



# Caring for a Child with a Tracheal T-tube

While you are at Cincinnati Children's, you will learn to care for your child and their tracheal T-tube. The staff will discuss these areas with you and then demonstrate the care.

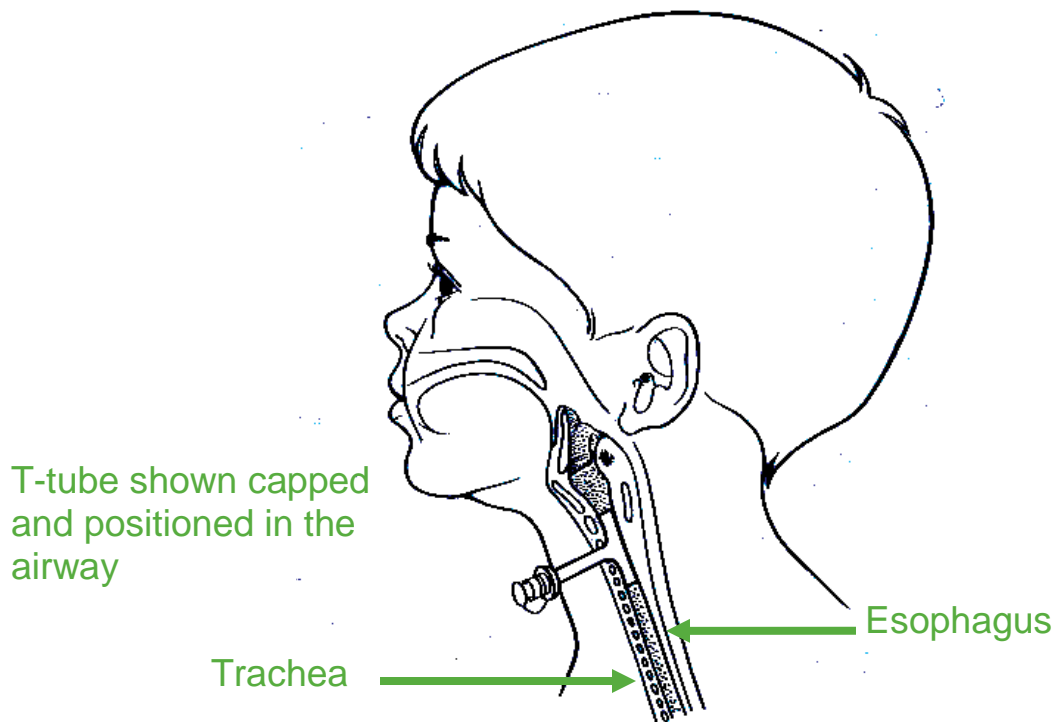
Below is a list of what you will need to learn. We encourage you to check off things as you learn and feel comfortable doing them. When you are ready, ask your nurse or respiratory therapist to watch you complete the care.

- Why your child has a T-tube
- Where the T-tube is positioned in the airway
- Size and length of your child's T-tube
- Parts of the T-tube
- Why, how and when to clean the T-tube site
- How to care for the skin near the T-tube, and signs of skin infection and how to manage
- Why, how and when to clean the external limb and rings of the T-tube
- Why, how and when to suction the T-tube
- Why, how and when to use 4.2% sodium bicarbonate through the T-tube
- Side effects of sodium bicarbonate solution
- Why, how and when to irrigate the T-tube with normal saline
- Why, how and when to cap the T-tube
- Use of a mist collar if the T-tube must be uncapped
- What equipment to have with you at all times
- How to prevent and manage emergency situations
- How to help others learn T-tube care
- Who to call if you have questions
- Other:

## What is a T-tube and why does my child have one?

A tracheal T-tube is a soft silicone tube shaped like a “T”. T-tubes are used for many reasons. In most cases, the T-tube is used to help your child’s airway heal after surgery. A tracheal T-tube also is used when a child has a condition that requires a breathing tube and a typical tracheotomy tube is not suitable.

