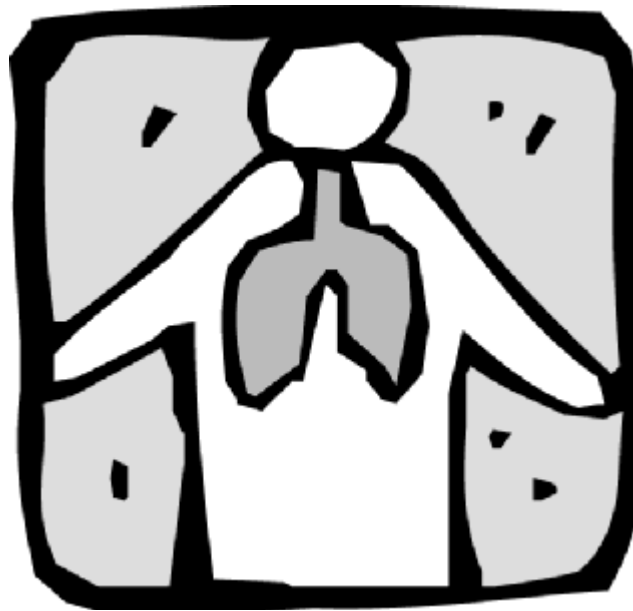


My lungs, me and BMT



**Keeping your lungs healthy when you have
a bone marrow transplant.**

Reading this booklet can help you learn how to prevent infections in your lungs, during and after a bone marrow transplant.

Inside this booklet you will find information about these topics:

- The role of the physiotherapist
- Why am I at risk of getting a lung infection?
- How can I prevent getting a lung infection?
- Learning about breathing exercises
- Learning about your lungs
- When to call the doctor

The role of the physiotherapist

The physiotherapist on the Bone Marrow Transplant Team can help you keep your lungs as healthy as possible, by:

- listening to your lungs regularly
- helping you learn and practice breathing exercises to help prevent lung infections

If you have questions, or would like more information please talk with your physiotherapist:

Name _____

Phone _____

Why am I at risk of getting a lung infection?

Everything we come into contact with in daily life can be a source of infection. Germs (bacteria, viruses and fungi) that we come into contact with usually do not cause a problem for healthy people. The body's immune system works to prevent infections by destroying germs when they enter the body.

For a bone marrow transplant (BMT) patient, it's a different story. The chemotherapy and/or radiation you receive before a BMT cannot tell the difference between cancer cells and normal cells. It not only attacks the cancer or diseased bone marrow, but it also attacks your immune system.

This causes the white blood cells, which fight infection, to fall to a very low level. Until the transplanted stem cells engraft and make new white blood cells, you are at risk of getting infections which can be life threatening.

The first 2 to 4 weeks after the transplant is a critical time as the transplanted stem cells move to the large bones and begin making new white blood cells.

Although the risk of infection decreases as the transplanted marrow makes new white blood cells, most patients remain at risk for 6 months to 1 year after the transplant. This may be even longer for patients with complications.

During your stay in hospital, you may feel weak and tired. Some days you probably don't have the energy to get out of bed and move around. When your activity level is this low, you tend to take slow and shallow breaths. As a result, air does not reach the lower parts (lobes) of your lungs.

Shallow breathing along with a weakened immune system could allow secretions to collect in your lungs. This may cause infections such as pneumonia.

Review:

How a lung infection could develop

chemotherapy or radiation weakens the immune system



you may feel weak and tired, and become less active



your breathing can become shallow



air does not get to the lower lobes of the lungs



secretions can collect in your lungs



a lung infection can develop

How can I prevent getting a lung infection?

You can help prevent a lung infection by:

- doing breathing exercises
- spending as little time in bed as possible

The physiotherapist will help you learn how to do breathing exercises. During visits, the physiotherapist may check your lungs for any sign of infection and answer any questions you may have.

Learning about breathing exercises

Breathing exercises will help you to fully expand your lungs and prevent infection.

