What is a pleural effusion?
Normally in good health, the lungs sit within the rib cage and fit snugly. The lung and the inside of the rib cage are both covered by a thin membrane or film called the pleura. The space between the two layers of pleura is called the pleural cavity or pleural space. Usually the pleural space contains about two teaspoons of fluid. This helps to lubricate the lung, so that it can slide easily within the rib cage if, for example, you take a deep breath, sneeze, or cough.

Sometimes a larger quantity of fluid accumulates in the pleural space and this is known as a pleural effusion.

What are the possible causes of a pleural effusion?
A pleural effusion can occur because there is inflammation in the pleural space or as part of an overall problem with fluid retention within the body. When it is due to inflammation or irritation it can be caused by a number of different illnesses: for example, an infection in the lung, blood clots in the lung, inflammatory diseases like rheumatoid arthritis, or certain forms of cancer affecting the pleural space. In each of these circumstances extra fluid builds up within the pleural space and leads to a pleural effusion. When a pleural effusion is due to fluid retention, it is treated as part of the fluid retention and not as a problem in its own right.

What are the symptoms?
The symptoms of a pleural effusion may be shortness of breath, a dry cough or chest pain. The chest pain is usually stabbing or sharp in nature, in which case it may be described by a doctor as pleurisy or pleuritic chest pain.
Breathlessness is caused by fluid pressing on the lung, preventing it from expanding fully, so that you are unable to take a deep breath. This particularly can become a problem if you are trying to exert yourself.

What will be done about my pleural effusion?
There are three main steps to looking after someone who has a pleural effusion:

1. The first is to try to establish the reason why the fluid has built up in the first place. This is important because it influences any future treatment you may need.

2. The second step is to drain off the fluid, so that it no longer compresses your lung. Draining off the fluid will improve most feelings of breathlessness.

However, if the fluid is due to mesothelioma, there could be breathlessness with or without an effusion. Finally, after draining the fluid, the doctors and nurses looking after you will want to try to make sure that the fluid does not come back.

Finding the cause of a pleural effusion
There are two main ways for finding the cause of a pleural effusion.

1. Take a sample of fluid. Usually an ultrasound scan of your chest will be performed to show the doctor the best place to take this sample. This is a painless procedure in which a probe covered with jelly is placed on the skin of the chest and the doctor is able to look through the rib cage at any fluid in the chest. The doctor will then pass a thin needle between the ribs to draw off a small sample of this fluid (about 3 or 4 teaspoons).

2. Perform a pleural biopsy. Often a fluid sample alone does not give a definitive answer about the cause of a pleural effusion. If this is the case your doctor will suggest taking a sample of the lining of the inside of the rib cage. Taking such a sample is called a pleural biopsy.

Different sorts of pleural biopsy
There are a number of ways in which a small sample of tissue can be taken from the membrane lining the inside of the rib cage.

- One way is for a doctor to pass a needle, using a CT scan to guide it, into a thickened part of the membrane and take a sample of the pleura. This is called a CT-guided pleural biopsy.

- Another way of taking a sample from the pleura is called thoracoscopy. Thoracoscopy can be performed in two ways - Local Anaesthetic Thoracoscopy (LAT) and Video-Assisted Thoracoscopic Surgery (VATS). Both of these involve the doctor looking inside the rib cage with a thin telescope. LAT is done as its name suggests, under local anaesthetic using a sedative only. For a VATS procedure a general anaesthetic is used.

How can my pleural effusion be treated?
Sometimes a pleural effusion is treated by addressing the underlying cause, for example, by thinning the blood if it is caused by a blood clot. At other times the fluid can continue to be a problem and it has to be drained.

The treatment of a pleural effusion has two main aims. The first is to remove as much of the fluid as possible to enable the lung to re-expand. The second is to try to prevent the fluid from coming back again. Usually an ultrasound scan of your chest will be performed first to find the place where most of the fluid has accumulated, (see “Finding the cause of a pleural effusion”).
The doctor will then pass a thin tube between the ribs under local anaesthetic. This tube is called a chest drain. The chest drain is connected to a bottle to collect the fluid. It may take one or two days for the fluid to drain out.

**How can the fluid be prevented from coming back again?**

Once your doctor has decided that all the fluid has been drained and the lung has fully re-expanded, a procedure is carried out to try to stick the lung to the inside of the rib cage, to prevent fluid from being able to build up again. This is called a pleurodesis.

Usually a pleurodesis is performed by injecting a mixture of sterile talc and a solution of saline into the pleural space via the chest drain. Talc causes some irritation to the pleura, which makes the lung stick to the rib cage so preventing fluid from reaccumulating in the pleural space. You may feel flu like symptoms for a few days after the talc has been put in. This is quite normal.

Sometimes the pleurodesis can be carried out at the time of the VATS or LAT.

**What if the fluid comes back?**

If the fluid reaccumulates your doctor may want to try the pleurodesis again. Another option is to consider a special sort of chest drain called a indwelling pleural catheter has been used to help to control the fluid.

**What is a indwelling pleural catheter?**

A small tube designed to drain fluid from around your lungs easily and painlessly whenever it is needed. It avoids the need for repeated injections and chest tubes every time the fluid needs to be drained. The drainage can be performed either by you on your own or with the help of a nurse, whichever is easier for you. The IPC is a soft flexible tube that is thinner than a pencil which remains inside the chest and passes out through the skin. There is a valve on the outer end of the IPC to prevent fluid leaking out (see separate information leaflet).