



An agency of the Provincial  
Health Services Authority

# Cystic Fibrosis and Physiotherapy

- Physiotherapy: Modified Postural Drainage with Percussion and Vibration
- The Respiratory System: How is it Different in Cystic Fibrosis?
- The Respiratory System: What is it made up of?
- Making Physiotherapy Part of Your Child's Life



[Cystic Fibrosis and Physiotherapy Teaching Video link](#)

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## Physiotherapy Department

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# PHYSIOTHERAPY

## Modified Postural Drainage Positions with percussion and vibration

Physiotherapy techniques are taught to parents of children with Cystic Fibrosis. These techniques include Modified Postural Drainage with Percussion and Vibration.

People with Cystic Fibrosis have thicker mucus in their lungs. Physiotherapy helps loosen and remove the mucus from the lungs. This keeps the lungs healthier.

- Physiotherapy is done 2-3 times a day
- Do the physiotherapy session before meals or 45-60 minutes after eating
- Place a blanket or towel over the area to be percussed
- Percuss for 3-5 minutes in each position
- Follow with 3-4 vibrations as your child breathes out
- Encourage your child to cough after each position

## Modified Postural Drainage

- Your child is placed in different postural drainage positions to help mucus move from the small airways to the large airways of the lung
- Each position focuses on a different area of the lung

## Percussion

- Percussion helps to loosen the mucus in the lungs
- Percuss with a cupped hand
- Majority of the movement should be from your wrist, relax your shoulder
- Percuss firmly and rhythmically, faster is not better



## Vibration

- Vibration helps move the mucus from the smaller airways to the larger airways of the lung
- Vibrate with a flat hand
- Majority of the movement should come from tensing your arm
- Vibrate as your child breathes out



## Coughing

- Coughing helps clear the mucus from the lung
- Encourage your child to cough after completing each postural drainage position with percussion and vibration

## Medication

- If ordered by your child's CF specialist, give ventolin before the physio session using a nebulizer or puffer

## Morning Physiotherapy Session

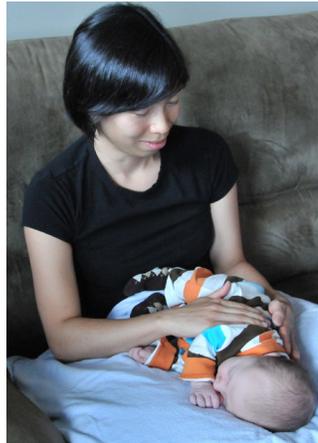


### Front Lower Lobes (Anterior Segments)

- Position child flat on back.
- Percuss and vibrate on both sides of chest below the nipple line but above the tummy.

### Right Side Lower Lobe (Lateral Segment)

- Position child flat, lying on left side.
- Percuss and vibrate over right lower ribs.



### Left Side Lower Lobe (Lateral Segment)

- Position child flat, lying on right side.
- Percuss and vibrate over left lower ribs.

# Afternoon Physiotherapy Session



## Back Lower Lobes (Posterior Segments)

- Position child flat on stomach.
- Percuss and vibrate on both sides of chest just below the shoulder blades.



## Right Middle Lobe

- Position child lying on left side  $\frac{3}{4}$  turn to back. May use a towel to lean back against.
- Percuss and vibrate close to right armpit over nipple line.



## Left Middle Lobe (Lingula)

- Position child lying on right side  $\frac{3}{4}$  turn to back. May use towel to lean back against.
- Percuss and vibrate close to left armpit over nipple line.

# Evening Physiotherapy Session



## Front Upper Lobes (Anterior Segment)

- Position child flat on back.
- Percuss and vibrate above nipple line.

## Back Right Upper Lobe (Posterior Segment)

- Position child flat  $\frac{3}{4}$  turn onto their stomach.
- Percuss and vibrate over right shoulder blade.



## Back Left Upper Lobe (Posterior Segment)

- Position child  $\frac{3}{4}$  turn onto their stomach with head up at an inclination of  $30^\circ$ .
- Percuss and vibrate over left shoulder blade.

# THE RESPIRATORY SYSTEM

## How is it different in Cystic Fibrosis?

Every day we use our lungs. They give our bodies oxygen and get rid of carbon dioxide. This keeps us alive, healthy and well.

Everyone's lungs make mucus. Mucus is mostly made up of water. Mucus acts as a barrier and collects all the pollutants and germs that we breathe in through the air. When we cough or "clear our throats" we get rid of or clear the mucus from our lungs.

People with Cystic Fibrosis have mucus that is thicker. This is because people with Cystic Fibrosis have a defective chloride ( $\text{Cl}^-$ ) channel in their epithelial cells. Therefore, water cannot move into the mucus. When mucus is thick it cannot easily be cleared from the lungs so they become clogged up with mucus. This makes it harder to breathe.