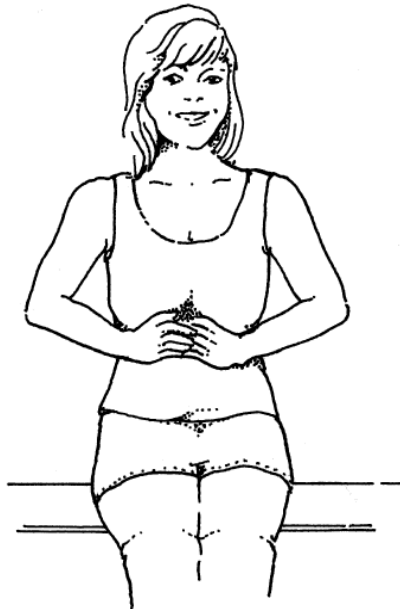
Breathing exercises include:

1. Deep breathing using your diaphragm muscle.
2. Deep breathing while stretching your chest muscles.
3. Deep breathing while stretching your shoulders.

Do **ONE** of these exercises every hour that you are awake. Stop and rest between repetitions if you feel dizzy.

Deep breathing using your diaphragm muscle

1. Sit on the edge of your bed, or lie on your back with your knees bent.
2. Place your hands on your belly.
3. Breathe in slowly through your nose as deeply as possible. Your belly should rise and press against your hands.
4. Optional: You may hold this breath for 3 to 5 seconds to fully expand the bottom of your lungs.
5. Breathe out through your mouth slowly with your lips “pursed”, like you are about to whistle.
6. Repeat 10 times.



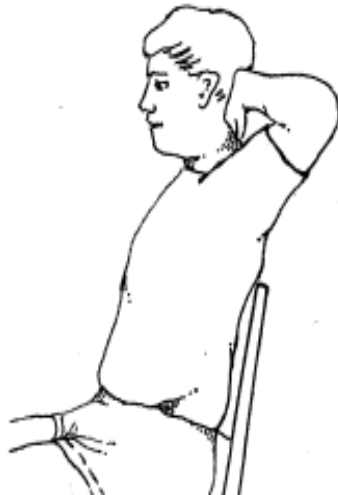
Deep breathing while stretching your chest muscle

STOP if you feel pain at your catheter site

1. Sit at the edge of your bed.
2. Place your hands behind your head, as shown in the picture.
3. Inhale slowly as you move your elbows back and slightly arch your back.

Optional: You may hold this breath for 3 to 5 seconds to fully expand your lungs.

4. As you exhale, move your elbows back to the starting position (step 2).
5. Repeat 10 times.



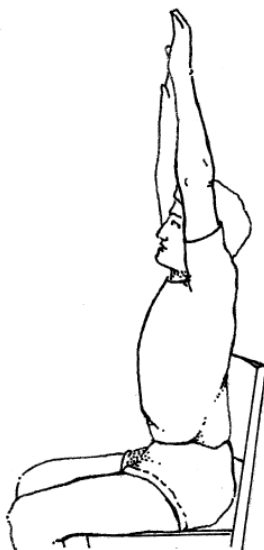
Deep breathing while stretching your shoulders

STOP if you feel pain at your catheter site.

1. Sit at the edge of your bed.
2. Rest your arms at the sides of your body or hold your hands together in your lap.
3. Inhale slowly as you reach both arms over your head, as shown in the picture.

Optional: You may hold this breath for 3 to 5 seconds to fully expand your lungs.

