your GP well ahead of your surgery that your medication is up to date and that you're taking the correct dose. This can help prevent delays to your surgery and give you the best chance of your operation and recovery going well.



If you are anaemic, you should talk to your GP about treatment to improve your blood count before surgery. This will give you more energy during your recovery and may stop you needing a blood transfusion.

If you are diabetic, it is important to have good control of blood sugar levels. This will improve wound healing and make you less likely to develop infections. Work with your GP and diabetes team to try and get your blood sugar controlled as best as possible before surgery.

Teeth and dentures

If you have any loose teeth or crowns, please visit your dentist before your surgery and have any necessary treatment. There is a small risk that loose teeth can be damaged when the breathing tube is put in place during your anaesthetic. It's important to make sure that your teeth and gums are in good condition and not infected before the surgery, as this can lead to bacteria entering the bloodstream and cause a serious infection, called endocarditis, in the heart.



Your anaesthetic for heart surgery

How will I be assessed before the operation?

Most hospitals have a preoperative assessment clinic (pre-admission clinic). This clinic prepares you for your heart surgery and organises any tests needed on your blood, heart, lungs and kidneys. You may need to attend more than one appointment.

An anaesthetist or preoperative nurse will want to know about your general health and activity levels. They will ask questions about medicines you take, any allergies you have, your heart problems, and anaesthetics you might have had in the past. It's a good idea to bring with you a list of all the medicines you normally take (you can get a copy of this list from your pharmacist or GP).

They will also ask about your teeth, crowns or dentures, and whether you have any problems opening your mouth or moving your neck.

A nurse or anaesthetist will let you know exactly when you need to stop eating and drinking before your operation. Usually, you will be able to eat up to six hours and drink water up to two hours before the operation, or less in some cases.

An anaesthetist or nurse will give you instructions about which medicines you should take on the day of surgery. These can be taken with a sip of water right up to the time of surgery if necessary.

At the preoperative assessment clinic, you will have the chance to ask any questions and discuss any concerns you might have about the operation and the anaesthetic. Patients who play an active role in making decisions about their treatment have fewer regrets and better outcomes after the surgery. You can find out more about shared decision making and useful tools to help your discussions with the healthcare professionals on the Centre for Perioperative Care website (www.cpoc.org.uk/shared-decision-making).



What happens at the time of the actual operation?

The anaesthetist who will look after you will visit you in hospital before your operation. In some hospitals, your anaesthetist may offer you a sedative drug before your anaesthetic to help you relax.

Before your operation, you will be asked to change into a theatre gown. Your nurse will put bracelets on you to confirm your identity and, if necessary, any allergies. For some operations, you will put on compression stockings to help prevent you getting blood clots in your legs.

When you arrive at the operating theatre, the anaesthetic assistant will meet you and check all your details. They will then connect you to several machines (monitors). These include an ECG (to monitor your heart beat), a blood pressure machine, and a clip on your finger or ear to measure the oxygen levels in your blood. You may have some stickers placed on your forehead to measure how deep asleep you are during your anaesthetic and the level of oxygen in your brain.

You will have two or three cannulas (plastic tubes or 'drips') put into your veins and an artery. Local anaesthetic will numb your skin so it should not hurt any more than a normal blood test. During this, you may be offered sedation to relax you and extra oxygen to breathe.

Your anaesthetic for heart surgery

What happens during the operation?

The anaesthetic drugs are injected slowly through one of the drips in your arm. Once you are completely anaesthetised, the anaesthetist will place a breathing tube via your mouth. A machine called a ventilator will then blow oxygen into your lungs, as well as the anaesthetic gas to keep you anaesthetised.

Also, after you are anaesthetised, a soft tube (catheter) will be connected to your bladder to show how much urine your kidneys are making. Once anaesthetised they will also put an ultrasound tube (transoesophageal echocardiogram or TOE) through your mouth down towards the stomach to give pictures of your heart during the operation. This will be taken out before you wake up.

Another larger cannula is placed in your neck after you are anaesthetised (asleep with the anaesthetic). This is used to give certain drugs and will help tell how well your heart is pumping. This is usually done once you are asleep. If your anaesthetist thinks there is a need to put it in before you are anaesthetised (using local anaesthetic to numb the skin), they will discuss this with you.

For many operations on the heart, surgery is not possible if your heart is beating. If this is the case for your surgery, your team will connect you to a special pump called a cardiopulmonary bypass machine (heart-lung machine). This machine takes over the work of the heart and pumps the blood around your body. It also adds oxygen to your blood. This means the team can safely stop your heart beating for part of the operation. Many heart operations last between three and five hours. Your anaesthetist and the technician who looks after the bypass machine will watch you closely during this time.

