

# HOME CARE OF THE CHILD WITH A TRACHEOSTOMY

So now your child has a tracheostomy, what next?

This booklet will provide you with basic information about caring for your child's tracheostomy. It will be beneficial if at least two people, including primary caregivers, be knowledgeable in caring for your child at home.

First, it will be important for you to always have important phone numbers ready and accessible, so you should list them below:

NEAREST EMERGENCY ROOM: \_\_\_\_\_

LUNG SPECIALIST: \_\_\_\_\_

PEDIATRICIAN: \_\_\_\_\_

NURSE PRACTITIONER: \_\_\_\_\_

ELECTRIC COMPANY: \_\_\_\_\_

TELEPHONE COMPANY: \_\_\_\_\_

POLICE: \_\_\_\_\_

FIRE: \_\_\_\_\_

## Equipment for the Home

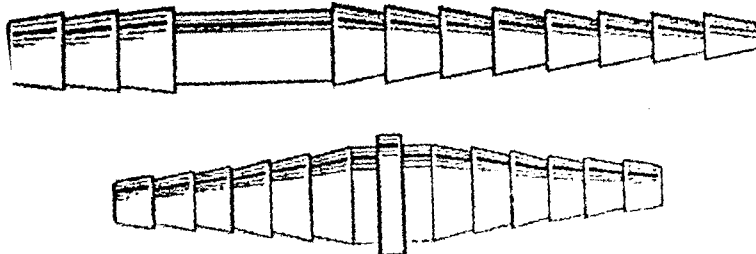
So what will you need when you get home?

### Tracheostomy Supplies

- Tracheostomy tubes: Size\_\_
- Tracheostomy tube (1/2 size smaller): Size \_
- Trach tube ties/velcro
- Dressing supplies, gauze
- Hydrogen peroxide, sterile water, normal saline
- Water soluble lubricant such as Surgilube or KY Jelly
- Blunt-end bandage scissors
- Tweezers or hemostats
- Sterile cotton applicators referred to as Q-tips

### Suction Equipment

- Stationary electric suction machine
- Portable battery-powered suction machine
- Suction connecting tubing
- Suction catheters, catheter size: \_\_\_\_
- Normal saline solution
- Sterile jars with screw tops (sterile specimen containers or sterilized baby food jars work well)
- Saline ampules ("bullets")
- Bulb syringe
- Sims Connector (suction machine connection tubing – see figure)



### Humidification System

- Air compressor
- Nebulizer bottles
- Tracheostomy mask
- Aerosol tubing
- Water trap
- Room humidifier
- Sterile water
- Heat Moisture Exchanger (HME)

### **Miscellaneous Supplies**

- Hand washing supplies
- Cleaning supplies
- Sterile or clean paper cups
- Manual resuscitation (Ambu) bag with mask and trach adapter
- Tissues
- Intercom, baby monitor or video monitor
- Thermometer
- Stethoscope
- Disposable Gloves (powder free)
- Trach scarf or bib
- Rolled-up towel

### **Other Possible Equipment Needs**

- Speaking valves
- Trach guard
- Pulse oximeter
- Oxygen
- Ventilator
- BiPAP
- Nebulizer equipment (Aerosolized medication delivery system)
- Extra smoke detectors and a fire extinguisher suitable for electric as well as regular fires.
- Consider an emergency generator if you have frequent power failures.

### **Travel Kit**

Pack a bag to take with you whenever you take your child away from home. Some items are listed here, although the list should be modified depending on the child's needs.