4. As you exhale, bring your arms back down to the starting position (Step 2).
5. Repeat 10 times.

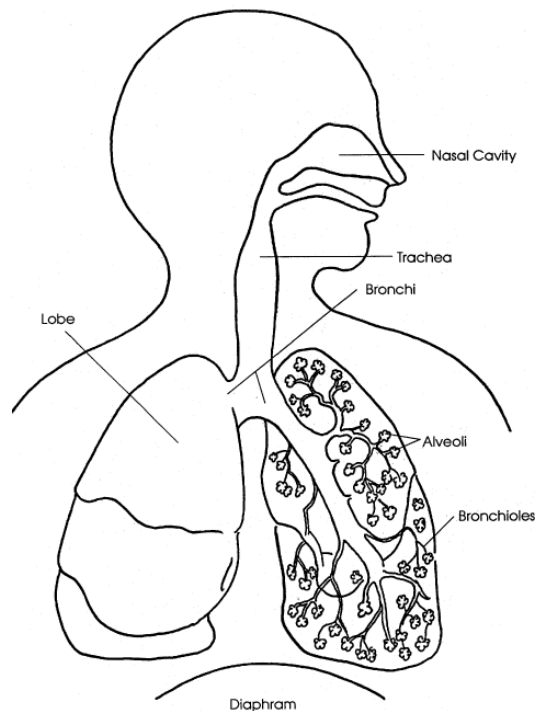


Learning about your lungs

The muscles of the rib cage, especially the large muscle called the diaphragm are used for breathing. When you breathe in, your diaphragm contracts or tightens and flattens, allowing air to be sucked into the lungs. When the diaphragm and the rib cage muscles relax, air is released.

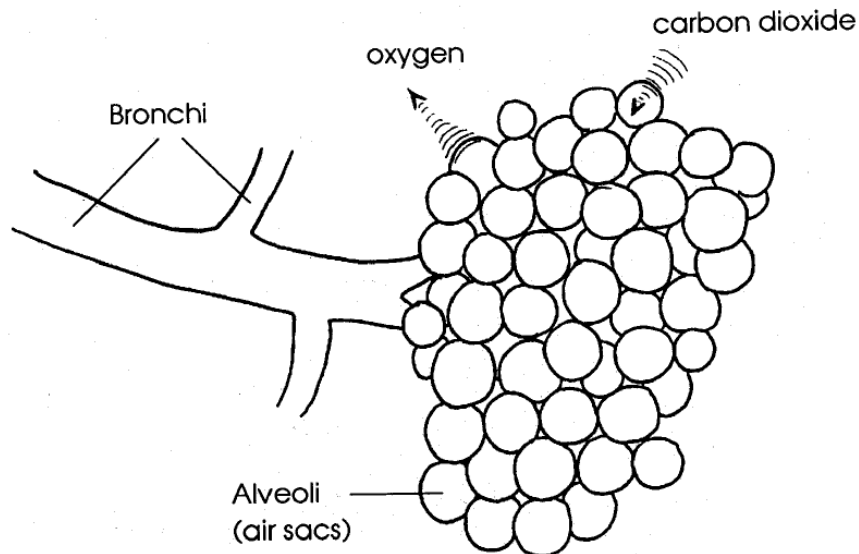
Air, containing the oxygen your body needs, is inhaled through the mouth and nose. The mucous membranes in our mouth and nose warm and moisten the air, as well as trap particles such as dust.

Air passes through the throat into the trachea or windpipe. The trachea divides into left and right bronchi which are like branches. Like a branch, each bronchus divides again and again, becoming narrower and narrower.



The smallest airways end in alveoli. These are small, thin sacs of air arranged in clusters like bunches of balloons. When you breathe in, the “balloons” expand as air rushes in. When you breathe out, the “balloons” relax and air moves out of the lungs.

Tiny blood vessels surround each of the 300 million alveoli in the lungs. Oxygen moves through the walls of the air sacs and is picked up by the blood to be carried to the rest of the body. Carbon dioxide and other waste gases pass into the air sacs from the blood to be breathed out.



When to call the doctor ...

Call your doctor right away if you notice these signs of infection

- fever, a temperature 38⁰ C (100⁰ F) or higher
- shaking or chills
- cough
- shortness of breath

Good luck with your bone marrow transplant. I look forward to visiting you. Please feel free to ask me any questions if you are not sure about your exercises.

Keep smiling!

Your Physiotherapist