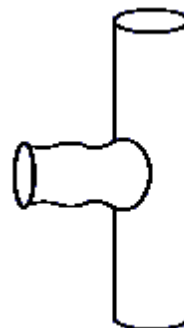
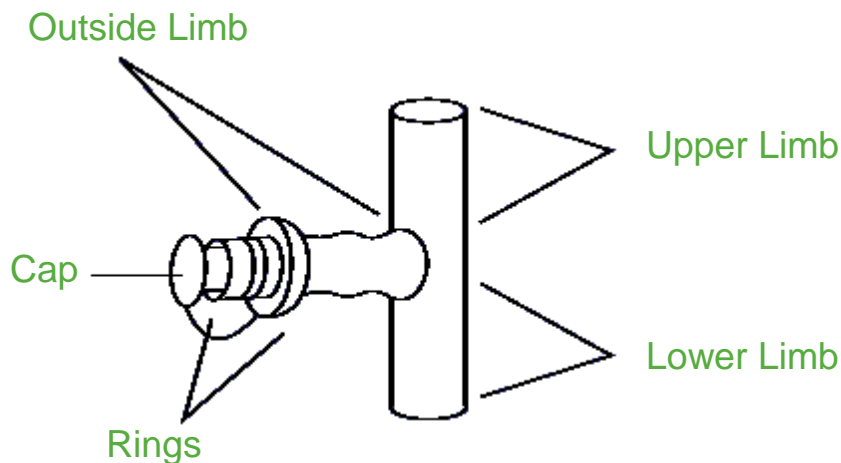
The shape of the T-tube allows the upper part of the tube to hold open the airway that was surgically repaired while the other parts act like a breathing or tracheotomy tube.



## What are the parts of a T-tube?

A T-tube has five parts. These parts are:

1. Outside limb
2. Upper limb
3. Lower limb
4. Rings
5. Cap



T-tube  
pictured  
without  
cap  
and rings



T-tube cap  
attached to ring

## How does a T-tube fit in my child's airway?

- The outside limb is what you can see from your child's neck. This limb is connected to the upper and lower limbs.
- The upper limb rests in your child's airway keeping open the larynx (voice box) and upper trachea (windpipe).
- The upper limb extends to an area just below, at, or just above the vocal cords.
- The lower limb extends down the airway acting like a tracheotomy tube.
- The rings set on the outside limb between grooves and should be placed just slightly off of the neck. The rings keep the T-tube from moving back and forth in the stoma. The rings can be moved back and forth for cleaning.
- The cap fits into the outside limb. By capping the T-tube your child is able to keep their airway and T-tube humidified without the use of an outside moisture source.
- Every T-tube has a size. MY CHILD'S T-TUBE SIZE IS: \_\_\_\_\_

## Skin Care and Your Child's T-tube

Because of the T-tube, your child will have an incision on their neck after surgery and a stoma, or hole, in the neck where you will see the T-tube. Your child's neck may be tender and swollen after surgery. There also may be bloody drainage and redness at the site as well. This swelling, redness, drainage and pain will improve. To help your child's neck incision and T-tube stoma heal, we recommend keeping these sites clean and dry. T-tube skin care should be done at least twice a day or whenever the site has drainage or crusts.

### To clean the T-tube site you will need:

1. Half- strength hydrogen peroxide (mix equal parts hydrogen peroxide and water) when the skin is *not* healed
2. Mild soap and water when the skin *is* healed
3. Cotton tip swabs

### To clean the T-tube site:

1. Wash and dry your hands.
2. Dip one swab in the 1/2 strength peroxide then clean directly around the T-tube site.  
After circling around the tube once, throw the swab away. With a new swab continue to clean around the T-tube working out from the last place you cleaned. Never reuse swabs. Clean the entire area around the T-tube and neck incision.
3. Dry the entire area in the same way you cleaned it.
4. As you clean and dry the site, be sure to look for signs of infection. Signs of infection may include redness, swelling or drainage that does not improve; drainage that becomes green or yellow; poor skin healing; or fever.
5. Clean the T-tube rings by sliding them away from the neck on the external limb and then cleaning around the rings with the 1/2 strength peroxide. After cleaning the rings, dry them.
6. When the area is dry, return the rings to their original position.
7. With a new swab dipped in the 1/2 strength peroxide, uncap the T-tube and gently clean inside of the external limb. Avoid soaking the swab in peroxide to prevent extra peroxide from going down inside the t-tube.
8. Dry the inside of the outside limb carefully, and then recap the T-tube.



