Complex Care Hub Manual: Looking After a Child with a Tracheostomy

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<th>4.0</th>
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<td>Date revised</td>
<td>2017 next due 2019</td>
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1 What is a tracheostomy?

A tracheostomy is a surgical opening (stoma) into the trachea (wind pipe) below the voice box. A tracheostomy tube is a curved hollow tube that is inserted into the stoma that allows the child to breathe by bypassing the mouth and nose (upper airway). Some reasons a tracheostomy may be required include upper airway blockages, floppy airways, excessive secretions (mucus and saliva) and other issues that cause difficulty breathing through their upper airway.

*Image 1: Example of tracheostomy and child with tracheostomy in-situ*

1.1 Types of tracheostomy tubes

There are many types and brands of tracheostomy tubes available. Commonly used tubes are:

**Single cannula tracheostomy**

These tracheostomy tubes only have one cannula.

**Inner and Outer cannula tracheostomy**

These tracheostomy tubes have an inner cannula and an outer cannula. This means that you may only have to change the inner cannula if the tracheostomy is blocked.

*Image 2: Example of inner and outer cannula tracheostomy*
2 Care of the stoma

2.1 Cleaning the stoma
The stoma is cleaned at least once a day or more often if it is red, moist or infected. It is usually cleaned after the child’s bath.

What you will need to clean the stoma:
- Cotton buds
- Sterile water/cool boiled water/sterile saline/tap water
- Split gauze dressing

Procedure
1. Perform Hand Hygiene
2. Remove old split gauze
3. Perform Hand Hygiene
4. Gently swab skin under flange in a circular motion around the stoma with a moist cotton bud, continue until stoma is clean using each cotton bud once
5. Wait approximately 20 seconds for stoma to air dry
6. Insert new split gauze dressing by inserting half under one side of flange and then the other half under the other side
7. The split gauze dressing should be changed whenever wet or dirty
8. Perform hand hygiene

On occasion you may be required to put ointment or a different dressing on the tracheostomy stoma. The child's parents will instruct you when this may be required.

2.2 What to look for when cleaning the stoma
- Discharge (may be yellow)
- Granulation (small bumps of tissue that grow around the edge of the stoma
- Smelly offensive dressing/stoma
- Swelling and/or redness around stoma
- Pain
- Bleeding

Tell the parent/caregiver about any of the above before the end of your shift. If the stoma is bleeding inform the parent/caregiver immediately.

3 Changing tracheostomy ties

The ties holding the tracheostomy in place should be changed daily or more frequently if wet or dirty. The ties are usually changed after the child’s bath. Tie changes are best done with two people present due to the risk of the tracheostomy being accidently dislodged

3.1 Cotton ties
What you will need to change the cotton ties:
- Scissors (for cotton ties only)
- Pre-cut cotton ties/Velcro ties
- Rolled towel
What you will need to have available:

- Tracheostomy kit
- Phone
- Suction Catheter and suction machine
- Cool boiled water

**Procedure**

1. Perform hand hygiene
2. Prepare two equal lengths of cotton, long enough to go around the child’s neck or clean Velcro ties
3. Lie the child down on a small rolled towel placed under the shoulders, this helps to put the neck in the right position (alternatively an older child may like to sit up in a bed or chair)
4. Insert a clean cotton tie on each the holes on the flanges on each side of the tracheostomy. The old cotton ties are left in place while the new ones are tied
5. For cotton ties make a single loop approximately 0.5cm from the edge of each flange.
6. Tie both sides together in a bow to secure them. (Try to tie this knot in a different position on the skin each time to minimise the risk of pressure areas)
7. Check the tension of the ties. Allow one finger to fit snugly/firmly between the skin and the ties
   - Ties that are too loose can cause the tracheostomy to fall out
   - Ties that are too tight they can cause skin and tracheal irritation
   - Check the skin under the ties for signs of redness/irritation
8. When you are happy with the tension, pull the bows through into a reef (inner and outer) knot to secure the tracheostomy
9. When the new ties are secure remove the old ties by cutting/removing them carefully
10. Cut off the extra length of the new cotton ties, leaving approximately 3 cm
11. Perform hand hygiene

NB: The old ties must remain in place until the new ties are secured. If you have to remove the old ties before securing the tracheostomy with clean ties, you will need a second person to hold the tracheostomy in place until the new ties are secured.

**3.2 Velcro™ Ties**

4. Two people are required to change Velcro™ ties, one to hold the tracheostomy tube in place (an older child may be able to assist with this) and the other to remove old ties and secure clean ties to both ends of the tracheostomy
5. Once the Velcro ties are in place recheck the tension of new ties
   - Ties that are too loose can cause the tracheostomy to fall out
   - Ties that are too tight they can cause skin and tracheal irritation
   - Check the skin under the ties for signs of redness/irritation
6. The second person can stop holding the tracheostomy once the new/clean Velcro ties are secured and checked

7. Before use ensure the Velcro™ ties are adhering firmly and in good condition

4 Humidification

4.1 What is Humidification?
Humidification happens as we breathe in and the air is warmed and moistened (humidified) and also filtered by the nose and mouth. This natural humidification does not happen in children with a tracheostomy because the air does not pass through the nose and mouth. A child with a tracheostomy needs a special humidifier which acts in a similar way to our nose and mouth. The humidifier makes breathing more comfortable for the child by stopping their airways from getting too dry, secretions from getting too thick and it also helps filter out foreign particles and dust.