- Portable suction machine, connection tubing and suction catheters. Keep portable suction machine plugged in whenever possible to preserve battery charge. You may want to keep a suction catheter attached to machine for quick use if needed. Keep the suction catheter inside the packaging for cleanliness.
- Back up suction: syringe with catheter or bulb syringe
- Same size trach tube and one size smaller with obturator and ties (you may want to keep ties in place to save time in an emergency)
- Saline bullets
- Normal saline in a screw-on bottle
- Sterile lubricant (water soluble)
- Blunt-nosed scissors
- Tweezers or hemostats
- Manual resuscitator (Ambu bag)
- Extra trach filters (HME)
- Tissues
- Shoulder roll
- Hand sanitizer (alcohol gel or foam)
- List of emergency phone numbers
- Note with child's brief medical history
- Mobile phone if possible

## **Cleaning Equipment**

Keeping respiratory equipment clean is essential for preventing respiratory infections. Many of the supplies used for tracheostomy care are intended to be disposable. However, sometimes in order to control cost, supplies must be washed and reused. While this is not always recommended, sometimes it is unavoidable. There are several different solutions, techniques and frequencies for cleaning equipment. It is important to check with the manufacturer, equipment supplier or respiratory therapist for recommendations for your equipment. Some suggestions for cleaning equipment are included. Don't forget to wash your hands before and after cleaning equipment.

### **Tracheostomy Tubes**

Plastic tubes should not be cleaned and reused. Metal tubes can be cleaned and reused. Clean metal tubes with soap and water using pipe cleaners. Rinse well. In a pan used only for trach tubes, boil tube parts for 15 minutes. Drain water, allow metal to cool and air dry. Then place in a sterile container. If you leave metal tubes soaking for long periods of time, this may cause pitting of the metal.

### **Suction Equipment**

- Empty suction bottle, wash with soap and water, and rinse at least once a day. Replace disposable bottles once a week. For glass non-disposable bottles, sterilize once a week.
- Wash connecting tube daily with soap and water. Discard and replace suction connecting tubing weekly. Do not boil plastic connecting tubes.
- Suction catheters should not be cleaned and reused.
- Empty and clean, or replace solution containers daily.
- Clean bulb syringe with soap and water and rinse after each use.

### **Humidification Equipment**

- Disassemble and clean nebulizer bottles and aerosol tubing 2 - 3 times a week. Replace as needed.
- Clean tracheostomy mask daily with soap and water.
- Clean the compressor filter once a week, more often if needed.
- Room humidifiers should be completely emptied, clean with soap and water, rinse and refill daily to prevent bacterial growth.

### **Other Equipment**

- Velcro trach ties can be washed with soap and water. However, if you do clean and reuse Velcro ties, be sure the Velcro still holds securely after washing.
- Scissors, tweezers and hemostats can be cleaned with rubbing alcohol.
- There are new Heat Moisture Exchangers (HME) that are washable, but most are not. Dispose of soiled HME and replace daily and as needed.
- Swish speaking valves in warm water with mild soap. Rinse thoroughly in warm water and allow to air dry. Do not use Q-tips, vinegar, peroxide or bleach for speaking valves.

### **Miscellaneous Equipment Notes**

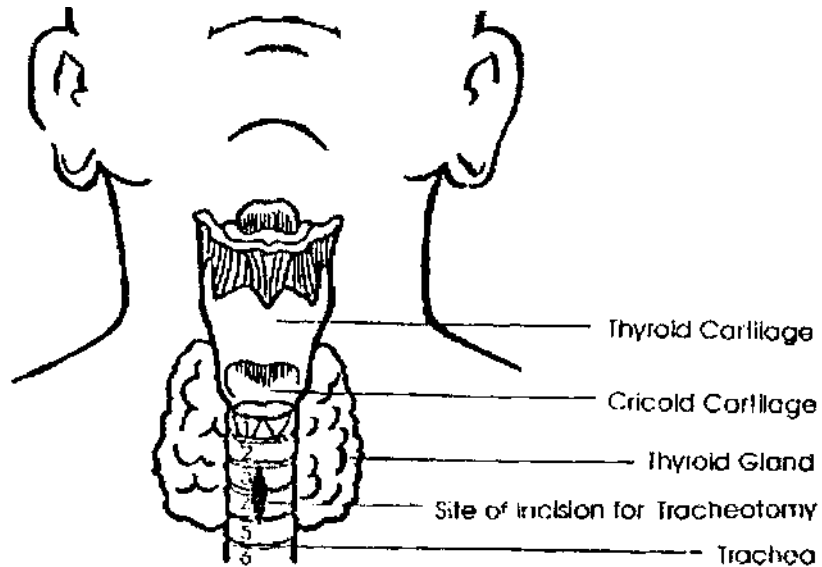
- The home medical supply company should provide complete instructions and hands on training in the care and operation of all equipment. Be sure you receive detailed and explicit

