NHS
University Hospitals
Coventry and Warwickshire
NHS Trust

Department of Cardiothoracic Surgery

Your anaesthetic for heart surgery

This leaflet describes the anaesthetic care that you will be given before, during and after your operation

Introduction

These notes are intended to give you and your family information about the anaesthetic for your heart surgery.

The aim is for you to have all the necessary pre-operative tests performed on the same day of your outpatient consultation with the surgeon. You will be contacted by the Cardiac Liaison Team who will give you written information about having heart surgery. You will also be seen by your anaesthetist on the day of your admission or on the day of your operation who will give you more detailed information, tailored to your individual circumstances.

Before you come into hospital

Getting fit for your operation

Preparing for your operation includes taking steps to improve your fitness. We should all take the following advice, but it is even more important before an operation on your heart, when the outcome of the operation can be improved by following these advices:

Smoking

If you smoke then you should consider giving up. The longer you can give up for, the better. After 6 weeks without a cigarette your blood will carry more oxygen around your body, and your lungs are less likely to develop an infection after the operation. If you need help to stop smoking then you can ask your GP, your pharmacist, or telephone 0300 123 1044 for smoking cessation. Website: http://www.nhs.uk/smokefree

Alcohol

If you are drinking a lot of alcohol it may be affecting the ability of your heart to function correctly. Cutting down before you come into hospital will improve your overall health. The maximum alcohol intake recommended per week is 14 units.

Weight loss

Being overweight, especially if your body mass index (BMI) goes above 35 kg/m2, increases the chance of complications associated with anaesthesia and surgery. Sensible weight loss will help reduce such risks. Your GP practice should be able to help you diet to lose weight and reduce your cholesterol. You could find what your BMI is by visiting the body mass index calculator at https://www.nhs.uk/live-well/healthy-weight/bmi-calculator/

Exercise

A regular walk at your own pace, without pushing yourself, will boost your stamina and cardiovascular fitness before surgery and help if you have a weight problem.

Fasting on the day of surgery

For MORNING Operations	**STOP taking at**:
Food or milk	2:30 am
Black tea/coffee, squash (not juice), Pre-Op carbohydrate drink	6:30 am
Water	Up to one hour before surgery
Please do not chew gum / suck mints or sweets on the day of surgery	

For AFTERNOON Operations	**STOP taking at**:
Food or milk	7:30 am
Milk	
Black tea/coffee, squash (not juice), Pre-Op carbohydrate drink	11:00 am
Water	Up to one hour before surgery
Please do not chew gum / suck mints or sweets on the day of surgery	

Coming into hospital

Your anaesthetist

An anaesthetist is a fully qualified doctor who has specially trained in anaesthesia: the treatment of pain, and the care of very ill patients (intensive care medicine). Your anaesthetist is responsible for your safety, comfort and well-being before, during, and after your surgical procedure. A consultant anaesthetist will direct your anaesthetic care, and another qualified doctor, (an anaesthetist in training) will often be looking after you as well.

Pre-operative assessment

You will have all your pre-operative investigations completed at the outpatient clinic and the results will be checked and verified before your admission. If any additional tests are needed we will be in contact with you as soon as possible. You will also be visited by your anaesthetist prior to your operation at which time you will be able to discuss any further points or concerns regarding your anaesthetic care plan.

Since the beginning of the Covid-19 pandemic, patients are being tested for the presence of Covid-19 antigens by a Covid-19 PCR test. This test involves the collection of samples by placing a swab in the back of your mouth and nose. The procedure may feel mildly uncomfortable but should not be painful. You will also be asked relevant questions related to the presence of symptoms suggestive of Covid-19 Infection.

The presence of an active or very recent Covid-19 infection would normally affect the decision to carry out elective cardiac surgery.

During the preoperative assessment, your general health will be carefully evaluated along with your medical history in order to properly plan your care. You will be asked questions about the following areas:

General health: How well have you been in the last six to twelve months?

