



Intercostal chest drain insertion

This leaflet is for patients who are to undergo an operation to insert an intercostal chest drain.

What is an intercostal chest drain?

A chest drain is a narrow, plastic tube that is inserted and sits in the space between the lung and the chest wall. This space is lined on both sides by a thin membrane called the pleura and is known as the pleural cavity or pleural space. The drain is inserted between the ribs (intercostal) into this area.

A chest drain is inserted when air, fluid or pus has collected in the pleural space. The end of the chest drain, which is outside the body, is usually attached to a bottle filled with water. The water acts as a one-way seal to prevent air from outside entering the pleural space.

Why do I need a chest drain?

Your doctor will advise you if you need a chest drain.

If air (pneumothorax), fluid (pleural effusion) or pus (empyema) has collected in the pleural space it can cause the lung to stop working normally and cause problems with breathing. The chest drain will allow this air, fluid or pus to leave the body and the lung should be able to re-expand. If the chest drain is inserted for a pleural effusion where the cause is not known, the fluid can be sent for analysis to determine why the fluid is building up.

There are several possible reasons for fluid to build up including:

- Infection, including pneumonia or tuberculosis (TB).
- If you have cancer, cancerous deposits can form in the lining of the lung.
- Inflammatory processes (such as rheumatoid arthritis).
- As a result of processes in other organs, such as heart failure.
- Spontaneous build-up of fluid after heart surgery.

How will the chest drain be inserted?

A chest drain is inserted after being given local anaesthetic, but approximately half an hour before the procedure you may also be given some oral painkillers.

You will be asked to either sit or lie in a comfortable position. The drain is usually placed in the side of the chest below the armpit. Prior to inserting the chest drain the clinician may do an ultrasound scan of the chest to help identify the best site.

Your skin will be cleaned with an antibacterial solution and sterile drapes will be placed on the chest. Local anaesthetic is injected to numb the area- this can 'sting' temporarily but resolves quickly. The clinician will then use a needle to locate fluid or air which ensures the drain is inserted in the correct place. The drain should then be gently eased into the chest which should not be painful but you may feel some pressure or pushing. The drain will be held in place by

stitches and covered by a dressing and will be attached to a drainage bottle.

The procedure usually takes around 30-45 minutes to perform. Your chest drain will be monitored closely by the medical staff to ensure it is working and draining.

Suction

Occasionally, the lung finds it difficult to re-expand. If this happens, the drainage bottle can be attached to a suction unit and this gentle suction can help the lung to re-expand in some cases.

What are the risks of a chest drain being inserted?

The insertion of a chest drain is generally routine and very safe. However, like all medical procedures, there are potential risks. The person doing the procedure will discuss these risks at the time when asking you to sign the consent form. The more common side effects of the procedure are:

- **Chest drain falling out.** Despite the stitches and dressing, chest drains occasionally become dislodged and fall out. The risk of this can be reduced by 'looking after your chest drain' (see below) carefully. If the drain falls out it may need to be replaced.
- **Chest drain blockage.** Sometimes fluid or pus being drained from the chest is thick (viscous) and it can block the drain. Nursing staff will administer chest drain flushes to try and prevent this.
- **Pain.** The local anaesthetic used should mean the procedure is not painful. There can be a "catch" as the needle passes through the lining of the chest wall. Once the local anaesthetic wears off, there may be some discomfort from the chest drain but you will be prescribed regular painkillers to control this
- **Bleeding.** Very rarely during its insertion the chest drain can damage a blood vessel and cause significant bleeding. This affects approximately 1 in 500 patients and may require a further procedure to control the bleeding.
- **Infection.** Sometimes chest drains can become infected although this is also uncommon (approximately 1 in 50). The doctor will be sterile during the procedure, and will thoroughly clean the skin with antiseptic to reduce the risk of infection.
- **Organ puncture.** This is when the lung itself, or another organ such as the liver or spleen, is injured during the procedure to drain fluid or pus. By using ultrasound at the time of insertion means the risk of this happening is extremely low.
- **Re-expansion pulmonary oedema.** This is a rare complication of a collapsed lung re-expanding too quickly when fluid is removed. To prevent this we ensure any fluid is drained slowly.

Looking after your chest drain

There are a few simple instructions to reduce the risk of any problems with the drain:

- You can move and walk around with a chest drain but you must remember to carry the drainage bottle with you and below the level of your waist. If the bottle is lifted above where the drain goes in, fluid from the bottle can flow back into your pleural space.
- If the drainage bottle is on suction this will need to be taken off prior to you moving away from the bedside.
- Do not pull on your chest drain or allow it to get tangled up.

- Do not swing or carry the bottle by the tube.
- Do not leave the ward unless you are accompanied by hospital staff.
- If your chest drain is painful, you feel the tube is leaking, has moved or may be coming out tell your nurse.
- If you experience increasing shortness of breath, tell your nurse.

When will the drain be taken out?

Your doctors will discuss with you the approximate length of time your drain will need to stay in. This will vary between one and several days depending on why the drain was inserted and how well things progress while it is in. While the drain is in place you will need to remain an inpatient. In some cases, prior to removing the drain the doctor may want to perform a procedure called 'talc pleurodesis' to try to prevent the fluid or air coming back, but they will discuss this with you in more detail if this is the case.

Removing the chest drain is very straightforward and will be done by your nurse or doctor. The stitches and dressings are removed and the drain gently withdrawn from the chest. After removal, a stitch is occasionally inserted. This can be removed after five to seven days.

Following removal of the chest drain, if you get any pain that is worsening and not controlled by simple painkillers, or increasing breathlessness, please tell your nurse.

Preparing for the procedure

You will need to have some blood tests before your drain insertion to ensure you are not at an increased risk of bleeding.

Anticoagulation

If you are on blood thinning medications, the doctor who arranged your procedure or the pleural nurse should have given you specific instructions about this:

- i) If you are taking Clopidogrel, Prasugrel or Ticagrelor, you should stop this 7 days before the procedure
- ii) If you are using Tinzaparin injections, this should NOT be taken the day before the procedure
- iii) If you are taking Warfarin, you will either be advised to stop a week prior with an INR blood test the day before the procedure OR if you are converted from Warfarin to Tinzaparin injections temporarily, you will have both an INR test AND you must not take the Tinzaparin injections the day before the procedure
- iv) If you are taking Apixaban, Rivaroxaban, Edoxaban or Dabigatran, you must not take the tablets for 48 hours before

You can eat and drink as normal for this procedure and should also take your regular medications unless specifically instructed by your team. If you have any questions about the procedure please speak to your team.

Contact information

If you are experiencing any problems then please contact:

- Pleural Service answer phone – 07799 072517 (Mon-Fri 9am-5pm, excluding bank holidays) or email rbft.pleuralservice-refs@nhs.net
- Kennet & Loddon Unit – 0118 322 7491 (Mon-Fri 9am-5pm)
- The Department of Respiratory Medicine – 0118 322 8296 (Mon-Fri 8am to 5pm)
- For **urgent** issues out of hours, contact NHS 111 for advice

To find out more about our Trust visit www.royalberkshire.nhs.uk

Please ask if you need this information in another language or format.

Dr Lynne Curry, Consultant Physician, RBFT Department of Respiratory Medicine
Reviewed: October 2025. Next review due: October 2027.