

# The Importance of Humidification with a Tracheostomy

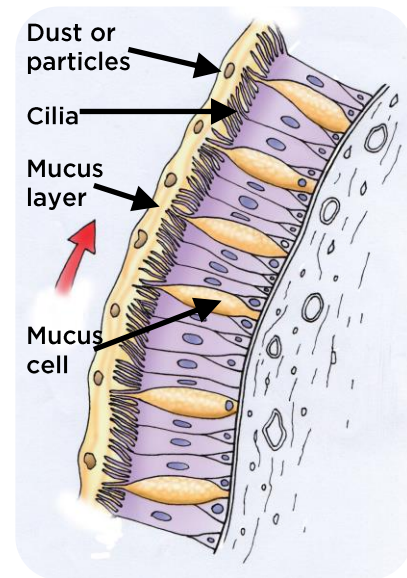
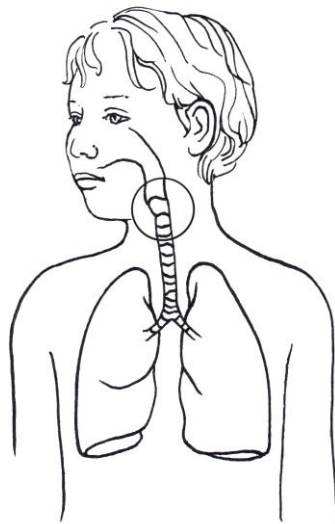
There are several ways to add humidification (moisture) to your child's trach before the air reaches their lungs.

## Breathing with a trach tube

When your child has a trach tube, they breathe all their air in and out through this artificial tube. The air they breathe bypasses the body's natural way to warm, humidify and filter the air – the nose.

## How do the lungs naturally clean the air we breathe?

The inside of the nasal cavity and the trachea and down through the bronchi are lined with a cells that produces a layer of mucus. This mucus layer traps dust and any particles that we breathe in. Special hair-like structures in the mucus layer, called cilia, sweep constantly to move the mucus up to the end of the trach tube. (see picture on right below.) This mucus is then coughed up and spit out or swallowed.



A close-up of mucus layer and cilia movement inside the airway

## How do I keep my child's mucus clear with a trach in place?

You will need to remove the mucus your child is unable to clear by their own effort. The mucus must be coughed or suctioned out of the airways. Thin mucus is easier to cough out of the lungs. The airway needs to have good humidification (moisture) and warmth to keep this layer of mucus thin and allow the cilia to function properly.

## Keeping moisture or humidification in the trach tube

Humidification is really about doing what the nose normally does - keeping moisture in the air you breathe in. If the air is warm and moist, the mucus will be thin and easier to manage. If the air is dry, it will dry out the mucus in the lungs and the trach tube. Thick mucus can block the trach tube. There are

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Heated mist collar set-up

several ways to add humidification (moisture) to your child's trach before the air reaches their lungs.

### Types of humidification

#### Heated mist collar

The heated mist collar is the **best** source of warm, humidified air for children with a simple trach tube (see set up at left). It uses an air compressor to push air through tubing and over the warm water in the heated humidifier chamber. As the air flows over the heated water, it picks up moisture as it travels through the tubing into the trach mask and into your child's trach. This will keep the mucus thin and easier for your child to cough and clear out, or for the caregiver to suction.

#### Care tips

- The trach mask fits loosely over the trach tube and has an elastic adjustable strap that fits behind the neck. Make sure to keep the mask over the trach tube to direct the warm moisturized air to the trach tube. Do not overtighten the elastic strap. This will cause discomfort and skin breakdown for your child.
- Check the level of sterile water in the humidifier chamber and water bag often to make sure that it does not run out of water. Hot, dry air will cause the mucus to thicken and increases the chance of plugging.
- Check the tubing to make sure that it is warm to the touch and you can see condensation droplets on the inside of the tubing.



Trach mask



Humidifier chamber

#### How often to use

When your child first gets the trach, they will need to be on the heated mist collar most of the time. After a while, they may need to only use it during sleep, naps and illness. When your child's mucus becomes thick, you may need to increase the amount of time they spend on the heated mist collar.

If your child is using a ventilator, the same heated humidifier system is used as part of the circuit to provide warmth and humidification to the airway.

#### Heat Moisture Exchanger (HME) – the “nose”

An HME is a small “nose-like” piece of plastic with a paper filter that fits over the trach opening. Each end of the HME is made up of rows and rows of thin



Tubing with condensation water droplets

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Types of heat moisture exchangers

### To Learn More

- Respiratory Care  
206-987-2258
- Ask your child's healthcare provider
- [www.seattlechildrens.org](http://www.seattlechildrens.org)

### Free Interpreter Services

- In the hospital, ask your child's nurse.
- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.



Cap

filter paper. The HME helps with humidification by trapping some of the warm moist air when your child breaths out through their trach. When your child breathes back in, the air passes through the HME and picks up the moisture from the filter paper.

### Care tips

- The HME is a disposable, one use only product. If the HME become wet with secretions or plugged, throw it away and replace it with a new one.
- Start each day with a new HME and remember to throw away any used HME's at the end of each day.
- You can add more moisture by adding 2 to 3 drops of normal saline drops directly to the trach tube every 15 to 30 minutes and then adjust to your child's needs.
- HME's are used during the day when your child is awake and if the secretions are thin. While asleep or when the secretions are thick, it's best to use the heated mist collar to decrease the risk of airway plugging.

### How often to use

- When you first start using an HME, remember to start with a short time to see if your child tolerates it. Using an HME for bath time is a good place to start. Remember to increase the time slowly.
- Your child will need to use the HME to go portable and for activity times.

### Capping

A cap is a small plastic cover that is placed at the end of the trach tube. Capping is an order from your doctor and it is only done if your child can breathe in and out without distress through their nose or mouth. Through capping, humidification is supplied by the child's own body. No outside source of moisture is needed. Capping is normally done as a trial to make sure they are ready to have the trach out for good. It is also done when a child only needs to use a ventilator or breathing machine such as CPAP or BiPAP for sleep at night.

The airway must be checked by Otolaryngology (Ear Nose and Throat or ENT) before the trial to confirm that it is clear of any obstructions. ENT might schedule a Trach Safe evaluation (a special camera used to inspect the airway). After the airway evaluation, your doctor and respiratory therapist will do a capping trial to make sure that your child is able to breathe comfortably through their nose or mouth and around the capped trach tube in their airway. Because your child will be using their upper airway to breathe in, the air will be warmed, humidified and filtered naturally by the nose.

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Seattle Children's offers interpreter services for Deaf, hard of hearing or non-English speaking patients, family members and legal representatives free of charge. Seattle Children's will make this information available in alternate formats upon request. Call the Family Resource Center at 206-987-2201.

This handout has been reviewed by clinical staff at Seattle Children's. However, your child's needs are unique. Before you act or rely upon this information, please talk with your child's healthcare provider.

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