

Patient information from BMJ

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Chest drain insertion

A chest drain is simply a tube that helps to remove air or fluid that has gathered in your chest cavity, between your lungs and your ribs. It's a common procedure that's used to help people with a number of conditions.

There is more than one type of chest drain. Here, we look at the one that's most commonly used in non-emergency situations.

What is a chest drain?

The area between your lungs and your ribcage is called the pleural space. It's usually filled with a small amount of fluid. But sometimes it can fill with too much fluid (for example, from an infection) or with air, if there is damage to one of your lungs.

This makes it harder for you to breathe normally. So the air or fluid needs to be removed quickly. This is done with a chest drain.

The drain is a flexible tube that is passed between two of your ribs. Any air in the pleural space can then escape easily, and any fluid can be drained away.

Why might I need a chest drain?

A chest drain is needed to remove either air or fluid from the pleural space.

Air in the pleural space is caused by what doctors call a **pneumothorax** (collapsed lung). This means that there's a tear in one of your lungs that is letting air into the pleural space.

A build-up of fluid in the pleural space is called **pleural effusion**. It can be caused by many things, including:

- a lung infection such as pneumonia or tuberculosis
- heart failure
- rheumatoid arthritis
- cirrhosis of the liver
- kidney failure
- systemic lupus erythematosus (SLE), and

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- some cancers.

What will happen?

Before the procedure

Your doctor will check what medications, if any, you are taking.

If you are taking medication to stop your blood clotting too easily, you might need to take medicine to temporarily make your blood clot normally. This is to stop you bleeding too easily.

Your doctor might also do a scan, such as an ultrasound, to help guide where the drain should be placed.

During the procedure

You lie on your back and put your hand (on the side that needs the chest drain) behind your head. The doctor then has a good view of your ribs and chest.

Your doctor will then:

- clean your chest with antiseptic
- place a sheet over your chest. The sheet will have a section cut out of it, so that the doctor can focus on where to place the drain
- mark the point where the drain is going to go, between two of your ribs
- give you an injection of local anaesthetic where the drain is going to go, to minimise pain during the procedure
- wait a few minutes for the anaesthetic to work.

That's the first part of the procedure. The doctor will now:

- give you another injection, with what's called an introducer needle. This needle is inserted until it reaches the pleural space
- disconnect the introducer needle from the syringe that was used to insert it
- pass a thin guide wire through the needle into the pleural space, and then remove the needle. The guide wire will be used to guide the chest drain into the correct place
- make a small cut to enlarge the tiny hole where the needle and guide wire went into your chest
- use a small tube called a dilator to gently stretch the cut into a small circular opening
- thread the chest drain over the guide wire and pass it into your chest until it reaches the pleural space
- remove the guide wire
- attach a drainage bottle to the drain, and secure the drain to your skin with an adhesive dressing. Any fluid or air in the pleural space can now escape.

The doctor will then order a scan to check that the drain is in the right place.

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What are the risks?

Inserting a chest drain can be a tricky procedure, and it should always be done by someone with the right training and experience.

Even so, complications can happen, including:

- pain when the drain is inserted. Even with a local anaesthetic, a chest drain can sometimes be painful
- the drain being placed incorrectly. If this happens, the doctor will need to do repeat some or all of the procedure
- damage to nearby organs, such as the liver, spleen, heart, or oesophagus
- damage to blood vessels
- air from the pleural space getting into other tissues, such as under the skin. This isn't usually dangerous
- the chest drain becoming blocked and having to be reinserted
- damage to the lung, causing a pneumothorax (collapsed lung)
- creation of what's called a fistula - a new passage for fluid to drain through, in a place where it shouldn't
- infection.

What can I expect afterwards?

A doctor or nurse will need to regularly check how the drain is doing its job.

The drain will need to stay in place for as long as it's needed, which is usually at least 24 hours. After it's removed you'll need to have an x-ray to check for any complications.

For many people, the chest drain works well to remove fluid or air from the pleural space. But if the drain reveals a large volume of air or fluid, a drain alone is probably not enough to deal with the problem, and you might need chest surgery.

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