Heart Problems: Questions will be focused on your symptoms; how long you have been suffering from them, and what makes them better or worse. You will be asked about your blood pressure control, previous heart attacks, and strokes.

Medical History: Do you have additional medical problems such as: diabetes, epilepsy, thyroid, symptoms of gastric reflux, or asthma? Have you had any operations in the past?

Previous Anaesthetics: Any problems or reactions that you or your family have had in relation to anaesthesia.

Medications: Tablets or preparations that you take whether prescribed by your GP or bought "over the counter". This includes herbal remedies and other complementary therapies. It is important to continue most medications up to the time of your surgery. Certain drugs, particularly those used to "thin the blood" and prevent clotting (e.g.: aspirin, clopidogrel and warfarin) may need to be stopped before your admission to hospital and you will be advised of this.

Allergies: Any reactions you have had to medicines, foods, or substances such as latex; contained in rubber gloves, balloons, and condoms.

Dental Work: It is necessary for your anaesthetist to know if you have any loose teeth, caps, crowns or bridgework so that damage can be avoided when breathing tubes, and monitor probes are placed in your mouth after you are anaesthetised.

Dental damage is a possibility even when all protective measures have been put into place.

Particular attention will be paid to your heart and lungs, and assessment of your ability to open your mouth and move your neck.

You should inform the anaesthetist if you have any pain or stiffness on moving your neck, dental decay or the presence of any dental work (crowns, bridges, implants). You should also inform the anaesthetist of any known pathology affecting your cervical spine including previous trauma to your neck.

After the evaluation, the anaesthetist will be able to tell you about the procedures associated with your surgery; the anaesthetic technique to be used and any choices that are available will be discussed with you, along with the associated risks and benefits. The anaesthetist will also discuss the following aspects of your care:

Pre-medication: sedative drugs may be given to you an hour or two before surgery commonly, in the form of tablets. This sedation is termed the ‘pre-med’ and it may help to reduce anxiety.

Routine medications: Many of the medicines you take daily have a protective effect on your heart. It is important that this protection is continued during the perioperative period. Your surgeon and your anaesthetist will advise you as to which of your medications you should take before surgery and which of them (if any) should be stopped. Drugs can be taken with a sip of water right up to the time of surgery if necessary.

During the operation

Your anaesthetic

‘Anaesthesia’ means, from the Greek, ‘without feeling’; the term ‘general anaesthesia’ means a state of controlled unconsciousness during which you will be completely unconscious, pain free and unaware of events. We say ‘falling asleep’ when we talk about anaesthesia, but in fact you are much more deeply unconscious when under an anaesthetic than when you are asleep at night.

Anaesthetic drugs can be injected into a vein, or breathed into the lungs as gases. They are carried to the brain by the blood where they stop the brain from recognising messages coming from the nerves of the body.

The operating department

When you arrive in the Operating Department, ('theatres'), you will be met by one of the operating department assistants who works with the anaesthetists. They will check through your details and paperwork with you.

Following this you will be transferred into the anaesthetic room or the operating theatre itself. The team will then prepare you for the anaesthetic and the operation. You will again be checked at this stage by the surgical and theatre teams to ensure that all your details are correct.

Monitoring

Before you are anaesthetised the following monitoring will be established to assist the anaesthetist during the course of your operation:

ECG: Sensors will be attached to your limbs and chest to monitor your heart rate and rhythm.

Pulse Oximeter: A clip will be placed on your finger to measure the amount of oxygen your blood is carrying.

Blood Pressure Cuff: This will be occasionally used to check your blood pressure.

The following monitoring lines may be put in before or much more commonly after you are asleep, either way there is little or no discomfort from having this done.

Arterial Cannula: Your anaesthetist will insert a cannula, commonly into the artery in your wrist, first infiltrating the skin with local anaesthetic to prevent you feeling pain. The arterial cannula also enables samples of blood to be taken for testing during the operation.

Central Venous Line: This is a large cannula, or drip, that is placed in a large vein located in the neck. Some cannulae have several compartments through which the pressure of the blood entering the heart can be measured and various drugs administered during the operation.

