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nationwidechildrens.org

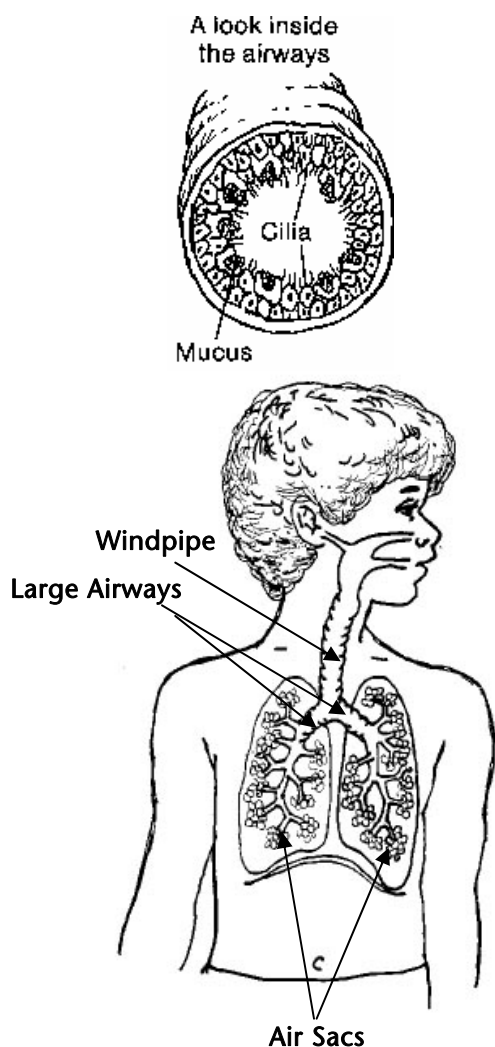
## CHEST PHYSICAL THERAPY (CPT): CHILDREN AND ADULTS

Chest Physical Therapy (CPT), also called postural drainage, is a way for you to help your child get rid of extra mucus in his lungs. This is important because too much mucus can block the air passages in the lungs. Giving CPT treatments to your child at home helps keep extra mucus from building up.

### HOW THE LUNGS WORK

We breathe in air (inhale) through the nose and mouth. The air goes through the windpipe into the large airways in the lungs (Picture 1). Then the air goes into the small airways and into the air sacs.

The air sacs in the lungs do important work. The oxygen from the air, which we need to live, goes into the blood through the air sacs. The used oxygen is changed into carbon dioxide in the blood. The carbon dioxide goes from the blood into the air sacs and into the air we breathe out (exhale).



### MUCUS

All the parts of the lung have a protective mucous lining. The mucus that covers the lining catches tiny pieces of dirt, dust, and other particles in the air we breathe. These particles would irritate the lungs or cause infection if they stayed in the lungs.

### HOW MUCUS GETS OUT OF THE LUNGS

All the parts of the air passages are lined with tiny hairs called cilia (Picture 1). The cilia act like an escalator that carries the mucus and particles up to the windpipe to be coughed out or swallowed.

### IF THERE IS TOO MUCH MUCUS

Normally, there's just the right amount of mucus in the lungs. But when the lungs get irritated or infected, a large amount of thick mucus is produced. This is because the lungs are working extra hard to get rid of the infection or irritation.

Extra mucus can slow down or stop the cilia from working. If the cilia don't work well, we have to help the lungs get the mucus out. This is why CPT is done.

Extra mucus can also block the air passages. If air passages are blocked, air can't move in and out of the air sacs. Then the child doesn't get enough oxygen into his blood and doesn't get enough carbon dioxide out of his blood.

**Picture 1** The lungs inside the body.

## DOCTOR'S ORDERS

- The CPT chart on pages 4 and 5 is marked for your child. This chart shows the positions you should use.
- The length of time spent giving CPT is different for each child. The doctor or nurse will tell you how long to spend on each area.
- Give your child CPT at these times:\_\_\_\_\_.
- Spend \_\_\_\_\_ minutes on each area.

Give this treatment **before** the child eats. (The positioning may cause vomiting or stomach discomfort if there is food in the stomach.)

## HOW IS CPT DONE?

CPT helps to move the extra mucus into the windpipe where it can be coughed up more easily. There are 4 steps in CPT: 1. Positioning, 2. Clapping, 3. Vibrating, and 4. Coughing.

