

# Complex Chest Injuries

## Fractures of the Ribs with either Pneumothorax or Haemothorax

This information was compiled by  
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September 2017



The human rib cage is of the part respiratory (breathing) system. It covers the chest (or thoracic) cavity. The rib cage is flexible & moves up & down when you are using your breathing muscles.

One of the roles of the rib cage is to protect the organs underneath - lungs, heart, & large blood vessels. Other organs under the rib cage are the liver, gallbladder, spleen, kidneys, stomach, pancreas & parts of the bowel. It also provides a strong frame onto which the muscles of the shoulder, chest, upper abdomen & back, can attach.

The bones of the rib cage are the **sternum (breast bone)**, the 12 **thoracic spinal bones (vertebrae)** & 12 pairs of flat curved bones called **ribs**. The ribs are numbered 1 to 12, from the top to the bottom of the chest.

At the back, all the ribs are attached to the spine with ligaments, & fit snugly against the spinal bones. In the front, cartilage tissue joins the upper ribs, numbers 1 - 7, to the sternum. Ribs numbered 8-12, are more loosely attached, & ribs 11 & 12, are not attached to anything at the front.

All ribs are attached to each other with cartilage, & in between each rib are muscles, nerves & a blood supply.

The **sternum** (or breast bone) is a flat bone between the ribs, just below the throat area. The first 7 ribs on both sides of the chest at the front are attached to the sternum.

## People involved in your recovery

**Nursing & Medical staff** – will monitor your progress with regular checking of your vital signs, pain levels, & arrange any investigations (x-rays &/or blood tests). They will also maintain treatments, & be there for you & your family, throughout your stay.

**Trauma Nurse Specialist** - to ensure co-ordinated care is achieved, especially if other injuries are present. To give you extra advice while in hospital & on discharge, & discuss ACC processes, if needed.

**Acute Pain Service** – will ensure that your pain is within an acceptable coping level for you & will prescribe the correct pain relief to allow you to breathe, cough & mobilise more easily.

**Physiotherapist** – will assist you with deep breathing & coughing exercises to prevent complications such as chest infections.

**Social Worker** – available for support, counselling & arranging community services should you require them.

## Advice for AFTER discharge

### REST..... ACTIVITY.....REST.....EXERCISE

Discomfort from the injury will continue for some weeks, after discharge, but will steadily become less & less. You may feel tired & slightly more sore, when you first go home. This is normal, as you will be more active than you were resting in hospital.

#### Some suggestions::

- plan a rest time during the day.
- keep doing the deep breathing & coughing exercises.
- walking each day is the best way to increase your breathing ability & prevent complications.
- use extra pillows for comfort when sleeping.
- try to avoid sudden movements: & lifting or pulling objects

SPORTS – NO high impact or physically active sports or activities for at least 3 months.

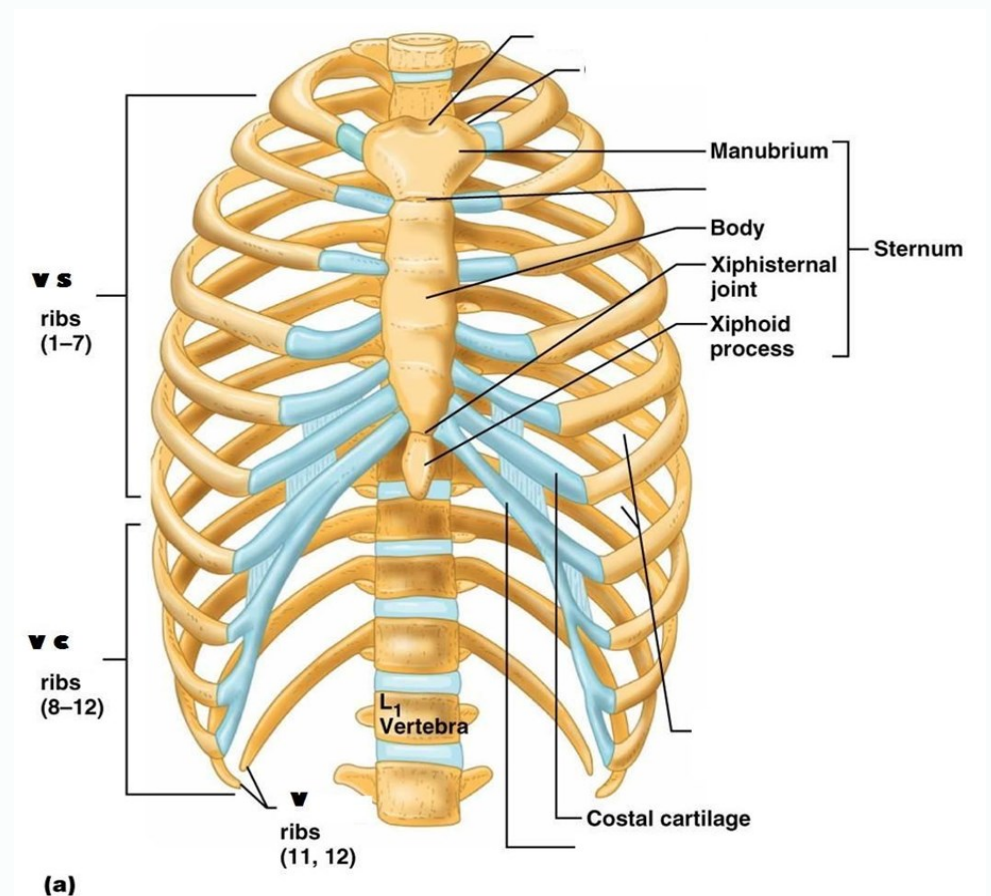
DRIVING THE CAR- we advise you NOT to drive for at least 3 weeks after your injury. Your strength & movement may not be up to coping with any defensive driving or emergency stops.