Pulmonary Artery Catheter: this is a special monitoring device that is sometimes used to measure the heart function and the pressures inside the heart.

Complications related to central venous line and pulmonary artery catheter insertion are rare but could be significant. The most common complications that may occur are;

- Infection
- Bleeding
- Abnormal positioning (Malposition)
- Abnormal heart rhythm (Arrhythmias)

The use of an ultrasound guided technique has reduced some of these complications significantly.

Other monitoring may be introduced after you are anaesthetised. This includes the following:

Transoesophageal Echocardiogram (TOE): This probe is designed to be placed in the oesophagus (gullet), via the mouth, to scan the heart and assess its function during the operation. It is essential when you are having an operation on one of your heart valves.

Complications associated with its use are rare but can be important. The risk of a significant complication associated with TOE is 1 in 1300 examinations. These are some of the more frequent and/ or relevant ones:

- Dental and lip trauma;
- Oro-pharyngeal erosions;
- Oesophageal and gastric perforations;
- Gastrointestinal bleeding;
- Infections.

Urinary Catheter: This is placed in the bladder to collect urine to assess how well the kidneys are working during the operation.

Induction of Anaesthesia

Once all the necessary monitors and 'drips' are in place, your anaesthetist will administer oxygen via a facemask, as a safety measure. Anaesthetic drugs are then injected slowly through one of the 'drips' in your arm. These drugs may make you feel a little dizzy at first, and can cause your arm to feel very cold and stiff as they pass through your veins. You may also feel the urge to cough. These sensations are all normal. They only last a few seconds as you drift off to sleep under the anaesthetic.

Once you are asleep, and deeply anaesthetised, the anaesthetist will place a breathing tube (endotracheal tube) into your airway. Placement of central venous lines and a urinary catheter (see above) complete the initial preparation for surgery.

Maintenance of Anaesthesia

During the operation your anaesthetic will continue to be given either through your drip, or as a gas that you breathe into the lungs. Most operations take approximately 4-6 hours, and your anaesthetist(s) will ensure your safety throughout - until you are transferred to the Intensive Care Unit.

Many patients worry about the possibility of being awake during the surgery (i.e.: able to re-call events during an operation). This is termed being 'aware'. This risk for general anaesthesia is approximately between 1 in 1,000 and 1 in 3000 procedures, although the risk of being 'aware' during heart surgery could be slightly higher than this. Newer monitoring techniques for measuring the level of anaesthetic agents and the activity of the brain during anaesthesia are likely to reduce the risk of being 'aware".

Blood transfusion

During most operations, some blood will be lost. If necessary, your anaesthetist can usually make up for this blood loss by giving you other types of fluid into a vein through a drip.

There is a possibility, however, that you may need a blood or blood product transfusion during or after your operation. Blood used for transfusion (donor blood) is extensively screened to prevent complications associated with blood transfusions such as transmission of infections and modern transfusion practice in the UK is very safe. You can be assured that your doctors will keep the extent of blood transfusion to the minimum required for your safety.

Under most conditions, you will be asked to sign a consent form for the administration of blood and blood products before your operation being. The only exception is in an emergency and the urgency of the surgery or the condition of the patient does not allow the medical team to make such a request.

You should inform the medical and nursing team if you do not want to receive any blood or blood products through your hospital stay as this may have implications for your perioperative care pathway.

After the operation

The Intensive Care Unit

After your operation you will be transferred from the operating theatre to an Intensive Care Unit (ICU) or High Dependency Unit (HDU). Here, other anaesthetists (Intensivists) will keep you heavily sedated, for a further period of time, to enable you to recover from the operation. Your vital functions will be closely monitored and all the fluids and medication you receive will be carefully controlled. Your breathing will be assisted by a machine (a ventilator) until it is appropriate, and safe, to turn off the sedation and to let you wake up completely. The breathing tube will then be removed and oxygen administered via a clear plastic facemask. This awakening process usually takes place 4-6 hours after the end of the operation, but can be considerably longer than this (even days) in some patients depending on age, medical condition and type of surgery.