instructions and are comfortable with home medical equipment. These companies often have a respiratory therapist on staff to answer questions. You should also consult your child's otolaryngologist, pulmonologist, pediatrician, or nurse practitioner.

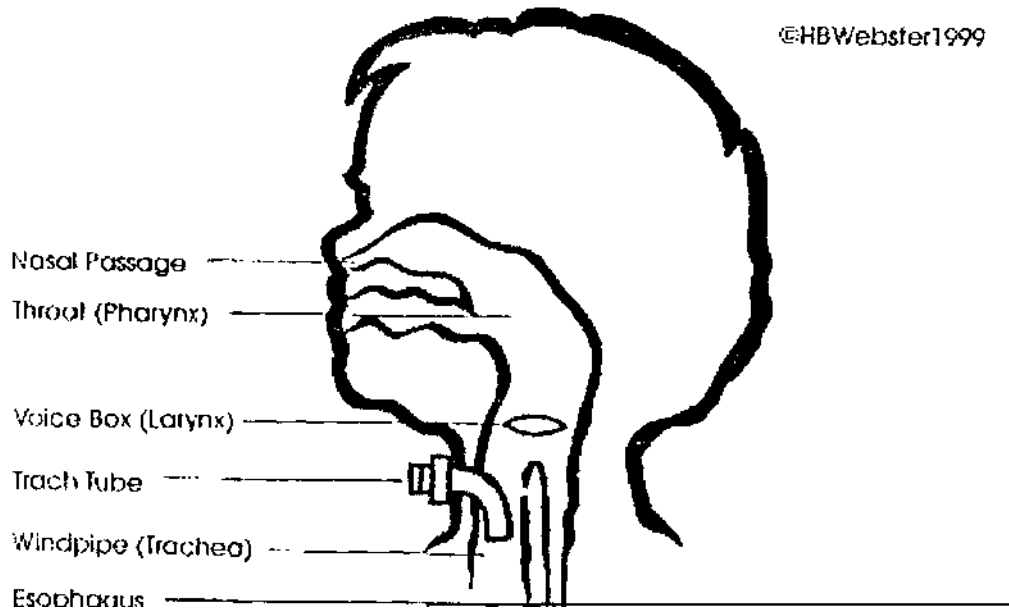
- The noise from the equipment (such as air compressors, suction machine, O2 concentrators and ventilators) is sometimes difficult to adjust to. Children quickly get used to this 'white noise' and may even have trouble sleeping without the noise. Depending on your home setup, you can try placing the air compressor in the hallway or closet to muffle some of the noise and run the aerosol tubing out the door. Be sure that there is plenty of empty space around compressor for proper ventilation, so that the machine does not overheat!
- Depending on the type of equipment your child needs, you may notice a significant increase in your electric bill.
- For extended trips, ask your medical supply vendor for the name and number of a local vendor in the area to which you are going, so you can get equipment if needed. You may also want to ask your doctor for a physician referral in that area.
- Check with the RMV (Registry of Motor Vehicles) to see if your child qualifies for a handicap placard or sticker. This is helpful when dealing with a child with special needs, plus equipment such as suction machine, O2 tanks, etc.
- Restock trach equipment weekly.

## WHAT IS A TRACHEOSTOMY?

A tracheostomy "trach" is an artificial opening in your child's trachea (windpipe). This opening is made by a surgical procedure called a tracheotomy. The opening is called a stoma. A small tube is inserted through the stoma which allows your child to breathe in and out and to remove any secretions which may be in your child's airway. The tracheostomy replaces breathing through your child's upper airway (nose, mouth, and throat).



