



Your Anaesthetic for Your Thoracic Surgery

Information for Patients

This booklet has been produced by the Department of Cardiothoracic Anaesthesia at the Royal Infirmary of Edinburgh. Its purpose is to inform you about the stages of your journey before, during and after thoracic surgery.

What is an Anaesthetist?

This is a doctor specialised in providing Anaesthesia, Pain Management, Intensive Care Medicine and High Dependency Unit (HDU) Care, whose role is to look after your safety during surgery, making sure you are asleep through the operation and comfortable afterwards.

The main aim is that you leave hospital healthy. The anaesthetist helps this by managing your care during surgery, in the recovery room and afterwards in HDU or the Intensive Care Unit (ICU) when necessary.



Ward 102 entrance

You will be admitted (usually the day before surgery) for your operation so that you can have your history taken, be examined by the ward doctor, have some blood tests performed as well as completing a consent form. You will meet with your anaesthetist who will visit you, either the day before or on the day of surgery. You will also most likely have a COVID-19 Test.

What will the Anaesthetist do before your surgery?

The anaesthetist will read your notes and ask you about:

- Heart and breathing symptoms
- Smoking habits
- Your alcohol intake
- Whether or not you have diabetes
- Any previous problems with anaesthetics
- Heartburn or indigestion
- Allergies
- Your previous illnesses
- Your teeth, mouth opening and neck movements to assess your airway.

The anaesthetist will look at your blood test results, assess your lung function tests, and

review investigations including your ECG and chest x-ray. Often you will have a CT scan of your chest.

Will the operation definitely proceed?

At the beginning, the anaesthetist considers whether you are fit enough for surgery.

Your physical condition before surgery greatly affects the impact the surgery will have on your body.

Some illnesses, such as chest infections, mean that the surgery may need to be postponed until you have completely recovered.

Most patients successfully go through lung surgery and are well when they are discharged home. If you have severe lung disease (such as emphysema, fibrosis, severe bronchitis or bronchiectasis) an operation sometimes may not be good for you. After surgery your ability to breathe may be impaired- especially if you have had part of a

lung removed. If you can't breathe (and cough) properly then you may have to remain on a machine called a ventilator which breathes for you.

Ventilators, though lifesaving, can increase the chance of chest infections, as well as weakening your chest muscles. Infrequently, it can be hard to wean some patients from the machine.

Your anaesthetist will discuss this with you if necessary.

Types of Operation:

- Video Assisted Thoracic Surgery, (VATS) lobectomy, removing part of the lung
- Open lobectomy-as above but through a thoracotomy (chest incision at the side)
- Pneumonectomy-removing the whole lung
- Bullectomy-removing abnormal air sacs
- Pleuridesis- sticking the two linings of the lung together
- Pleurectomy-removing the lung linings
- Drainage of Empyema (a pus collection around the lung)
- Rib resection (helps to drain an empyema, see above)
- Bronchoscopy- to examine the airways

Types of Operation (continued):

- Mediastinoscopy-to examine the area around the windpipe using a small wound in the root of the neck
- Nuss Bar insertion or removal (for pectus excavatum, when the breastbone and chest cage are abnormal)
- Endobronchial Valve placements
- Lung Volume Reduction surgery.

Getting Ready for Surgery

For all these operations you will be seen beforehand by the anaesthetist (except in extreme emergencies when you may be met by the anaesthetist in the operating theatre). Your surgeon will have explained the procedure and its risks to you. Sometimes the anaesthetist will discuss any other risks when you meet before the operation.

You will sometimes (but not always) be given a “pre-med” tablet which is a sedative. You can discuss this with the anaesthetist.

Fasting for surgery

Do not eat any solids or drink milk, tea or coffee for 6 hours before your surgery.

Stop drinking clear fluids (water, squash) 2 hours before your surgery.

To the Anaesthetic Room



Pictured: A Consultant Anaesthetist (Right) and an Operating Department Practitioner/Nurse Assistant (Left) with the bed you will lie on. Behind them are the monitoring devices and anaesthetic machine.

You will be transferred to theatre where you will meet your anaesthetist again. The anaesthetist or the assistant will check you into the Anaesthetic Room.

During the COVID-19 pandemic, the staff in the Anaesthetic Room will be wearing full

Personal Protective Equipment (PPE) to protect you and the clinical team.

You will then be monitored; leads are connected to sticky skin discs, and an oximetry probe (like a loose peg) will be attached to your finger to measure your blood oxygen level.

The anaesthetist will then use a local anaesthetic to numb your skin and put in your intravenous (IV) drip and sometimes a line into your artery where a doctor would normally

feel your pulse. Often this arterial line is inserted after you are anaesthetised, but sometimes it may have to be inserted while



Above: an intravenous drip

you are awake. The skin is therefore numbed before the arterial line is inserted.

The IV drip allows us to give you your IV anaesthesia drugs.

In lung surgery, if an arterial line is used this will help monitor your blood pressure continuously and take blood samples to measure your oxygen and carbon dioxide levels more precisely during and after surgery.

Your blood pressure can change during anaesthesia and surgery, so the arterial line helps to monitor this and ensure prompt treatment.

After this we give you some oxygen to breathe then use the drip to give you an anaesthetic to put you to sleep.

Once you are anaesthetised

You will usually have a breathing tube put into your mouth and windpipe where it will remain until you wake up after the operation.

For lung surgery, your breathing will be done for you by the ventilator, and only through one lung. This is so that the lung having the operation is not moving while the surgeon tries to operate. Anaesthetists use special breathing tubes to overcome this issue.