4.2 What types of Tracheostomy humidification are there?

Heat Moisture Exchanger

- HME/Swedish Nose™: is a plastic cylinder that has special paper filters on each end. They must be changed: every 24 hours, or when they are clogged with secretions or if they are dropped onto a dirty surface. Do not wet the HME filter.
- Trache Bib: is tied around the child’s neck, (similar to a feeding bib) and sits over the tracheostomy. The Trache Bib may be washed and reused for approximately one month unless discoloured or damaged. They can be worn for 24 hours unless very wet with secretions or contaminated with food or vomit.
- Tracheostomy bibs can be used for children of all ages. Upon first use the toggles on the ties must be put in place and the excess tie length cut off. Ties that are too long can cause strangulation.

Mechanical Humidification

The mechanical humidifier is a machine that adds moisture and warmth into a circuit that is used to give air to the child. See the specific manual section for mechanical humidification.

5 Suctioning

Suction is used for children who aren’t able to bring up (clear) their own secretions (saliva, mucus).

If the secretions aren’t removed the child could get a chest infection (from the secretions going into the lungs), or the build-up of secretions could block the child’s tracheostomy.

The correct suction pressure to use when suctioning a tracheostomy is 80-120 mmHg or 10-16 kPa. Check the suction pressure at the beginning of the shift as higher pressures can damage the airway.

There are a few different home suction machines but the steps to suction a child are the same with each machine.
5.1 When to suction a tracheostomy:
- You can hear the secretions in the child’s airway
- You can see secretions in the tracheostomy
- The child is having difficulty breathing
- You think the tracheostomy is blocked or partially blocked
- The child can’t clear the tracheostomy by coughing out the secretions
- The child is vomiting
- High pressure alarm (in ventilated children)
- The child asks to be suctioned

5.2 How to suction a tracheostomy
What you will need to suction the tracheostomy:
- Portable suction machine
- Suction tubing
- Suction catheter
- Container of cooled boiled water/tap water
- Hand gel

Procedure

1. Complete hand hygiene
2. Put on gloves
3. Turn on suction machine
4. Remove suction catheter from its cover, making sure not to touch the part of the catheter that will go into the tracheostomy
5. Measure the length of the catheter you will use against the measuring tape on the child’s suction machine without touching it with the catheter.
6. Gently introduce the suction catheter into the tracheostomy to the pre-measured depth. Do not use suction while putting the catheter into the tracheostomy.
7. Apply suction by placing your thumb over the suction hole on the catheter.
8. Withdraw the catheter over five seconds (count to five). While withdrawing gently rotate the catheter in the lumen to remove all secretions.
9. Let the child get their breath
10. Re-suction as necessary – you may need to suction a few times in a row in order to fully remove all the secretions from the tracheostomy. Be sure to let the child get their breath between each suction.
11. Clear the suction catheter by suctioning cool boiled water through the catheter.
12. Look at the secretions. If there are any changes to the thickness, colour or smell please tell the child’s parent/caregivers. If there is blood in the secretions you MUST inform the family immediately.
13. Remove gloves and discard
14. Complete hand hygiene

NB. Some patients may require bagging with a resuscitation bag (assisted ventilation) before and after suctioning.

6 Special Considerations for suctioning

6.1 Saline
Saline can be used if the tracheostomy feels partly blocked and it is difficult to pass the suction catheter into the tracheostomy (refer to Section Blocked lumen).

Procedure
1. Perform hand hygiene
2. Draw up 0.5mls of saline ampoule into a syringe
3. Squirt the saline into the opening of the tracheostomy, count slowly to 5
4. Suction
5. Perform hand hygiene

6.2 When to throw out suction catheters

Throw out suction catheters and open a new one:

- Every 24 hours
- If the catheter looks blocked with thick secretions
- If the catheter tip comes into contact with anything other than the tracheostomy
- If you drop the catheter

6.3 Blocked tracheostomy

A blocked tracheostomy is usually the result of a build-up of secretions, due to inadequate suctioning or if the child has very thick secretions. In a blocked tracheostomy you may not be able to pass the suction catheter the full length of the tracheostomy. A blocked tracheostomy can cause severe breathing problems, which must be fixed immediately to avoid an emergency situation.