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The above illustrations were adapted from [tracheostomy.com](http://tracheostomy.com)

## Tracheostomy Care

### Skin Care

Rubbing of the trach tube and secretions can irritate the skin around the stoma. Daily care of the trach site is needed to prevent obstruction, infection, and skin breakdown. Care should be done at least twice a day, and as needed. Children with new trachs or children on ventilators may need trach care more often. Tracheostomy dressings are used if there is drainage from the tracheostomy site or irritation from the tube rubbing on the skin.

### Equipment

6 - Sterile cotton tipped applicators (Q-tips)  
Sterile trach gauze and regular gauze  
Sterile or boiled tap water  
Hydrogen peroxide  
Trach ties and scissors (if ties are to be changed)  
Two sterile or clean disposable cups

### Procedure

1. Using a calm and gentle approach, explain the procedure using age appropriate language to the child.
2. Wash hands.
3. Prepare a clean work area.
4. Wash hands.
5. Pour 5 ml of hydrogen peroxide and 5 ml of water into one cup (this makes 1/2 strength hydrogen peroxide).
6. Pour 5 ml of plain water into another cup.
7. Label each cup to avoid confusion.
8. Open Q-tip, trach gauze, and regular gauze packages.
9. Clean skin around trach tube with Q-tip soaked in 1/2 strength hydrogen peroxide solution. Work from the center of the trach site outward using 4 swabs, one for each quarter around the stoma. Do not allow any liquid to get into trach tube or stoma area under tube.
10. Rinse area with Q-tip soaked in sterile water.
11. Pat dry with gauze pad.
12. Change trach ties if needed (See Tracheostomy Ties under Tracheostomy Change for instructions on changing ties)
13. Check skin under ties, especially back of neck.
14. Place pre-cut trach gauze around and under trach tube flush to skin. Do not cut or use gauze containing cotton because the child may inhale small particles. It is best to use pre-cut tracheostomy gauze. Be sure the trach dressing does not fold over and cover trach tube opening. Change dressing when moist to prevent skin irritation. Tracheostomy dressings may not be needed for older tracheostomies when the skin is in good condition and the stoma is completely healed and free from rash or redness.
15. Monitor skin for signs of infection. If the stoma area becomes red, swollen, inflamed, warm to touch or has a foul odor, call your doctor or nurse practitioner.
16. Check with doctor or nurse practitioner before applying any salves or ointments near the trach. If the doctor or nurse practitioner orders an antibiotic or antifungal ointment, apply lightly with a cotton swab in the direction away from the trach stoma.

## Suctioning The Tracheostomy Tube

The upper airway makes the air we breathe warm and moist. The air from a trach tube is cool and dry because it bypasses the upper airway. Suctioning is necessary to remove mucus from the tube and trachea and make breathing easier.

### When should you suction your child?

- When the child signals that he/she may need to be suctioned.
- When secretions can be heard or seen bubbling
- When a high pitched wheezy or raspy sound can be heard
- When there are signs of obstruction (clogging) such as:
  - \* Change in skin color (blue/pale)
  - \* Nasal flaring
  - \* Agitation
  - \* Slow, fast, or heavy breathing
  - \* Low oxygen saturation
- **You know your child better than anyone else, if your child's breathing is different from his/her normal breathing pattern, he/she may need to be suctioned**