Cleaning T-tube stoma



Cleaning external limb of T-tube

### **When to call your doctor:**

- If you see signs of infection
- Before applying any creams, lotions or dressings to the site

## How to Suction a T-tube

Like trach tubes, T-tubes are suctioned to allow air to enter and exit the lungs. Yet, suctioning a T-tube is different from suctioning a tracheotomy tube.

To suction a T-tube you have three limbs to suction. You must suction the outside, upper, and lower limbs of the T-tube. Also when caring for a child with a T-tube, you must instill a medicine into the T-tube twice a day. This medicine is called 4.2% sodium bicarbonate. You will probably hear it called "bicarb" for short. The bicarb helps keep the mucus from sticking to the inside of the T-tube.

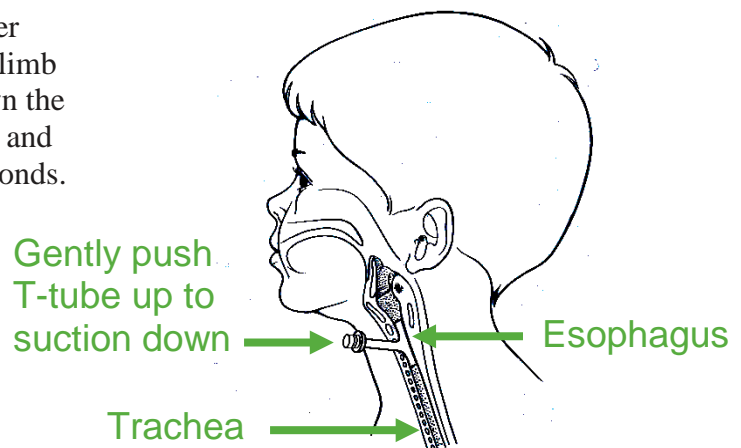
Your nurse will show you how to suction the T-tube. When you are comfortable, you may suction the T-tube with your nurse present. When you are ready to suction by yourself, ask the nurse to check you off in this area. Your nurses will always be available for questions you may have.

## To suction you will need:

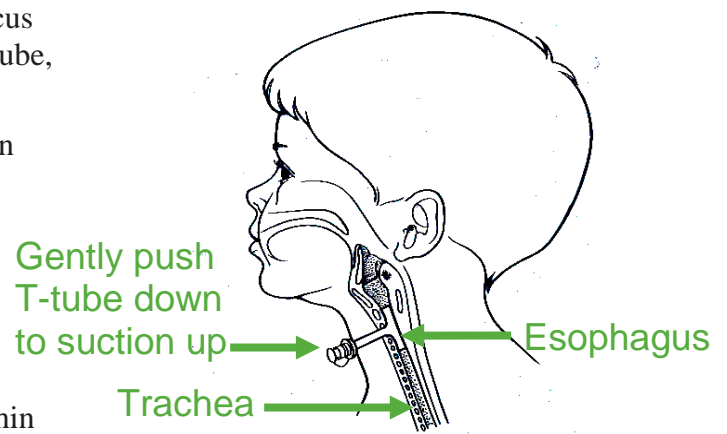
- Suction catheters
- Suction machine
- Marked suction catheter (this will remind you how far to suction up and down the T-tube)
- Saline

## To suction the T-tube:

- Wash and dry your hands.
- Prepare your suction equipment and marked suction catheter.
- Your nurse will give you exact measurements for how far to suction up and down.
  - Write the depths here: suction \_\_\_\_ cm up and \_\_\_\_ cm down.
  - Also to help you remember how far to suction, you should keep the marked suction catheter. Measure against the marked suction catheter with the clean suction catheter how far you will be suctioning up or down. (Be careful not to touch the two catheters together.)
  - When you have measured how far you will be suctioning, mark the depth with your fingers on the clean suction catheter.
  - The distance you will be suctioning up and down might be different, so be sure to re-measure against the pre-marked suction catheter each time you switch the direction you are suctioning.
- Uncap the T-tube and place the clean suction catheter into the outside limb. Gently lift up on the external limb with your opposite hand and guide the catheter down the T-tube to the measured distance, then apply suction and remove the catheter from the T-tube within five seconds.
- Before you suction again, allow your child to take a few deep breaths. Encourage your child to cough between suction passes.