It is normal to lose some blood during heart surgery. Your team will inject fluids through the cannulas to replace any lost blood. Where possible, they will collect your own blood using a special machine (cell saver) and transfuse it back to you. You may, however, need a blood transfusion during or after your operation. Blood used for transfusions is carefully checked and modern blood transfusions are extremely safe. They will not give you any more blood than is needed for your safe recovery. You may also need other blood components, such as fresh frozen plasma or platelets. Your anaesthetist will discuss all of this with you and may ask you to sign a separate consent form.

What happens after the operation?

After your operation, you will be taken to the intensive care unit (ICU) or high dependency unit (HDU). This is because you will need a higher level of nursing and medical care and more specialised equipment which cannot be provided on a normal ward.

The ICU team will carefully watch your heart rate, blood pressure, breathing and kidney function. Your nurse will adjust the fluids and medication according to what you require.

They will keep you sedated and connected to the ventilator until it is the right time to bring you round from the anaesthetic completely.

Your anaesthetic for heart surgery

The ICU team will then remove your breathing tube and give you oxygen through a mask over your mouth and nose. This usually happens four to six hours after the end of your operation. It can be later than this (even days) in complex cases or if you have breathing problems. Your surgeon and anaesthetist will discuss with you before your operation if they think this is likely to be needed.

When you wake up, you will still be connected to all the drips and monitors. You will also have one or two tubes that drain any fluids from your chest. There may be some fine wires attached to your heart (pacing wires) that your anaesthetist can use, if necessary, to control your heart rate. These are usually kept in for just a few days. You may also still have the catheter in your bladder to help you pass urine.

During and after your operation, your anaesthetist will give you strong painkilling drugs through the drip to keep you comfortable. Once they take out your chest drains, you will be less likely to need strong painkillers and you will be able to take tablets orally (by mouth) instead.

Your nurse will check your pain levels regularly. It is important that you take enough pain relief so you can manage to take deep breaths in and cough well. It is important to cough up mucus to keep your lungs working well and prevent you getting a chest infection. A physiotherapist will explain the breathing exercises to you and show you how to cough properly.

You may be able to have visitors while on ICU or HDU. Your nurse can advise you and family members on visiting times and the number of visitors allowed. Because you may be looked after in an area where there are very ill patients, it may not be suitable for young children to visit.

You will transfer to the ward when you no longer need all the monitoring and treatment in intensive care. This will usually be two or three days after your operation.

You can discuss with your surgeon how long they anticipate your recovery will take and when you might be able to return home.

What are the risks of complications from cardiac surgery?

The risk of complications during or after your operation depends on the type of heart surgery you have, how well your heart is working and your general health before surgery.

During your anaesthetic for cardiac surgery

- There are risks with putting in lines, drips and monitoring. These include bleeding, infection and damage to other parts of your body they are close to. These risks are common – 1 in 100 cases.
- The risk of damage to your oesophagus (food pipe) from the ultrasound tube for the TOE is rare – less than 1 in 10,000 cases.
- All the standard risks and side effects from general anaesthesia also apply to cardiac operations:
 - feeling sick and having a sore throat afterwards is common
 - uncommon risks include damage to teeth, nerves and eyes

Your anaesthetic for heart surgery

- awareness is uncommon during cardiac surgery – a large study showed the risk of a self-reported case of awareness during cardiac surgery to be 1 in 8,600
- allergic reactions to anaesthetic drugs are rare.

Leaflets about risks associated with having an anaesthetic or an anaesthetic procedure are also available via the College website: www.rcoa.ac.uk/patientinfo/risks/risk-leaflets

During your recovery from cardiac surgery

Recovery from cardiac surgery can be more complex than after other operations. Depending on your specific case, you may need some extra treatment, for example:

- your lungs may need help with ventilation for longer than normal and you will usually be sedated during this time. This is very common – around 1 in 10 cases
- if you need to be on a ventilator for more than a few days, the breathing tube in your mouth will need to be changed to a 'tracheostomy'. This is a tube going through the front of your neck directly to your airway. This is common – 1 in 100 cases. A tracheostomy tube can easily be taken out when it's no longer needed
- it's normal for some internal bleeding to occur after the operation and your doctors and nurses will monitor this carefully. If the bleeding is excessive, the anaesthetist and surgeon may make the decision to take you back to theatre for a further operation to stop the bleeding. This is part of the reason why you are kept anaesthetised for a few hours after the operation is complete
- three in every ten people who undergo cardiac surgery will have some abnormality of their heart rhythm during their recovery. Temporary pacing wires are often put in place by your surgeon during your operation to help your heart beat normally if needed. A small number of patients require a permanent pacemaker after surgery
- there is a risk of stroke after heart surgery – depending on the type of surgery, this risk is between 3 and 5 in every 100 cases. A stroke can cause temporary or long-lasting problems that affect how you move, speak and swallow. It can sometimes be fatal
- your kidneys sometimes need extra help to work properly and a dialysis machine may be used to clean your blood of waste products while your kidneys recover. This is common – around 1 in 50 cases. Your anaesthetist will need to put another large drip into one of your veins if you need this
- your heart may need help to pump blood well while it recovers. This is common – around 1 in 100 cases. In most cases your anaesthetist will give you drugs to do this, but occasionally artificial pumps are used until the heart can work by itself again
- there is a risk of infection inside the heart if you are connected to the bypass machine during the operation. The risk is rare – less than 1 in 5,000 cases.