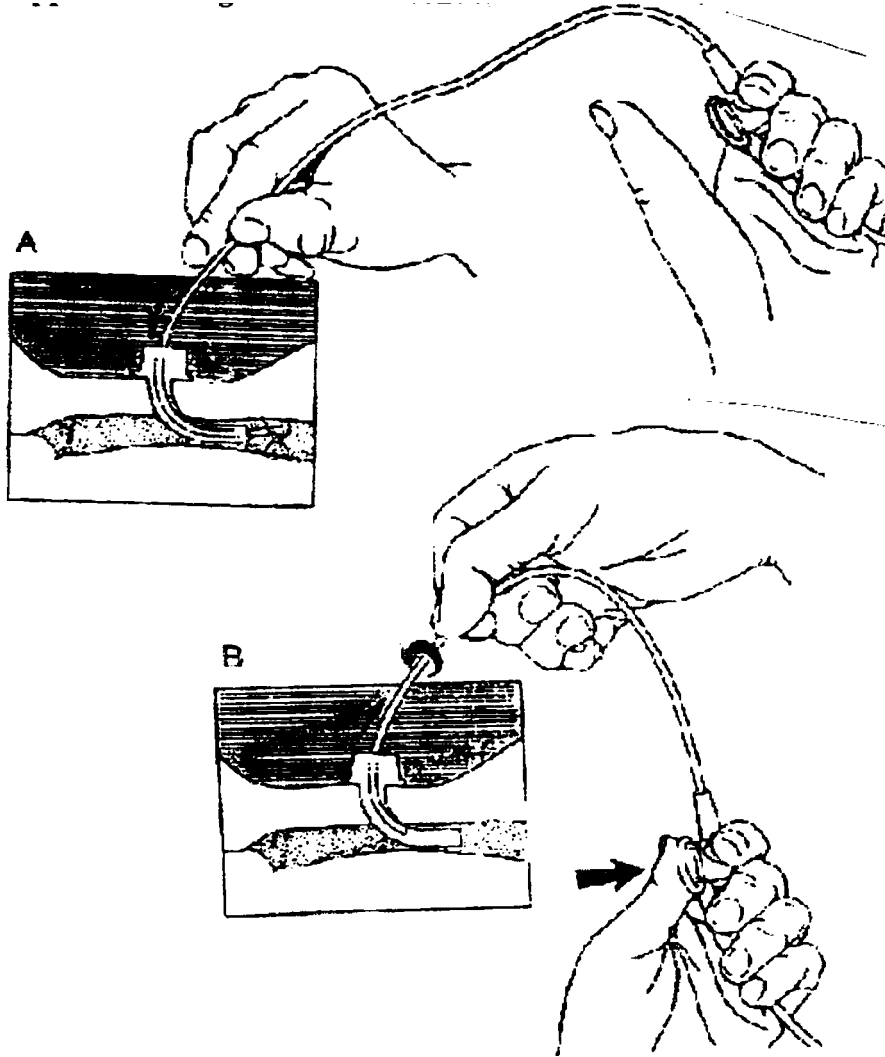
### Equipment for suctioning

Suction machine  
Suction connection tubing  
Suction catheter (size # \_\_\_\_\_)  
Normal saline solution (3cc ampules and bottle saline)  
Sterile or clean cup  
Sterile gauze  
Gloves (optional)  
Oxygen/ambu bag

### Procedure:

1. Wash hands with soap and water before tracheostomy care
2. Set up equipment
3. Pour normal saline in a sterile/clean cup
4. Test suction machine to assure that the pressure is between 60-80mm/hg (infant), 80-120mm/hg(child), 120-150 mm/hg (child greater than 8 years) . This is done by placing your finger over the suction port and checking the dial
5. Position the child – a small roll behind the shoulders will help make the tracheostomy easier to reach
6. Oxygenate the child as ordered before initiating suction
7. Place 2-3 drops of sterile normal saline with plastic squeeze ampule into the trach if needed for thick or dry secretions. Use saline only if the mucus is very thick, hard to cough up or difficult to suction. **(Remember always suction after saline has been placed in the trachea).**

- Moisten catheter tip with normal saline, then gently insert the tip of the suction catheter into the tracheostomy tube (without touching the catheter tip) (see Figure A). When the catheter is as far into the length of the trach tube as possible, draw back the catheter while applying suction in a circular, twirling motion (see Figure B). **Suction must not be applied for longer than 10 seconds.**