- You may suction down the tube again if there is mucus remaining. If you are finished suctioning down the tube, you must now suction up the tube.
- To suction up the T-tube, measure how far to suction up against the marked catheter. Insert the clean suction catheter into the outside limb and with the opposite hand gently push down on the outside limb. With the outside limb in the down position, guide the catheter up the T-tube to the measured distance.
- Apply suction pressure, and remove the catheter within five seconds.
- After suctioning is done, recap the T-tube.



## When to call your doctor

- If you find your child is producing thick or discolored mucus
- If your child cannot be comfortably capped

## Tips

- Remember to rinse your suction catheter between each time you suction.
- Sometimes, you may find that the suction catheter does not easily glide up and down the T-tube when you start to suction. Try to reposition the outside limb at a different angle and try to advance the catheter again.
- Between suctioning, your child should be able to cough mucus up into their mouth and swallow it or spit out the mucus into a tissue.
- We recommend suctioning the T-tube at least two times a day, but your child may need it more often than this if they are unable to clear their mucus.
- You may also use saline drops when suctioning if mucus is thick or blood tinged.



## How to Use Sodium Bicarbonate or "Bicarb"

Sodium bicarbonate, or "bicarb," is used to keep mucus from sticking to the inside of the T-tube. During the first seven days after your child gets a T-tube, the bicarb will be put into the T-tube every four hours. After the first seven days, your doctor may decrease how often it is instilled to twice a day. Your child may say that the bicarb is uncomfortable for them when it is placed into the T-tube. The bicarb also may make your child cough.

### To instill the bicarb you will need:

1. A 3 ml syringe
2. 4.2% Bicarb solution
3. Suction machine and catheters
4. Normal saline
5. Tissues

### To instill the bicarb:

1. Wash and dry your hands.
2. Draw up 2 ml of the bicarb.
3. Uncap the T-tube.
4. Slowly instill the bicarb into the T-tube in small amounts (be prepared to cover the end of the T-tube with a tissue to prevent your child from coughing the bicarb out of the T-tube).
5. After the bicarb is instilled, recap the T-tube.
6. Wait 15 minutes and then uncap the T-tube.
7. Slowly place a total of 2-5 ml saline drops into the T-tube and suction the T-tube up and down as described earlier (instilling small amounts of saline into the T-tube before each suction pass helps rinse the T-tube of the mucus and bicarb).
8. After suctioning is complete, recap the T-tube.

## What to Keep in Your Emergency Bag

Even though you can prevent most breathing problems by providing T-tube care, breathing problems can occur and you must be prepared. Keep your emergency equipment with you at all times.

### Your emergency equipment will include:

1. Size \_\_\_\_\_ET tube
2. Size \_\_\_\_\_tracheotomy tubes with ties already in place
3. Fully charged suction machine
4. Suction catheters size \_\_\_\_\_
5. Yankauer mouth suction
6. Breathing bag with \_\_\_\_\_ size face mask and \_\_\_\_\_ size T-tube adapter
7. Normal Saline
8. Extra tracheotomy tube ties
9. Scissors
10. Hemostats
11. Water based lubricant
12. Manual suction
13. Marked suction catheter
14. 4.2% sodium bicarb with 3 ml syringe
15. Emergency phone list

To help you feel prepared for potential emergencies, we will review the signs of breathing trouble and how to help your child.

