

△ GENERAL INFORMATION

Dramatic improvements have been made in modern surgery so that it is now possible to perform operations that were thought to be impossible not many years ago. Despite all this progress, it is still difficult to keep the lungs clear after an operation. In fact, the lungs are the most common cause of problems in the surgical patient.

The windpipe (*trachea*) is about as big around as a dust mop handle. As the trachea goes down into the lungs, it divides into smaller and smaller branches—eventually smaller than the lead in a pencil—until these branches reach the air sacs (the *alveoli*). The alveoli are lined by a thin membrane: on one side of this membrane is air and on the other side is the blood flowing in the capillaries. Through this remarkable membrane (a *semipermeable membrane*, because air but not blood can pass across it) fresh air that you breathe in can get to the blood and bad air (CO₂) in the blood can be removed as you exhale. This happens with every breath.

There are two properties of the alveoli (and so of the lung) that are interesting:

- The lung is elastic like a balloon. It likes to collapse, but inside the chest it cannot do that. There actually is a vacuum between the lung and the chest wall. As the chest expands, the lungs must follow the chest wall and all the alveoli open up. However, if the chest does not expand enough, some of the alveoli stay collapsed. Remember this point.
- The air tubes of the lungs are lined by microscopic hairs (called *cilia*) that are always waving in one direction—toward the outside. Although they are only microscopic, all of them together help move mucus (which is normal) from inside the lungs to the

outside. This helps keep the lungs clean of dust and other particles we breathe in. Otherwise, the mucus would plug up these tiny tubes. If the tubes become blocked, the lung tissue (being elastic) collapses. This condition is called *atelectasis*. The collapsed lung tissue is spongy to soggy and has bacteria in it that got there from the air we breathe. It is the perfect place and condition for the start of an infection that can lead to pneumonia.

Even though they should, patients don't want to move or breathe deeply after an operation because it hurts. They surely don't like to cough because that hurts even more. One important reason for giving you pain medicine is to lessen the pain with coughing.

You will be given an incentive spirometer. Breathing into this as you are instructed will help you expand your lungs and reduce the risk of developing pneumonia.

ABOUT SMOKING

Smoking does several things to the lungs:

- It stimulates them to make much more mucus. Any steady smoker knows this.
- Also, it stuns (and sometimes cripples or even destroys) the tiny hairs. This prevents them from pushing out the mucus. In addition, the irritation from the anesthetic causes more mucus to form.
- *Not smoking* for 1 week can make a big difference.
- It lets the stunned cilia recover and work better.
- It means that less mucus is likely to be present to plug up your lungs.

So, *stop smoking* at least 1 week before your operation. This will help reduce the risk of developing a serious lung infection following your operation.