For major surgery you are connected to a breathing machine because our medicines prevent you from breathing on your own. The machine can also deliver your anaesthetic to you, to keep you asleep, in gaseous form. Many anaesthetists use Total Intravenous Anaesthesia (where anaesthetic medication is put directly into your vein) to keep you asleep.

Most often you will go to sleep from intravenous medications unless your veins are

awkward to find. In these rare cases, you might be given anaesthetic gas to inhale.

After you are asleep, a local anaesthetic block will be injected to help your pain relief. Your anaesthetist will explain this to you before your operation. This means you will have pain relief in place for the end of your surgery.

We are very careful not to allow local anaesthetic to enter the bloodstream because this can cause problems to the heart and blood circulation. However, occasionally small amounts of local anaesthetic can enter the blood circulation and this causes a drop in blood pressure.

Everything a doctor does can have side effects, but we believe the benefits outweigh the risks and if you have any questions please ask your anaesthetist. Your anaesthetist is skilled in rapidly managing critical and major emergency situations.

Towards the end of your operation, the surgeon will, where possible and necessary, place a paravertebral catheter along and near one of your ribs. This tiny tube is used to give local anaesthetic continuously using a special pump for up to 72 hours if required. At the end of this time, the paravertebral catheter is painlessly and easily pulled out by your attending nurse.

Into Theatre

Your operation happens in the operating theatre. Patients having a bronchoscopy are usually brought straight into the actual operating theatre because the bronchoscopy is performed immediately after you are anaesthetised.



Pictured: An Anaesthetist in full PPE in the Operating Theatre holding a special oxygen delivery device for bronchoscopy with monitoring equipment and the anaesthetic machine in the background

Your anaesthetist uses machines to monitor you closely throughout your operation, and watches over you closely, making sure you are asleep whilst delivering anaesthesia and any treatments to keep you safe throughout.

What Happens After your Operation?

Chest operations are often major, and sometimes there can be complications with the surgery, your breathing, or your blood circulation. Every measure is taken to make things right and the team work together for your safety.

Any problems with pain relief are dealt with in the recovery room. Our aim is to have patients safe and comfortable after surgery.



Recovery Room Nurses and available equipment

When you awaken, you will be transferred to the HDU if you have had a more major operation, or alternatively you will be transferred back to the ward. Where you go depends upon the amount of care you need following your operation. You will usually have a chest drain (between your lung and ribcage) to release any trapped fluids, blood clots around the lung, or air.

Oxygen will be given as required via a facemask or nasally from small plastic tubes below the nose (“nasal spectacles”) or from a high flow system below the nose (which assists those patients who might need extra support due to having reduced lung function before the operation or being overweight).

You will often receive a painkiller from a pump (Patient-Controlled Analgesia or PCA) which you can control yourself by pressing a button when you feel sore. This makes the pump give you morphine or another suitable painkiller tailored to your needs. Tablets and

other medicines are available for pain relief if you do not need the PCA.

Occasionally a patient may need advanced care from the Anaesthetic team in the Intensive Care Unit (ICU) if their blood pressure or breathing is insufficient.



A typical HDU Bed

What are the Complications?

Pain relief is usually excellent, using the paravertebral (where local anaesthetic is

injected to an area of your spine) and PCA system, if you need this. Sometimes a chest drain can lead to shoulder tip pain and this can require special attention, such as the use of heat pads or even pulling the chest drain back a little.

Chest infections can occur even in a clean hospital environment. This risk increases if smoking has affected your lungs. You may then need antibiotics to treat the infection.

Very overweight patients find it more difficult to breathe after surgery. They are at risk of chest infection because their lungs are compressed by the abdomen.

Complications are increased by the patient's underlying medical conditions and diseases. If the lung capacity is reduced before the operation, it will always be further reduced by having an operation but it can recover later.

Complications affecting the heart, kidneys and other organs are more likely if there is

pre-existing disease of those organs, or if you have diabetes. Your anaesthetist will be able to discuss any complications with you so please ask about these.

Delirium is quite common and can last for several days after an operation. This unpleasant condition can be due to many factors and is particularly associated (though not always) with a high alcohol intake and may be caused by alcohol withdrawal so it is important to give an accurate alcohol history, so that we might be more prepared. Delirium is usually temporary.

What happens after HDU?

After going to the HDU, you will usually be transferred back to Ward 102 (perhaps the following day or later, depending upon how well you recover). You will then usually make good progress towards returning home. Physiotherapy and nursing care (as required) will be continued in the ward.

Advice before surgery

Stop smoking- ask the nurses at the clinic to set up an appointment with the Smoking Cessation programme, because this can help prevent chest infection after your surgery.

Get fitter, eat healthily and lose weight if you need to. You can ask the nurses at the outpatient clinic to set up a dietician appointment if you need this.

Exercise more if possible before your operation. Even walking a mile each day can help your recovery.

Do coughing and breathing exercises unless your surgery is because of having an air leak (pneumothorax) in which case excessive coughing might make the leak worse. Seek medical advice about this at the time.

Stop taking any herbal medicines 7 days before surgery. If you are still taking them up to surgery, discuss this with your anaesthetist.

Declare your true alcohol intake, because some patients who regularly take too much alcohol can suffer withdrawal and confusion after surgery. Help is available for stopping alcohol if you have been taking too much, but this should be at least 2 weeks in advance of your surgery.

Most thoracic surgery patients have a good result, as this document explains, but some patients have more risk factors and are more likely to have complications.

This type of surgery is often major, but the help given to you is from doctors, surgeons, nurses and operating department practitioners (ODPs) who are specialised in such care.

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