When you awaken, most of the drips and monitors that the anaesthetist placed prior, during or after to surgery will still be present. In addition to this, you will have tubes in the chest that help drain blood and fluids from the operation area. You may also have some wires attached to the heart (pacemaker wires) that can be used to control the heart rate and rhythm after surgery.

Pain Control

After the operation your anaesthetist, the intensivists and the acute pain team will ensure that you receive strong pain-controlling drugs to keep you comfortable, however you may temporally experience some mild/moderate discomfort Pain killers are given in the following ways:

Intravenous Infusions**:** powerful pain killing drugs (e.g. morphine) are usually given intravenously (i.e. into a vein via a drip). The infusion may be controlled by the nurses but often a patient-controlled system (PCA) is used whereby, once awake, a patient can press a button to deliver a dose of pain killer when he/she feels the need for it. Safety features are built into this system to prevent overdose.

Tablets**:** these are administered when you are able to eat and drink.

If you are experiencing pain and discomfort after you**r** operation it is important to let the nurses and doctors know. They will certainly ask you on a regular basis anyway! If they know your pain relief is not optimal, they can change your treatment to improve matters. Our hospital has an acute pain control/ relief team to supervise this aspect of your care.

Risks and complications

What are the risks?

Any heart surgery represents a major operation. The risks of surgery and anaesthesia need to be assessed in relation to the risk 'of not having an operation'. In most cases the risk associated with not having surgery is far greater. Your cardiologist, cardiac surgeon and cardiac anaesthetist will discuss this in detail with you before the operation.

Modern anaesthesia is very safe and**,** for heart surgery**,** the risk of the whole procedure far outweighs the risk of anaesthesia (by itself). We are not all the same and therefore the risks will be different for different people.

Common risks associated with anaesthesia are:

- Nausea and vomiting;
- Dental and lip damage;

- Eye abrasions;
- Shivering;
- Sore throat;
- Incomplete pain relief;
- Headaches;
- Soreness at the drip sites.

More serious risks, but much less frequent, include:

- Allergic reactions that could be life threatening (1 in 10,000 cases)
- Aspiration pneumonia;
- Post-operative transient confusion, although this could more likely related to the whole procedure;
- Air embolism and airway complications leading to oxygen starvation; that if severe and prolonged could cause severe harm including neurological damage;
- Awareness ; 1:1000 to 1:3000 cases;
- Death directly related to anaesthesia is extremely rare with an estimated frequency of 1 in 185,000 - 200,000 cases in the UK.

Further Information

There are many sources of information that are available to patients scheduled for heart surgery.

- The British Heart Foundation (BHF) produces a series of booklets on heart disease and its treatment. These can be downloaded from the BHF website: http://www.bhf.org.uk.
- The Society of Cardiothoracic Surgeons of Great Britain and Ireland (SCTS) also have patient information on their website at: http://www.scts.org.
- Extensive information on all aspects of anaesthesia can be found on the Royal College of Anaesthetists website: http://www.rcoa.ac.uk.
- Your Anaesthetic for Major Surgery, 1st Edition 2014 www.rcoa.ac.uk/patientinfo.

- You and Your Anaesthetic', 4th Edition 2014, Association of Anaesthetists of Great Britain and Ireland, https://www.aagbi.org.
- Your Anaesthetic for Heart Surgery, Compiled and written by Drs Andrew Steel, Barathi Varadarajan and John Gothard. Edited by Dr Fiona Gibson and the ACTA Committee.

Alternatively, if you have any other questions please contact the Cardiac Liaison Team, on 024 7696 5803.

The Trust has access to interpreting and translation services. If you need this information in another language or format please contact our department and we will do our best to meet your needs.

The Trust operates a smoke free policy.

To give feedback on this leaflet please email feedback@uhcw.nhs.uk

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