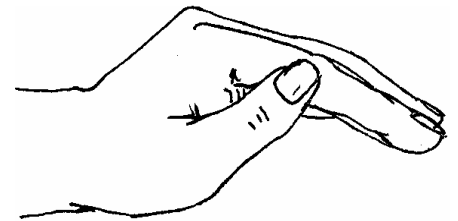
### 1. Positioning

- The child should be positioned so that the part of the lung to be drained is higher than any other part of the lung.
- It's important for you to be in a comfortable position because this makes the treatment more effective and easier for both you and your child.
- Your child can lie on a padded board. You may use a pillow to make your child more comfortable.
- Always have your child's knees and hips bent to help him relax and to make coughing easier.
- You can get the needed slant for head-down positions by placing one end of a bed or board on blocks. Ask your nurse or respiratory therapist about other methods used for the head-down positions.

### 2. Clapping

Before you begin, explain to your child that the clapping will make a noise like a galloping horse or like drums in a parade.

- Place a lightweight towel or blanket over the child's chest or back.
- Cup your hands by bending them at the knuckles. Hold your thumb against your index finger. Keep your fingers together to form a cup (Picture 2).
- Clap your hands, first one and then the other, on the area of the child's chest or back.
- Do the clapping in a regular rhythm.
- Do the clapping fairly fast. The rate of clapping should be comfortable, and not so fast that you get too tired.
- The clapping should be firm so the mucus in the lungs will be moved.
- During the clapping, the child should breathe normally.
- Clapping, when done properly, does not hurt. **It is very important that your child does not think of it as punishment.**



**Picture 2** Hold your hand like this to form a cup for clapping.



**Picture 3** Hold your hand like this to vibrate.

## HOW IS CPT DONE? (Continued)

### 3. Vibrating

After the clapping, vibrating is done over the same area of the lung.

- To do the vibrating, hold your hand in the position shown in Picture 3 (page 2). Place your hand flat over the area to be vibrated. Stiffen your shoulder and arm so your whole shoulder, arm, and hand vibrate (like shivering). Make sure not to use just your fingertips.
- The vibration should be done with **gentle**, downward pressure on the area.
- Start each vibration at the outside edge of the chest or back and move slowly towards the center.
- Have your child take a regular breath. Vibrate as the child exhales (breathes out) completely.
- Repeat vibration for 5 breaths out.
- If the child can, have him say "SSSS" when he breathes out.

### 4. Coughing

- After the mucus has been loosened by clapping and vibrating, have the child cough and spit out as much mucus as possible. Have your child start coughing in the position he is in. The child may then sit up if necessary. It's important to encourage coughing after each position.
- If you see any blood or blood streaks in your child's mucus, tell your respiratory therapist, nurse or doctor.

## PUTTING IT ALL TOGETHER

1. Refer to the pictures on pages 4 and 5.
2. Place the child in the first position.
3. Clap for 1 minute and vibrate 5 breaths out.
4. Then clap for another minute in this same position; vibrate 5 times again.
5. Encourage coughing. (Your child may not be able to cough up something after each position.)
6. Repeat steps 3 through 5 for each position marked.

## OTHER INFORMATION

For older children and adults there are other methods available for doing chest therapy at home and in the hospital. Ask your doctor, nurse, or respiratory therapist for more information.

## HELPFUL HINTS

- Try to make this as enjoyable as possible for you and your child. Many children like to watch a favorite TV show or movie, or listen to a favorite tape during chest therapy.
- Many times, with infants and younger children, chest therapy can be done just before naps and bedtime because it puts them to sleep.
- It's best to do chest therapy any time before your child eats, or at least 1 to 2 hours after a meal or snack.
- Remember: It's very important that your child does not think of chest therapy as punishment!

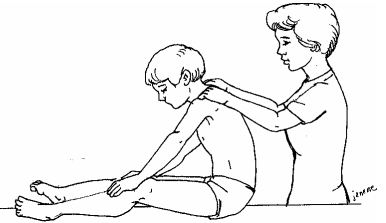
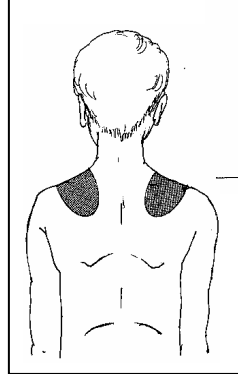
If you have any questions, please ask your doctor, respiratory therapist, or nurse.