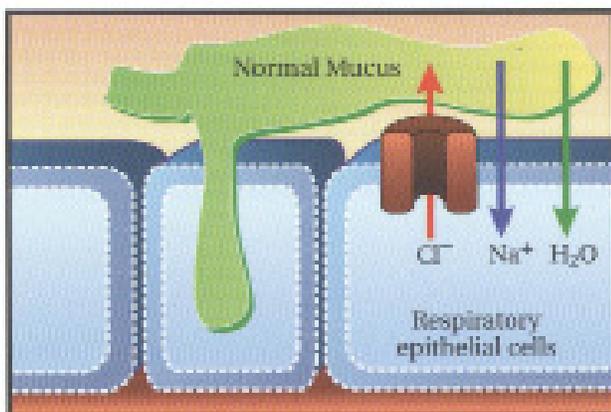
One of the most serious side effects of CF is lung damage. Physiotherapy helps loosen the mucus so it can be coughed up. This helps keep the lungs healthier.



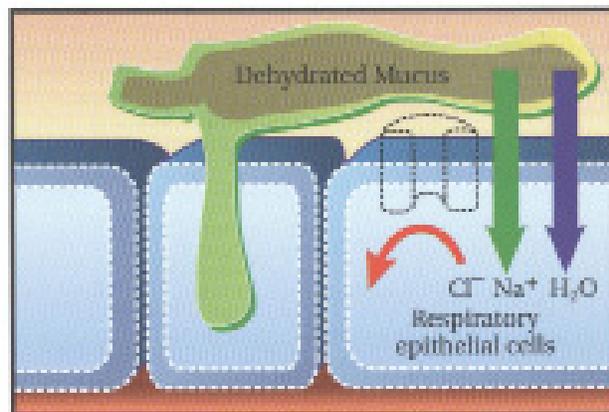
Normal Airway



Airway in Cystic Fibrosis with mucus clogging



Normal Cell



Cystic Fibrosis Cell with a defective chloride ( $\text{Cl}^-$ ) channel

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# THE RESPIRATORY SYSTEM

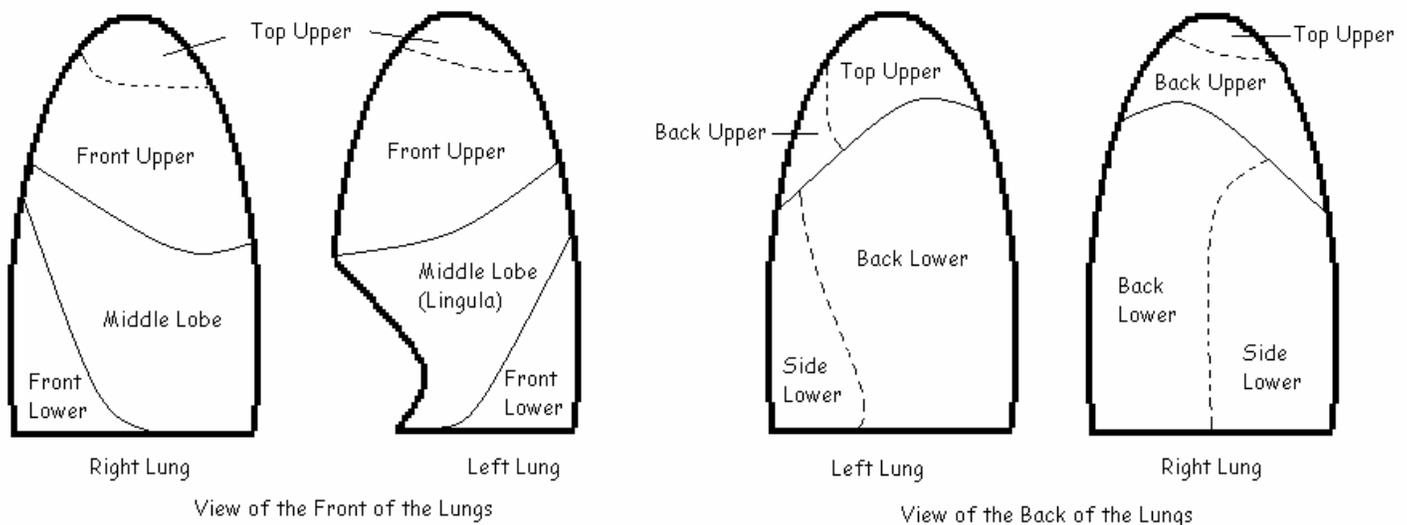
## What is it made up of?

Air enters your body through your nose or your mouth and travels to your lungs through the large airways. The large airways divide into smaller and smaller airways until they end in air sacs called alveoli. Alveoli are the site of gas exchange where your body takes in oxygen and gets rid of carbon dioxide.