- Rinse/clear catheter by placing the catheter into the cup with saline and applying suction
- Observe the child's color and ease of breathing. Give the child a 20-30 second rest period between suctioning attempts.
- Oxygenate the child
- Upon completion of tracheal suctioning, the child's nose or mouth may be suctioned. **DO NOT PUT THE SAME CATHETER BACK INTO THE TRACH!**
- Dispose of suction catheter, saline, and gloves
- Be aware of color, odor, amount, and consistency of secretions and notify your health provider of any changes

## Changing a Tracheostomy Tube

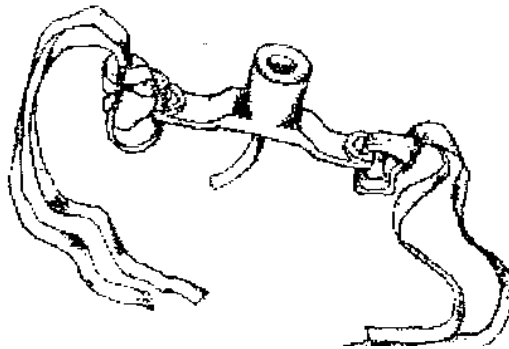
The tracheostomy tube is typically changed every 4 weeks to prevent mucus build up, cleanliness, and prevent infection. Check with your nurse practitioner or doctor about how often the trach tube needs to be changed. The trach tube should be changed 1 hour before feeding or 2 hours after feeding. Always change the trach tube with 2 people present (unless it is not possible in an emergency).

### Supplies

- Same size catheter tube with obturator (size: \_\_\_\_\_)
- Half size smaller trach tube with obturator (size: \_\_\_\_\_)
- Trach ties or velco straps
- Small blanket or towel roll
- Sterile water soluble lubricant
- Blunt ended scissors
- Tweezers or hemostats
- Suction machine and equipment (see section on Suctioning)
- Oxygen
- Good light source
- A clean working area next to child

### Procedure

1. Using a calm and gentle approach, explain the procedure using age appropriate language to the child. Children sense anxiety, try to relax.
2. Wash hands.
3. Prepare clean working area.
4. Wash hands.
5. Cut trach ties to the appropriate length, cut the ends of the tape at an angle to make it easier to thread through the hole in the trach wing (flange) and to prevent fraying (Figure B). Please note: when using Velcro straps to ensure that it sticks firmly to the strap-velcro that does not hold well, will loosen quickly and may cause the trach to come out with movement.



6. Inspect all tubes for cracks, tears, or decreased flexibility before use, especially if tubes are reused. Bring trach tie through one end of new trach tube. Avoid touching the part of the tube that is inserted into the trachea. Try to keep it sterile.
7. Insert obturator into new tube, be sure it slides in and out easily. The obturator helps to guide the tube, and the rounded tip adds protection to the stoma during insertion.
8. Place a small amount of sterile water soluble lubricant (surgilube or KY Jelly) on the end of the new trach tube and place the tube in sterile tray or clean surface. (*Note: Never use petroleum or Vaseline as a lubricant*). Use sparingly, wipe excess lubricant onto a sterile gauze.
9. Place the child on his/her back with a small blanket or towel roll under his/her shoulders to help with hyperextension. If your child is cooperative and can tolerate it, your child may sit up for the trach change.
10. Administer oxygen
11. Suction tracheostomy tube (see section on Suctioning)
12. Cut the old trach ties while the other person holds onto trach tube. The trach tube should always be held when ties are not secure—a cough or change in position can cause the tube to be dislodged.
13. Gently remove the old trach tube (follow angle of the tube, an upward and outward arc).
14. Insert the new tube in a smooth curving motion directing the tip of the tube toward the back of the neck in a downward and inward arc (like inserting a suction catheter).
15. Do not force the tube! (See section on Trach change difficulties)
16. Remove the obturator **immediately** while holding the tube securely with the other hand. DON'T FORGET THE CHILD CANNOT BREATHE WITH THE OBTURATOR IN PLACE.
17. Do not release the tube should the child cough.
18. With the other person holding the trach tube in place, thread the trach tie through the other end of the tube and tie, allowing one finger between the neck and the neck ties. Tweezers or hemostats may be used to thread ties through the hole of the wing of tracheostomy tube. Once the ties are properly adjusted, secure with a double square knot and cut off the excess tie. (DO NOT DIE IN A KNOT!)
19. Inspect old tube for color, mucus plugs or odor, then discard. Most plastic pediatric trach tubes are disposable and are not washed and reused. Specialized metal tracheostomy tubes are washed, then boiled to sterilize and reuse.
20. Observe stoma site for skin irritation, breakdown, and signs of infection. Observe the characteristics of the removed trach tube for dried blood, mucus, or yellow/brown secretions.
21. Remember to praise the child. Children like to be acknowledged for a job well done and tolerating a trach change is certainly a reason.