## CHEST PHYSICAL THERAPY (CPT): CHILDREN AND ADULTS

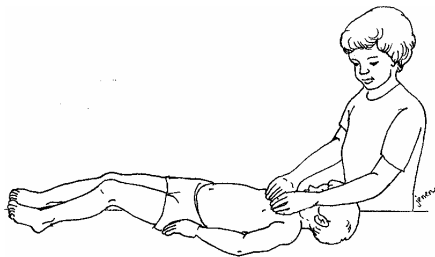
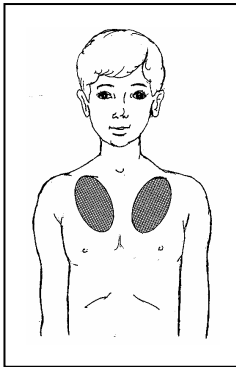
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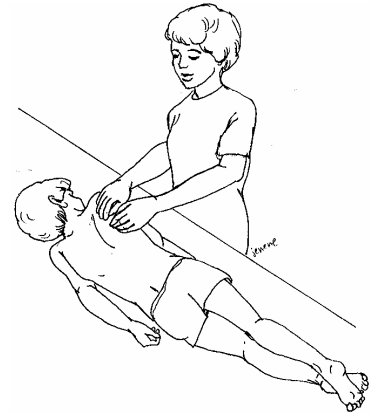
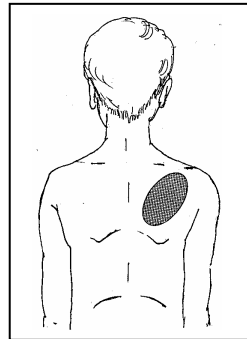
- 1. Upper lobes – apical and posterior segments**  
Lean your child forward.  
Clap on the shoulders on both sides.



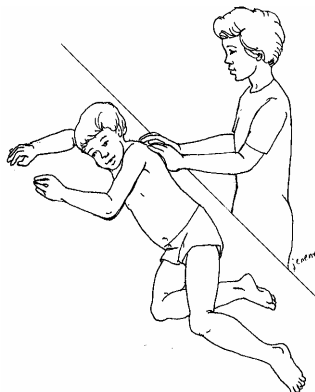
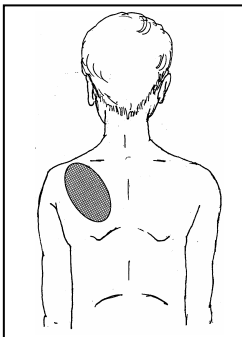
- 2. Upper lobes – apical and anterior segments**  
Lay your child flat on his back. Clap just below the collarbone.



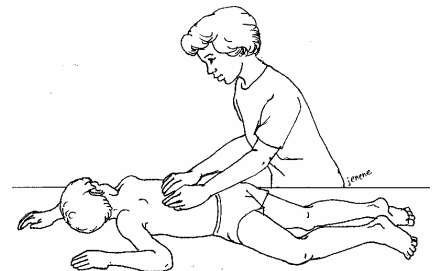
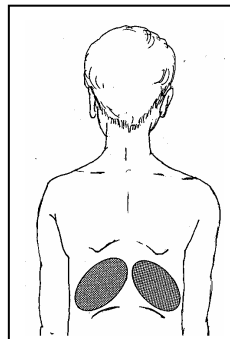
- 3. Right upper lobe – posterior segment**  
Lay your child on his left side with his chest elevated 45°. Roll your child slightly forward. Clap over the right shoulder blade.



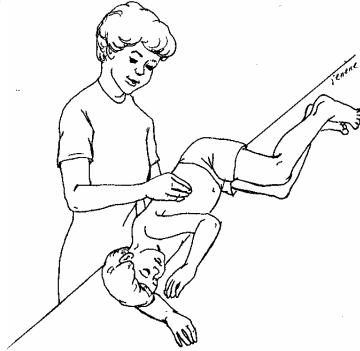
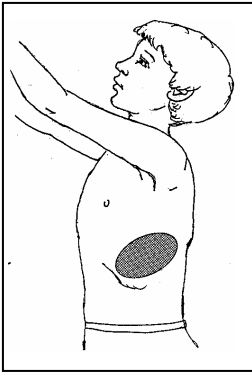
- 4. Left upper lobe – posterior segment**  
Lay your child on his right side, with chest raised 45°. Roll your child slightly forward. Clap over the left shoulder blade.



