



Respiratory Health

The respiratory system

The act of breathing in, taking in oxygen from the air, and breathing out air containing carbon dioxide, is called respiration. The major components of the respiratory (breathing) system are the:

- Nose
- Mouth
- Pharynx (voice box)
- Trachea (windpipe)
- Bronchi
- Lungs, including bronchioles and alveoli.

Air enters the body through your mouth. The mouth and nose clean the air bringing it to right wetness and temperature levels. The air then enters the windpipe (trachea) and flows through two large air tubes (bronchi) to the lungs. In the lungs are tiny air sacs, the alveoli, which are surrounded by blood vessels. The blood in these vessels takes up oxygen, and gives up carbon dioxide. In breathing out, the air passes back through the same passages.

How do I breathe?

Most of the work to get air in and out of the lungs is done by the diaphragm. This is a sheet of muscles that separates your chest from your abdomen. Your lungs are sealed in an airtight cavity. When your diaphragm moves down, this airtight cavity expands. When the diaphragm relaxes, it lets air flow back out of the lungs. Breathing in ('inspiration') requires quite a lot of effort, and uses:

- **The diaphragm**
(the main muscle for breathing)
- **Intercostal muscles**
(the muscles in between your ribs)
- **Accessory muscles**
(the muscles in your neck and shoulders)
- **Your abdominal muscles**

When you breathe out (called 'expiration') all your breathing muscles relax and compress the air out of your lungs.

How does having a spinal injury affect your breathing?

The nerves which supply your breathing muscles come from the spinal cord. Therefore, the level

of your injury will determine how your breathing is affected.

Tetraplegia (quadriplegia)

- If you have a very high injury in your neck (C1 – C3) all the muscles that you need to breathe may be paralysed. This means that you may need a ventilator (machine) to breathe.
- If your injury is lower in the neck (C4 – C7) your diaphragm will be working and so you should be able to breathe on your own. However, other breathing muscles may be paralysed and you may need assistance to breathe. You will need help to cough to clear mucus (phlegm) and may get chest infections from time to time.

Paraplegia

- If your injury is between T1 & T6 some of your intercostal and all of your abdominal muscles may be paralysed and so your breathing may still not be as good as before. You may still need assistance to cough well.
- An injury at T6 – T12 means that there will be more intercostal and abdominal muscles working and so your breathing will be better.
- If your injury is below T12 all of your breathing muscles will be working and your breathing should be close to as good as it was before your injury.

How do I keep my lungs healthy?

- By not smoking
- Do breathing exercises on a regular basis
- Have someone help you to cough regularly
- Try and stay away from known pollutants (eg. smoke, dust, chemicals, cold and flu germs)
- Take extra care if you get a cold or sore throat
- Try not to become overweight
(see the fact sheet on 'Healthy Eating')
- Drink plenty of fluids
- Have an annual flu shot.

People with SCI above T6 don't have the ability to cough and are at risk of an ordinary cold or flu turning into a serious chest infection, even pneumonia; therefore prevention is the best medicine.

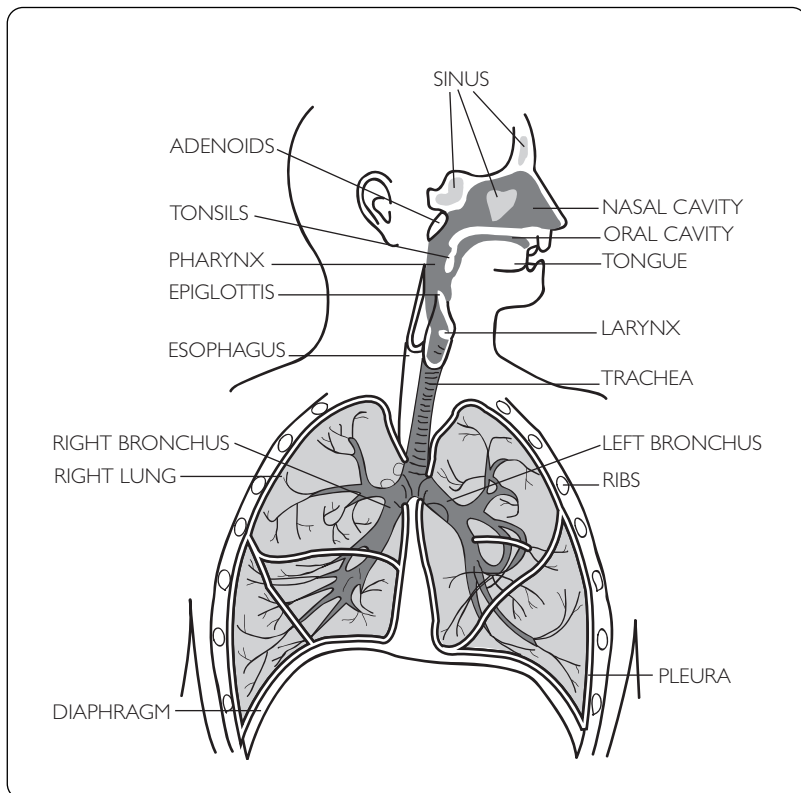


What is normal breathing for me?

A regular pattern of breathing for a person is usually:

- Regular breathing, in and out.
- Both sides of the chest rising at the same time and in the same way
- No major pausing between breaths
- About 12-20 breaths per minute are normal for an adult, with a few extra deep breaths and sighs.

THE RESPIRATORY SYSTEM ↓



- With a spinal cord injury, depending on which muscles are affected you may find that your chest does not rise and fall as it used to – only the rise and fall of your abdomen may be normal for you.

What should I watch out for?

The following signs may mean that you are not getting enough air into your lungs:

- Shortness of breath
- Quiet speech or difficulty speaking for extended periods
- A faster than normal breathing rate
- Flaring of your nostrils
- Tension in the muscles of your face and neck
- Tiredness or daytime sleepiness
- Restlessness, irritability or confusion
- Snoring
- Morning headache
- A cough that produces a lot of mucus (phlegm)
- Persistent cough that doesn't produce any mucus
- Blood in your phlegm
- Phlegm that is a different colour to normal
- Fever
- A fast pulse or heart rate
- Pain when you breathe in
- Wheezing or noisy breathing.

If you experience any of these symptoms you should immediately consult your local doctor



Further information

- Contact ParaQuad NSW
Freecall: **1800 424 096** (outside metropolitan Sydney)
Clinical Services Intake/Information Officer
..... **02 8741 5674**
- Your physiotherapist
- Your local community nurse
- Your local doctor
- A member of the Spinal Outreach Service (SOS)
..... **02 9334 0400**

For information regarding stopping smoking:

- Your local doctor
- Quitline **131 848**

For information regarding your breathing:

- Your local doctor

Spinal Injuries Units – NSW

Metropolitan

- Prince of Wales Hospital:
 - Acute care **02 9382 4115**
 - Rehabilitation **02 9382 5504**
- Royal North Shore **02 9926 8740**
- Moorong Spinal Unit
Royal Rehabilitation Centre **02 9808 9269**

Regional

- Hunter Rehabilitation Service
621-623 Hunter Street
Newcastle NSW 2302 **02 4925 7888**
- Port Kembla Hospital Spinal Unit
Rehabilitation Age and Extended Care
89 Cowper Street, Warrawong NSW 2502
CNC **02 4223 8216**