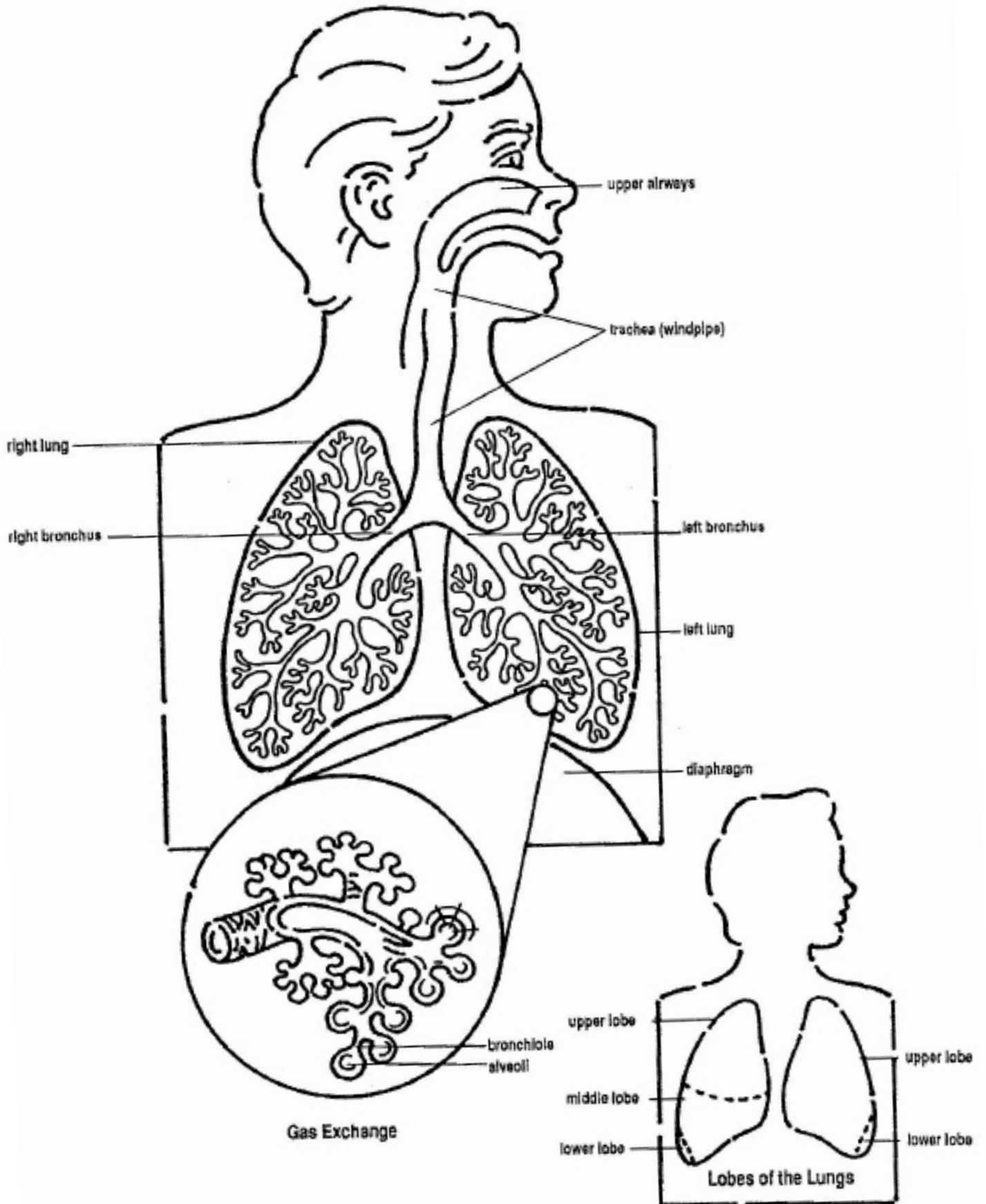
Each lung can be divided into three sections called lobes; the upper, middle and lower lobe. You can think of each lobe as a balloon. The 3 lobes (balloons) sit one on top of each other and inflate and deflate as you breathe in and out.

The upper lobe can be further divided into a top (apical), front (anterior) and back (posterior) segment. The lower lobe can be divided into a front (anterior), back (posterior) and side (lateral) segment. Physiotherapy treatment (modified postural drainage with percussion and vibration) targets all areas on the lung for mucus clearance.

## Diagram of the Different Segments of the Lungs



# THE RESPIRATORY SYSTEM



# Making Physiotherapy Part of Your Child's Life

Physiotherapy is very important for your child's lung health.

Physiotherapy depends on parents and caregivers. You have an important role in your child's well being.

Physiotherapy is done daily. It should be a pleasant experience for you and your child. Here are some ideas for a positive physiotherapy session:

- Develop a routine or schedule
- Have special toys that are only used during physiotherapy
- Play music or sing
- Watch a movie or television program

Physiotherapy can also be done outside of your home. If people ask you questions about what you are doing, here are some suggestions as to what you can say:

- "I'm doing physiotherapy for my child to help him/her breathe."
- "I'm keeping my child's lungs healthy."
- "This is to help my child feel better."

If you miss a physiotherapy session, make sure you still do all the treatment positions by the end of the day. Try to do the missed session as soon as you can. Do the next session at its' regular time. Remember: it's best to do the physiotherapy session at the scheduled times.

As your child grows older, different physiotherapy methods are used to help clear the mucus from the lungs. These methods allow your child to become more independent with his/her treatment.