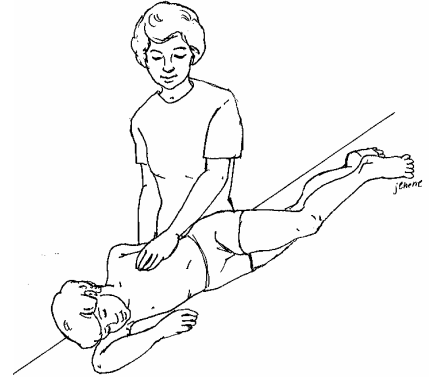
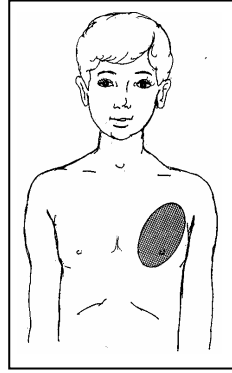
- 5. Lower lobes – apical segments**  
Lay your child flat on his stomach. Clap over the lower ribs.



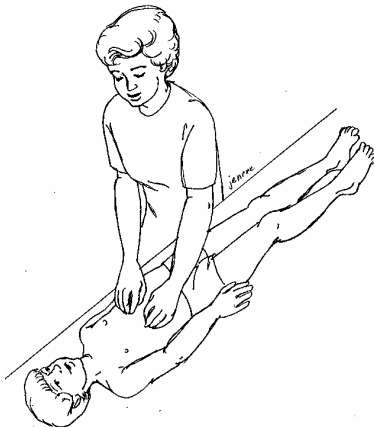
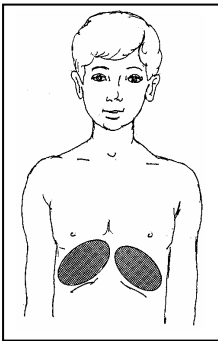
**6. Left lower lobe – lateral basal segment**  
 Lay your child on his right side with head and chest down 45° and knees bent. Clap over the lower ribs.



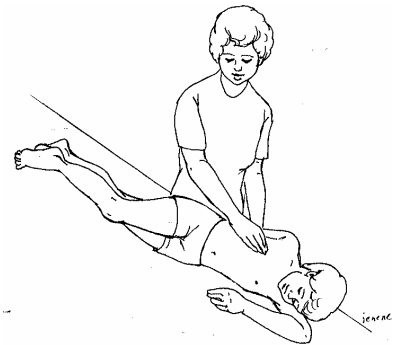
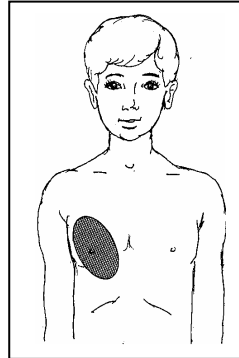
**7. Left upper lobe – lingular segment**  
 Lay your child on his right side. Clap over the left nipple.



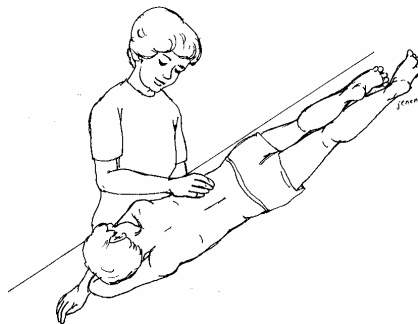
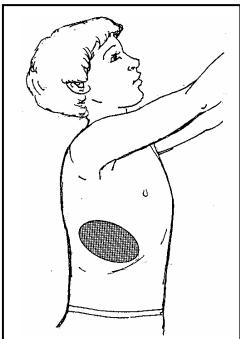
**8. Lower lobes – anterior basal segments.** Lay your child on his back with head and chest down 45°. Clap over the lower ribs.



**9. Right middle lobe** –Lay your child on his left side with head and chest down 45°. Roll your child slightly backward. .Clap over the right nipple.



**10. Right lower lobe – lateral basal segments**  
 Lay your child on his left side with head and chest down 45° and knees bent. Clap over the lower ribs.



**11. Lower lobes – posterior basal segments**  
 Lay your child on his stomach with head and chest down 45°. Clap over the lower ribs.