### The early signs of breathing trouble may include:

- Fast breathing
- Noisy breathing
- Sweaty, clammy skin
- Restlessness
- Change in breathing pattern
- Your child complains of shortness of breath
- Your child complains that they tire easily

### The later signs of breathing trouble may include:

- Hard breathing seen as sinking in of the chest, neck, ribs or head bobbing
- Flared nostrils
- Blue, gray or pale color around the lips, nails and skin
- Your child does not wake to your touch or when you call their name
- Head bobbing

The earlier you notice the signs of breathing trouble, the easier it is to correct the problem. If your child is having breathing trouble and does not get help, he or she could stop breathing.

## Potential Emergencies

Potential emergencies that might occur at home include:

- Accidental dislodgement of the T-tube
- Aspiration
- Bleeding from the T-tube
- Mucus plugging

## Accidental Dislodgement

The T-tube design, with limbs and rings, helps hold itself in place without the use of tracheotomy ties. But it is important to remember that the T-tube could accidentally be pulled out. You can prevent this by:

- Watching your child's activities
- Not allowing anyone to pull at the T-tube

## If the T-tube is accidentally dislodged:

1. Remain calm.
2. Take the tracheotomy tube you have in your emergency bag and place the tube in your child's stoma (if you need to learn or review how to place a tracheotomy tube, be sure you have discussed this with your nurses before you go home).
3. Keep the tracheotomy tube open with suctioning as needed.
4. Perform CPR/rescue breathing if needed.

## Aspiration

Aspiration is another potential emergency. Aspiration is the passage of solids, liquids, or saliva into the airway instead of the esophagus or swallowing tube. Some children may have trouble swallowing after the T-tube is placed. This difficulty may be related to swelling or positioning of the T-tube in the airway.

## Some signs your child may be aspirating:

- Choking or coughing with swallowing
- Watery secretions from the T-tube especially after swallowing
- Drooling or holding saliva and fluids in the mouth
- The color of liquid or food particles are coughed from the T-tube after swallowing
- Your child has frequent pneumonia

## You can prevent aspiration by:

- Thickening liquids with artificial thickeners or foods like puddings, baby foods, cereals, Jell-O, or yogurt (thickened fluids may be easier to swallow than thin liquids)
- Chewing or swallowing slowly
- Sitting upright when drinking or eating
- Following the doctor's orders with eating or drinking

## **If your child aspirates:**

1. Stay calm.
2. Suction the T-tube until it is clear of the fluid or food.
3. Suctioning with saline drops may help rinse the food or fluid from your child's airway.
4. Watch your child eat and drink.
5. Have the emergency equipment ready at all times.
6. Call your doctor if your child is showing signs of aspirating.
7. If necessary, refer to the section on mucus plugging to clear your child's airway (food and fluids can be like a mucus plug).

Remember your child can aspirate vomit too. Try to keep vomit out of the T-tube by turning their head to the side. Also, before you go home your nurse will review how to help your child if they are choking.

## **Bleeding From the T-tube**

Bright red blood coming from the T-tube is also an emergency. The bright red blood may be a sign of irritation or infection in the airway. Your child needs to be seen right away if bright red blood is coming from the T-tube.

## **You can prevent bleeding by:**

- Suctioning to the ordered lengths
- Calling your doctor early if your child is showing signs of infection or has an increased cough
- Keeping the T-tube capped except when suctioning or keeping a mist collar at the T-tube if your child is not tolerating the T-tube being capped

## **If you see bright red blood from the T-tube:**

1. Stay calm.
2. Keep the T-tube clear of mucus and blood with gentle suctioning while calling for emergency help.
3. Use saline drops when suctioning to keep the blood from crusting and plugging the T-tube.
4. The doctors will want to know when the bleeding started, how much bleeding there has been, and anything that may have happened before the bleeding started.



## Mucus Plugging

Mucus can collect in the T-tube and airway and cause plugging. You can prevent mucus plugging by:

- Making sure your child is drinking adequately or is getting enough fluids through their feeding tube
- Encouraging your child to cough and expel mucus from their mouth
- Suctioning as ordered and as needed if your child cannot clear the mucus from their airway
- Using saline drops with suctioning if the mucus is thick or blood tinged
- Using the sodium bicarb as ordered through the T-tube
- Calling your doctor if you notice any signs of resistance when suctioning the T-tube
- Keeping your child's T-tube capped unless you are suctioning or checking for breathing trouble (when the T-tube is capped, your child is humidifying their own airway)

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## If the T-tube does plug with mucus, your child will not be able to get the air they need to breathe.