AIRLINE FLIGHTS – Wait until at least 2 weeks after the pneumothorax is fully healed. Please check your airline's website for further details.

SEE YOUR GP - within 2 weeks of discharge. They will monitor your progress, & will assist you with your return to work, along with ACC.

Contact your GP as soon as possible if you have increasing pain, or you feel more & more unwell.

**If you get new shortness of breath, have rapid shallow breathing, chest pain & dizziness – Dial 111 for an Ambulance.**



**Fractured ribs** are a break in one or more of the rib bones making up the rib cage. Sometimes there are many breaks in the same rib or there may be many breaks in several ribs.

Fractures usually occur from direct blows such as: road crashes, falls, assault, or crush injuries. In people aged over 65, a fall is the most common cause. Broken ribs & sternum will most often heal without an operation.

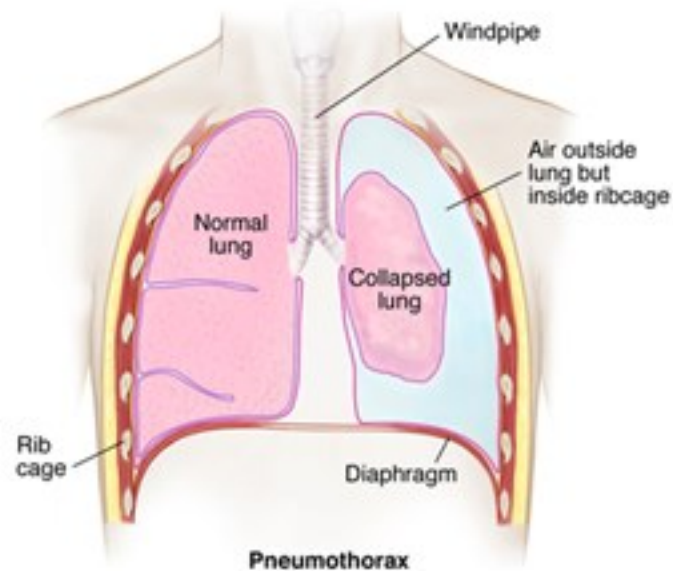
A chest x-ray or CT scan will usually identify rib or sternum fractures. Sometimes symptoms are present, but no fractures are seen. These are called clinical rib fractures.

The sternum can be either cracked or broken by a blow to the chest eg steering wheel, car air bags or against a seat belt.

## Pneumothorax

This is the medical term for a collapsed lung. It happens when air enters the space around your lungs (pleural space). Air can find its way into the pleural space when there is an opening in your lungs protective lining from a fractured rib causing a tear in your lung, or from a wound from outside the chest, eg a stab wound.

A pneumothorax interferes with the pressure that keeps your lungs inflated when you breathe in. It can lower your oxygen levels & your ability to breathe properly.



**When to go home** - agreement on discharge between you & your medical team will be when:

- A chest x-ray shows that the pneumothorax or haemothorax has healed
- You are on a stable amount of pain relieving medicines taken by mouth, to be safely taken at home.
- You are mostly independent with personal hygiene, eg showering, bathroom,
- You are moving well - getting in & out of bed comfortably, & walking short distances regularly on the ward.

AND.....there are no other injuries that still need treatment



## Pain control

When you have fractured ribs or have a chest drain in place, you will not be completely pain free. The aim is to be as comfortable as possible while you recover. In hospital you will be given a variety of medications to help reduce & control the pain.

These are some examples:

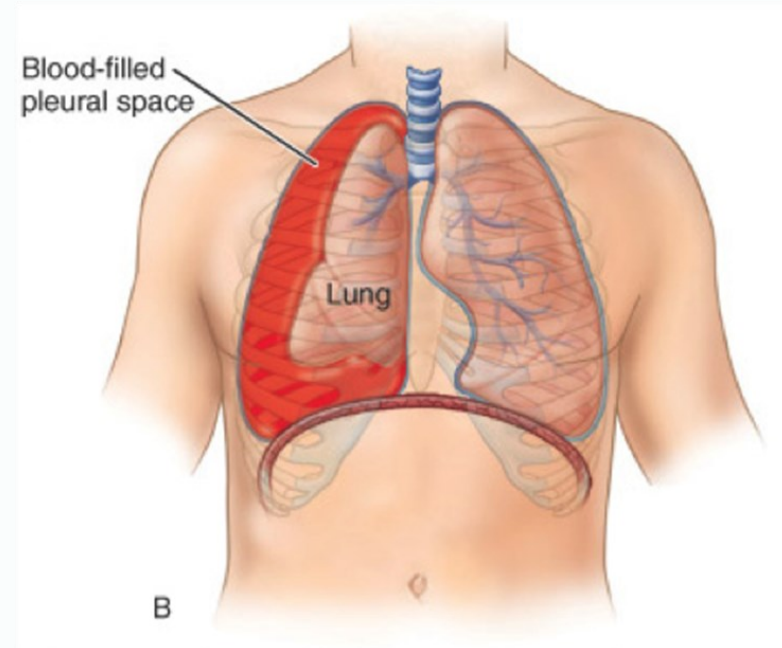
- Regular medication by mouth. Taken regularly, these medicines form a background level of pain relief.
- Extra medication by mouth, as you need it. Doses can be adjusted to your needs.
- A pain pump called a P.C.A—Patient controlled analgesia. This is intravenous (I.V) medication controlled the patient. You decide when & how often you need to use this.
- Local anaesthetic given continuously through a very fine tube which is placed under the skin, very close to the area where to ribs are broken, to numb the nerve ends. This is called a regional block.
- Epidural infusion. This is local anaesthetic given continuously through a very fine tube in your back near the spinal nerves. The local anaesthetic flows near your spinal nerve ends to numb them & help to reduce the pain.

A combination of these may be used, or given on their own.

It will depend which suits you best.

## Haemothorax

This is the medical term for blood in the pleural space. Mostly, this is from rib fractures causing a lung tear (laceration), but it may also be from a blow to the chest.eg car crash. The bleeding usually stops on its own. This blood interferes with normal breathing by limiting how much the lung can stretch to take in a deep breath.



## Haemo-pneumothorax

Some injuries to the lung & ribs cause both air & blood to be inside the pleural space (around your lungs).

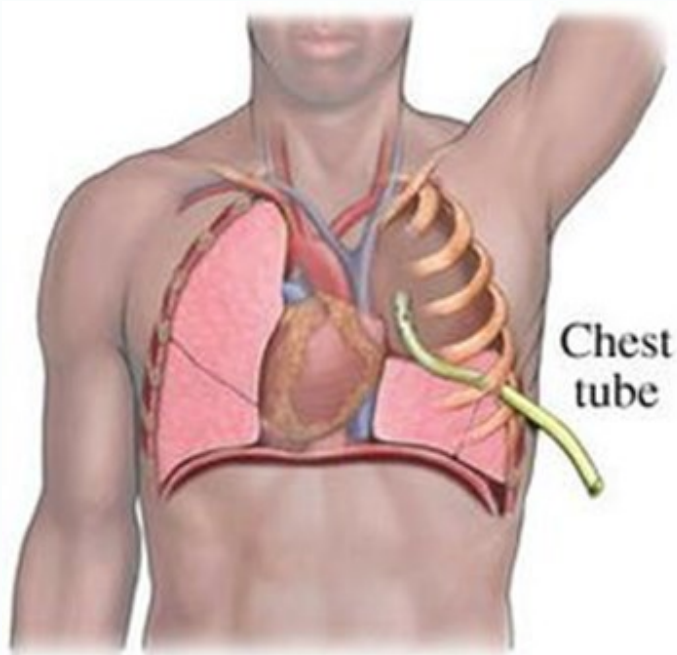
## Diagnosis

A pneumothorax or haemothorax with fractured ribs is identified with a chest x-ray or CT scan of the chest.

## Treatment

There are several immediate treatments you may require:

1. A chest drain: This is a tube inserted through your chest wall into the pleural space of the affected lung. The drain is stitched in place & attached to a drainage tube & bottle. It allows any air or blood to drain out.
2. Oxygen: This is given till your oxygen levels improve
3. Pain relief: Medicines are given by tablets or IV, to help you to be as comfortable as possible. See more information on this later.
4. X-rays: You will have a chest x-ray before & after the drain has been put in. Another x-ray will be done when the amount of blood or air appears to have slowed, to see if the drain can be removed. This may take up to several days.



Other treatment which *may* be needed:

Heart monitoring: This is may be used if you have broken your sternum & have the possibility of a heart muscle bruise (contusion) or have a blood clot (haematoma) behind the broken area This is so any abnormal heart beats can be picked up & treated early, should they occur.

Rib Plating: In some patients with more severely broken ribs, where many broken ribs interfere with breathing & control of pain, a repair of the rib bones can be done. This procedure will be discussed with you, if this is the best option for your recovery.

Other goals for your treatment are to be sufficiently pain-free so that you can cough, deep breathe & move comfortably & to help prevent any complications.

Chest infections are avoidable — if you mobilise in the early stages of your recovery & work with the physiotherapist.

The ability to move & get mobile is very important. Getting out of bed & walking as soon as possible is vital. Your ability to do this may also depend on whether other injuries are present or not.

This goal is achieved together by you & your hospital team by having **regular pain relief**, medical & nursing care, & physiotherapist help.