Tracheostomy

What is a tracheostomy?

- A tracheostomy is a surgical opening made in the neck into the trachea (windpipe) that allows a child to breathe without using his or her nose or mouth.
- A tracheostomy tube is inserted into the opening to allow breathing and removal of secretions by suctioning or coughing. There are several different types of tracheostomy tubes. All are held in place in the child's neck by a hook-and-loop fastener (Velcro) neck band called a *trach* (pronounced "trake") *collar.*
  - **Single cannula:** This type of tracheostomy tube is a single unit. It is generally seen in infants and toddlers.
  - **Double cannula:** This type of tracheostomy tube has an outer cannula that stays in place in the child and an inner cannula that is removable.
  - **Cuffed:** A cuffed tube has a soft balloon around the distal (far) end that can be inflated to seal the space around the tube against the trachea, to stop airflow around the tube, and to allow for better mechanical ventilation (use of a respirator) in patients with respiratory failure. The cuff is inflated with air or sterile water.
  - **Fenestrated:** A fenestrated tube has an opening in the shaft of the tube that permits speech when the external opening of the tube is blocked with a finger or special speaking valve. The opening in the part of the tube that is inside the trachea allows air to pass into the upper airway, across the vocal folds, to make speech sounds. These tubes are usually not used in younger children.

How common is it?

- A tracheostomy tube is placed in children to help overcome an obstruction somewhere in the head, neck, and airway region; to provide a means for mechanical ventilation with a respirator; or to provide a conduit to suction secretions from the airway (or any combination of those purposes). Tracheostomy tubes are often placed in children with congenital lesions of the airway that cause obstruction, in children with pulmonary complications of preterm birth that require mechanical ventilation, and in children with neurologic (brain) or neuromuscular disorders.
- More children are receiving tracheostomy tubes because lifesaving medical treatments are now available that allow children to survive serious medical conditions.

Who might be on the treatment team?

- Pediatrician/primary care provider in the medical home.
- A pediatric pulmonologist (lung doctor), an otolaryngologist (ears, nose, and throat surgeon), and a pediatric surgeon may be involved in the child's care.
- A respiratory therapist may also be involved if the child is on a respirator.
- Some children have home nurses who may accompany them to school or child care.

What are some elements of a Care Plan for a child with a tracheostomy?

The Care Plan should address

- The brand of the tracheostomy tube and the size
- Suctioning of the tracheostomy
  - A clean disposable suction catheter is placed in the child's tracheostomy tube and is hooked up to a suction machine to remove any of the child's secretions that have built up and, consequently, that might block the child's breathing.
  - This suctioning may be done up to every 4 hours as needed. It is usually done by the child's nurse or caregiver. To lessen the likelihood of introducing infection, the protocol for suctioning must be followed exactly.
  - The suction catheter should be introduced into the tracheostomy tube to only a specific depth. This depth is determined by the length of the tracheostomy tube cannula. It is premeasured with the child's own tracheostomy tube length and should be known by all caregivers who will suction the child's tracheostomy.
- Eating
  - Children with tracheostomy tubes generally can eat by mouth. A few children also have eating or swallowing problems that will be addressed in the Care Plan.
  - Most children require suctioning before eating and may require suctioning after eating, if any food slips unintentionally down into the airway. If food or liquid that a child swallows goes into the trachea and comes out the tube, the medical care team should be notified.
  - Plenty of fluids are recommended to keep secretions thin and moist.
- Speech. A child with a tracheostomy can speak in many ways.
  - A fenestrated tracheostomy tube has a hold in the shaft that allows air to flow up through the vocal cords to create voice.
  - Special speaking valves allow air into the tracheostomy tube, when a child breathes in, but block air from going out through the tracheostomy tube. These valves allow the air to move around the outside of the tracheostomy tube in the trachea (windpipe) and flow through the upper airway and vocal cords to create voice (eg, Passy Muir valve).

Tracheostomy *(continued)*

  - Plugging the trachea with a finger will temporarily encourage speech by allowing air to flow around the tracheostomy tube in the trachea (windpipe) and up through the vocal cords to create voice.
- Children younger than 3 years (ie, 36 months) may receive speech-language therapy through *early intervention* services. Early intervention is a system of services to support infants and toddlers with disabilities and their families. See Chapter 2 for more details.
- For children 36 months and older, *special education and related services* are available through the public school to provide the therapies necessary for school achievement. See Chapter 2 for more details.

What adaptations may be needed?

Physical Environment and Other Considerations

- When holding a child with a tracheostomy tube, be sure his or her chin is up and the tube opening is unobstructed.
- Prevent foreign objects from entering the tracheostomy tube, such as water, sand, dust, and small toy pieces.
- Avoid sandboxes and beaches.
- Avoid chalk dust.
- Watch play with other children so toys, fingers, and food are not put into the tracheostomy tube and to ensure that other children do not pull on it.
- Avoid clothing that blocks the tracheostomy tube, such as crewnecks, turtlenecks, and shirts that button in the back.
- No plastic bibs.
- No necklaces.
- No fuzzy or fur clothing and no stuffed toys.
- Do not allow anyone to smoke near the child.
- No latex balloons. Latex balloons are dangerous for all children. Latex over any airway will block breathing.
- Avoid exposure to people with colds and other contagious illnesses to the extent possible.
- All children and staff should be fully immunized, including with influenza vaccine.

What should be considered an emergency?

- Call emergency medical services (911) for
  - Difficulty breathing, especially if accompanied by noisy breathing (grunting or whistling from the tube) or cyanosis (pale, blue color of the lips and skin)
  - Increased respiratory rate or effort
  - Sweaty, clammy skin
  - Retractions, that is, extra work of breathing that involves pulling in of the skin between the ribs, below the breastbone (sternum), above the collar bones, or in the hollow of the neck
  - Tracheostomy tube that comes out and cannot be replaced
  - Extreme restlessness or change in level of consciousness (eg, sudden lethargy, not responding)
- Notify parents/guardians of
  - Fever and increased secretions
  - Redness, rash, or foul odor at the tracheostomy site
  - If coughing occurs after a child swallows food or liquids and either or both are noted to be coming out of the tracheostomy tube

What types of training or policies are advised?

There must be a trained person with the child at all times who is able to identify an emergency and

- Suction a tracheostomy and replace a tracheostomy tube that is blocked with secretions.
- Ventilate the child using an oxygen bag.
- Perform CPR.
- For children who are transported, be with the child at school and on the bus to and from the program. Preferably, this trained person should be a registered nurse or licensed practical nurse.

What are some resources?

- American Thoracic Society: www.thoracic.org, 212/315-8600—"Use of a Tracheostomy With a Child" (fact sheet), www.thoracic.org/patients/patient-resources/resources/tracheostomy-in-child.pdf
- Cynthia Bissell, RN: "Aaron's Tracheostomy Page" (Web page), www.tracheostomy.com

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