6.4 Preventing a blocked tracheostomy

- Use humidification, by using either a Swedish Nose/HME, Trache Bib or a heated humidifier made for use with a tracheostomy. There is a risk of a tracheostomy bib accidently blocking a tracheostomy tube when a child is lying on their stomach and the bib gets stuck over or in the tracheostomy
- Suctioning as required
- Use saline if secretions are thick and sticky (overusing saline can make the secretions thin and runny)

6.5 Treating a blocked Tracheostomy

See Basic Life Support for a Tracheostomy Section 5

7 Tracheostomy kit

The following items must be kept with the child at all times:

- Tracheostomy tube – the same size and one smaller
- Tracheostomy securing device- cotton ties\velcro\chains
- Scissors/ chain cutters
- Water based Lubricant
- 0.9% normal saline ampoule
- 1ml syringe
- One way valve for basic life support
- Resuscitation bag and face mask
- Mucus trap (for emergency suction –)
- Occlusive tape
- Portable suction pump and suction catheters
- Cool boiled water for clearing the suction catheters
- Face shield

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8 Changing the tracheostomy tube (planned change)

A planned tracheostomy change is a routine change of a tracheostomy tube. Two people work together to remove the child’s tracheostomy tube and insert a new one. This is best done before a meal or at least one hour after a meal, to reduce the chance of the child vomiting.

8.1 Equipment needed at the bedside for a tracheostomy change

Tracheostomy kit which includes:

- One tracheostomy tube the same size with ties attached
- One size smaller tube
- Spare Cotton ties or Velcro™ ties
- Suction catheter, suction machine and cool boiled water
- Saline and 1 ml syringe
- Scissors
- Lubricant (water based)
- Emergency mask and bag or one way valve

Phone in case of emergency and small rolled towel to put behind child’s shoulders

9 Tracheostomy change with two people

Procedure

1. Complete hand hygiene
2. Open packaging of same size tracheostomy tube, check size is correct on the flange
3. Prepare the tracheostomy for insertion by tying the cotton ties on to each flange (using the technique specified in section 5.1) or attach Velcro™ ties to one side only
4. Lie child on their back, put a rolled towel under their shoulder blades, this helps to expose the neck. If cooperative - older children may prefer to sit upright with their head tilted back.
5. Perform Hand Hygiene
6. Put on non-sterile gloves
7. Suction the child’s tracheostomy
8. **Person one** holds the tracheostomy in place
9. **Person two** cuts/removes the ties completes hand hygiene then holds the new tracheostomy tube.
10. **Person Two says** “I’m going to count to three” and then counts “1,2,3”.
11. **Person one** removes old tracheostomy on the count of 3
12. **Person two** inserts new tracheostomy (removes introducer if applicable) and holds the tracheostomy securely in place until the new ties have been made secure.
13. Ensure the child is breathing comfortably, suction as required

14. **Person one** secures the new ties by following the process outlined in section 3

   “Changing the ties”

15. **Person two** must not let go of new tracheostomy until the ties are secure and

    **Person one** has said the ties are secure

16. Complete hand hygiene

17. Comfort and settle the child

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**Image 3: Example of changing the tracheostomy tube**

**10 Emergency tracheostomy change**

This is a tracheostomy change that is not expected or planned for, such as if the tube has fallen out or is completely blocked. It is an emergency situation and you will need to do this change as quickly as possible and you may need to do it by yourself. Be prepared for an emergency tracheostomy change by having the tracheostomy kit easily available at all times.

**Procedure**

1. Get Tracheostomy kit
2. Complete hand hygiene only if ABHR is immediately available
3. Put on gloves only if they are immediately available
4. Extend neck, can use rolled towel or piece of clothing if immediately available
5. Cut the cotton ties
6. Remove the old tracheostomy
7. Insert the new tracheostomy
8. Remove the introducer (if applicable)
9. Secure tracheostomy tube by tying an inner and outer knot as quickly and safely as possible

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10. If child is not breathing:
   • Start basic life support (see Basic Life support Tracheostomy manual)

If they are breathing:
   • Reassure the child and monitor them
   • Suction the tracheostomy as necessary
   • Remove gloves and discard
   • Complete hand hygiene
   • Let the parents know

10.1 Possible problems when changing the tracheostomy

Anxious child: If you know the child is anxious about the change get everything ready for the change before the child comes into the room. If age appropriate, wrap the child snugly in a towel or small blanket. If possible use age appropriate distraction for the child. Remain calm at all times as this will help to reassure the child.

Shrinkage of the stoma: If you have difficulty inserting a new tracheostomy during a change follow the steps below, proceeding to the next step only if you are still not successful

Procedure

1. Apply lubricant to the outside of the tracheostomy tube
2. Extend the neck and spread skin around the stoma using your thumbs and forefinger so you can see the hole clearly. Try the new tracheostomy again; it should pass with gentle pressure.
3. If still unable to insert:
4. Try inserting the smaller tracheostomy using the same technique above.
5. If still unable to insert:
6. Insert a clean suction catheter (not attached to the suction unit) into the smaller tracheostomy so that the catheter goes 3-5cm past the end.
7. Insert the suction catheter a short way into the stoma; extending the skin around the tracheostomy and slide the tracheostomy along the catheter into the stoma.

If this fails, reassure and keep the child calm, call 000 for help. If the child stops breathing, start resuscitation efforts via mouth to mask or bag to mask. Tape the stoma site if there is a lot of air leaking from tracheostomy stoma and the child’s chest is not rising and falling.