### Techniques for Trach Change Difficulties

- The obturator helps make insertion easy and trauma-free. Always keep an obturator on hand should the tube need an emergency change.
- Reposition the child if needed
- If the tube cannot be completely inserted, hold the tube in place, remove the obturator, allowing the child to breathe, then continue to insert to tube.
- If still unable to insert tube, remove the tube, re-lubricate and try again.
- If this is unsuccessful, try to insert the one size smaller tube.
- Try stretching the skin around stoma and try to insert tube as the child is breathing in.
- If needed, insert a suction catheter through the smaller tube and guide the suction catheter into the trach stoma. Then slide the trach tube over the suction catheter and into the stoma. Remove the suction catheter.
- If all else fails, cut a section of suction catheter to place it into the stoma in order to keep the stoma open and maintain an airway. Be sure to cut the catheter long enough so that it cannot be aspirated! Hold on to the catheter and call emergency services.

- Give supplemental oxygen if needed
- **Do not force tube! If you absolutely cannot get any tube or catheter into the stoma, and the child is breathing fairly comfortably (through the stoma or through the mouth and nose), CALL 911! Sometimes, the airway can be made worse by a trach tube inserted in the wrong place.**

## **Tracheostomy Complications**

### **Respiratory Distress and Tube Obstruction**

Mucus plugs are an accumulation of secretions/mucus in the tracheal tube. Mucus plugs are the most common cause of respiratory distress for children with tracheostomies. Symptoms of a mucus plug include resistance when trying to suction or bag and/or signs of respiratory distress.

#### Symptoms of Respiratory Distress

- Difficulty breathing
- Increased respiratory rate
- Increased heart rate
- Grunting, noisy breathing
- Stridor (high pitched sound)
- Whistling noise when breathing
- Cyanosis (pale, blue color around lips, nail beds, eyes)
- Restlessness
- Sweaty, clammy skin
- Retractions (pulling in of the skin between the ribs, and below the breast bone, above collar bones or in the hollow of the neck)
- Anxiety, frightened look
- Flared nostrils
- Change in pulse or blood pressure
- Infants may have trouble sucking
- Difficulty or refusing to eat
- Inability to wake the child
- Head bobbing due to use of strap muscles for breathing
- Reduced airflow through the tube
- More comfortable with head elevated or sitting up
- Low Oxygen saturations for children with a home pulse oximeter

#### What to do?

Suction trach or change trach tube as needed for respiratory distress. The tube may have become blocked with dried secretions or blood. If symptoms do not clear with suction or trach change, call 911 and then the doctor/nurse practitioner.

### **Bleeding**

Very small amounts of bleeding (pink or red streaked mucus) often occurs, as a result of routine suctioning. This bleeding can be managed with close observation and by modifying the care that might have caused the problem.