### Some signs that the T-tube may be plugged are:

- Fast, noisy or hard breathing
- Dry whistling sound from your child's airway
- Restlessness
- Clammy, sweaty skin
- Your child states that they cannot breathe
- Unable to pass a suction catheter down or up the T-tube
- Blue color around the lips, skin, and nails
- Your child is not breathing and does not respond to their name or wake to your touch

### If you think your child's T-tube has a mucus plug:

1. Uncap the T-tube and try to suction up and down the tube.
2. If you can pass the suction catheter without difficulty up and down the tube, watch your child to see if the breathing is easier with the T-tube uncapped. If the breathing trouble eases when the T-tube is uncapped, leave the T-tube uncapped and apply the mist collar to the T-tube. Stay with your child as you call your doctor.
3. If the breathing trouble does not ease when the T-tube is uncapped, place saline drops through the T-tube and try to suction again. Deeper suctioning past the ordered length may be done, if done gently. If someone is with you ask them to call for emergency help.
4. If you find a mucus plug in the upper limb of the T-tube but do not find a mucus plug in the lower limb, attempt to remove the mucus plug by suctioning.
  - If you cannot clear the plug from the upper limb, suction the lower limb of the T-tube again to keep it open, and leave the T-tube uncapped. Your child should be able to breathe through the lower limb with the T-tube uncapped.
  - Remember to apply the mist collar to the T-tube if you must keep it uncapped.
  - Call your doctor immediately.
  - If your child would need CPR or rescue breathing in this instance, you can provide breathing for your child by using the adapter applied to your child's breathing bag. The adapter allows the breathing bag to fit the T-tube.
5. If your child is in need of CPR/rescue breathing and you find that there is no mucus plugging in any of the T-tube limbs, recap the T-tube after suctioning and begin the steps of CPR/rescue breathing. You will need to use the mouth-to-mouth method or use the breathing bag with the facemask placed over your child's nose and mouth to breathe for your child. (If you try to give your child breaths through the T-tube when the T-tube is patent in all limbs, the air will escape out through your child's upper airway.)

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6. If there is a plug in the lower limb, the plug must be removed to allow your child to breathe. Try to suction the T-tube using saline to help loosen the plug. If unable to remove the plug, gently tilt the outside limb up and try to place the size ET tube down the T-tube cm. If you cannot dislodge the mucus plug and suction the plug out, remove the ET tube. You must now remove the T-tube and place the ordered tracheotomy tube. (Remove the T-tube by gently apply pressure with your first finger above and thumb below the T-tube on your child's neck. With your other first finger and thumb or hemostats enter the T-tube stoma at the back of the external limb and collapse the T-tube while pulling the T-tube out of the airway.)
  7. If the T-tube must be removed, the tracheotomy tube must be replaced and kept open to provide an airway for you child. Complete the steps of CPR/rescue breathing if your child needs them through the tracheotomy tube.

### **How to help others learn T-tube care**

By the time you are ready to go home, you should be comfortable in caring for your child with a T-tube. Other people at home will also need to learn how to care for your child with a T-tube. You should not leave your child with anyone who has not learned this care. Our staff can contact school officials or home nursing if needed to help them learn your child's care. You may share this packet of information with your family, friends, school officials, and home nursing keeping in mind that reading the packet is just the beginning of learning care.

### **Questions or Concerns after going home**

If you have an emergency once you are home, call 911 or the local emergency number for your area. Once at a hospital, the staff there can contact one of our doctors.

If you have questions or non-emergent needs when you get home, you may call the ENT office at 513-636-4355 or 1-800-344-2462, ext. 64355, from 8 am to 4 pm. There are Advanced Practice Nurses available to answer your questions. After hours, if you need to speak with a doctor, you may call the hospital operator at 513-636-4200 or 1-800-344-2462 and ask to speak with the ENT resident on-call.