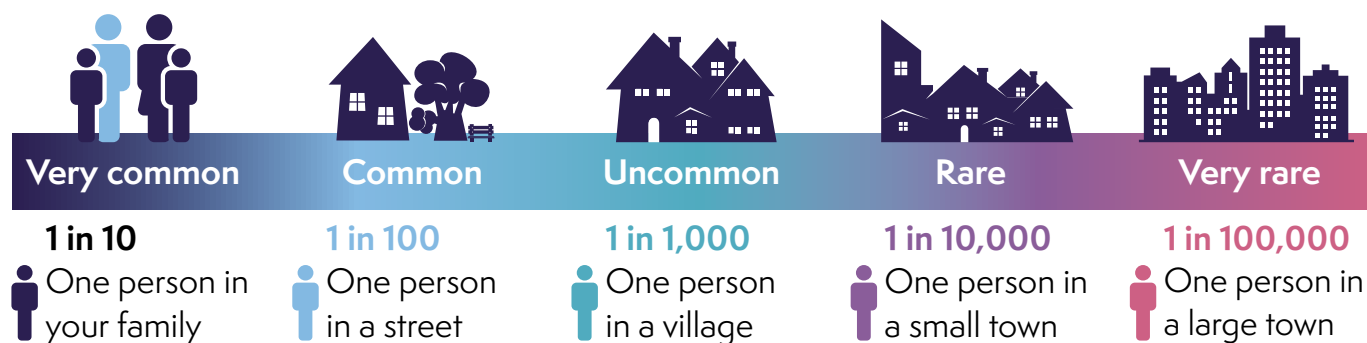
Your surgical team will discuss the risks of these procedures with you before your operation if they think you are likely to need them. If you did need any of these extra treatments, the risk to you would usually be far less than having to treat the complications from not having had the treatments.

Your anaesthetic for heart surgery

Detailed information about cardiac surgery and possible complications can be found on the Society for Cardiothoracic Surgery (SCTS) and the British Heart Foundation (BHF) websites:

- patients (www.scts.org/patients)
- treatments for heart and circulatory conditions (www.bhf.org.uk/information-support/treatments)

People vary in how they interpret words and numbers. This scale is provided to help.



Where can I get further information?

Most hospitals produce their own information leaflets about heart surgery and many of these contain information about anaesthesia.

You can find more information leaflets on the College website at www.rcoa.ac.uk/patientinfo. The leaflets may also be available from the anaesthetic department or pre-assessment clinic in your hospital.

Disclaimer

We try very hard to keep the information in this leaflet accurate and up-to-date, but we cannot guarantee this. We don't expect this general information to cover all the questions you might have or to deal with everything that might be important to you. You should discuss your choices and any worries you have with your medical team, using this leaflet as a guide. This leaflet on its own should not be treated as advice. It cannot be used for any commercial or business purpose.

For full details, please see our website: rcoa.ac.uk/patientinfo/resources#disclaimer

Information for anaesthetic departments on printing this leaflet

Please consider the visual impairments of patients when printing or photocopying this leaflet. Photocopies of photocopies are discouraged as these tend to be low quality prints and can be very difficult for patients to read. Please also make sure that you use the latest version of this leaflet, which is available on the RCoA website: rcoa.ac.uk/patientinfo/leaflets-video-resources

Your anaesthetic for heart surgery

Tell us what you think

We welcome suggestions to improve this leaflet. Please complete this short survey at: surveymonkey.co.uk/r/testmain. Or by scanning this QR code with your mobile:



If you have any general comments, please email them to: patientinformation@rcoa.ac.uk

Royal College of Anaesthetists

Churchill House, 35 Red Lion Square, London WC1R 4SG
020 7092 1500

rcoa.ac.uk



Second Edition, April 2022

This leaflet will be reviewed within five years of the date of publication.

© 2022 Royal College of Anaesthetists

This leaflet may be copied for the purpose of producing patient information materials. Please quote this original source. If you wish to use part of this leaflet in another publication, suitable acknowledgement must be given and the logos, branding, images and icons removed. For more information, please contact us.