#### Possible Causes of Minor Bleeding

- Irritation to the fragile tissue around the stoma
- Insufficient humidity to the airway
- Too frequent, deep or vigorous suctioning
- Suction pressure that is too high (Suction machine pressure for small children 50-100mm Hg, for older children/adults 100-120mm Hg)
- Infection
- Trauma, manipulation of trach
- Foreign object in the airway
- Excessive coughing

### What to do?

Call your doctor/nurse practitioner, 911, or go directly to your local emergency room for a significant amount of bright red bleeding from the tracheostomy.

### **Infection**

The trach tube bypasses the natural defenses (nasal hair and mucus membranes) of the upper airway that filter out dust and bacteria; and therefore causes children with tracheostomies to be at a high risk for infection. A child may also have a local infection at the stoma (tracheal opening) site. Also, monitor for local infections at the stoma site. Handwashing before any trach care is one of the best defenses against infection.

### Symptoms of Infection

- Yellow or green secretions (may be pink/blood tinged)
- Thicker mucus
- Increased amount of mucus
- Redness, rash and/or inflamed at stoma site
- Bleeding at stoma site
- Foul odor
- Fever (Temperature greater than 101°F)
- Congested lung sounds
- Increased respiratory effort or change in respiratory rate
- Listlessness
- Discomfort with trach care, tender at stoma site

Call the doctor/nurse practitioner for symptoms of infection.

### **Accidental Decannulation**

#### (What to Do If the Trach Tube Comes Out Accidentally)

#### STAY CALM

- Reinsert tube immediately even if conditions are not ideal.
- There should always be two spare trachs with the child at all times, the child's size and one size smaller for emergency replacement. If the regular size does not fit, then the smaller size will keep the airway patent (open). Keep two trach tubes taped at the head of the child's bed and in your travel bag. Always keep blunt-nosed scissors handy to cut trach ties.
- **Opening the airway is always the first priority.** If a spare trach tube is not handy, replace the one that came out. Later, when the situation is under control, you can replace it with a clean trach tube.
- If you cannot reinsert the tube, observe the child to see if he/she can breathe through the stoma itself. This may be possible if the stoma is well healed and fairly large. The child may also be able to breathe through the nose and mouth if there is no severe obstruction above the trach site. **Call 911!**
- Comfort the child when situation is under control.

See Changing Tracheostomy Tube, which includes, "Techniques for a Difficult Trach Change."

### What to Do If Your Child Pulls on the Trach Tube

- Caring for a child with a tracheostomy may cause anxiety. Try not to let the child see that you are anxious.
- Try not to make a big deal about the trach, particularly if the child touches the trach tube. They will learn very quickly that by touching or pulling the trach tube, they receive attention, which tends to reinforce the behavior.
- Once children develop a pattern of pulling on the trach tube, it is more difficult to control, especially for young children and children with developmental disabilities. A Tracheostomy Collar may be helpful in preventing the child from pulling out the tracheostomy tube. A trach collar is like a belt with a hole in the center for the trach tube opening, then it fastens in the back of the neck. Check with your doctor, nurse practitioner or medical supply vendor.

### CPR with a Tracheostomy

All parents and caregivers should be trained in cardiopulmonary resuscitation (CPR). In fact, infant and child CPR classes for parents are required before a child can be discharged. Although it is not the purpose of this booklet to teach CPR, I would like to point out some important differences when delivering CPR to an infant or child with a tracheostomy tube.

### If the Child is Not Breathing

- Open the airway using the chin lift, but do not hyperextend the neck.
- Suction the trach tube.
- Change the trach tube if plugged or dislodged.
- Give two gentle puffs of air into the trach tube using an Ambu bag (breathing bag) with trach adapter or mouth to trach technique.
- If air leaks from nose and mouth, hold them closed.
- If the tube is obstructed or lost, it may be possible to give ventilation by sealing your mouth over the stoma and blowing or place the face mask of ambu bag over the stoma (gently, just enough to cause the child's chest to expand).
- If the child's airway is not obstructed, you can use mouth to mouth resuscitation by closing the stoma with your finger.
- Give CPR as indicated.