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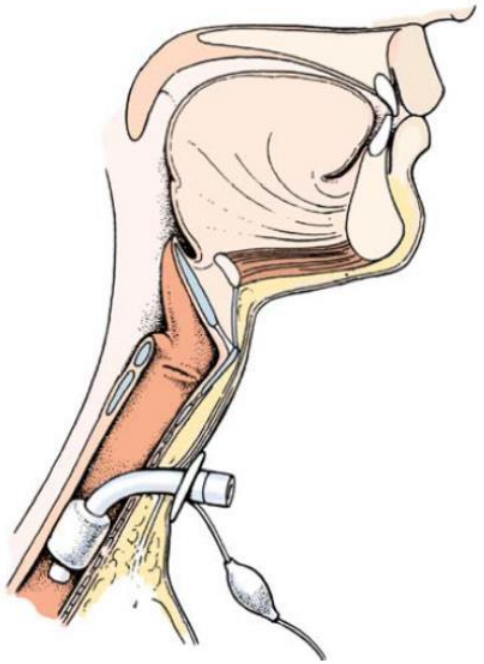
Tracheostomy Care



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IMET2000-Pal, Ramallah

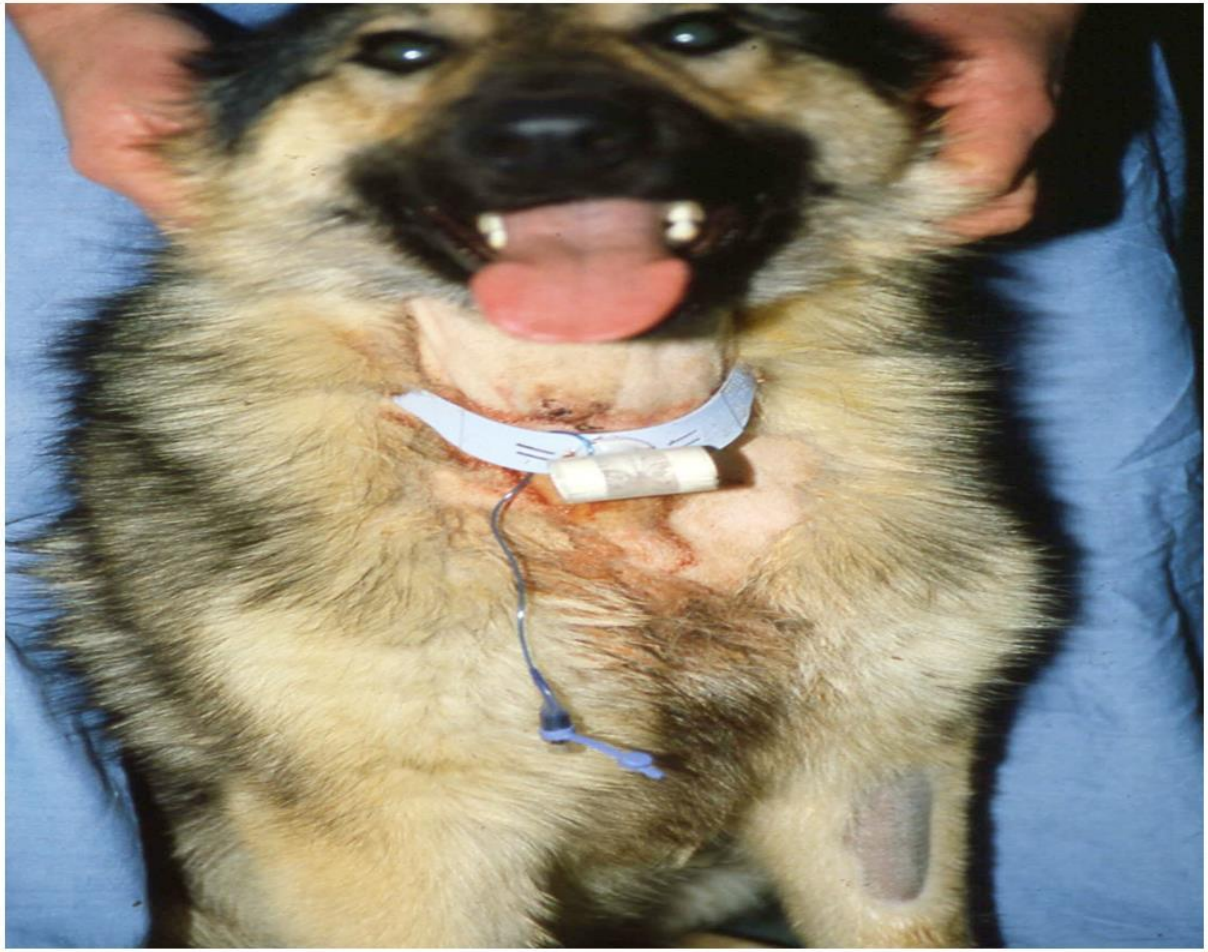
Outline:

- Anatomy.
- Definition.
- Types of Tracheostomy tubes.
- Reasons for Performing Tracheostomies.
- Tracheostomy Contraindications.
- Nursing Care.
- Complications.

Objectives:

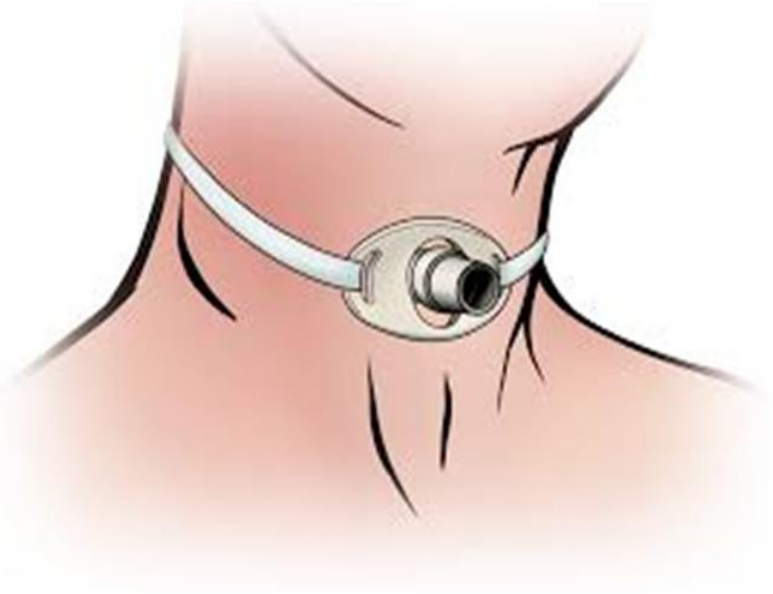
After successful completion of this session you will be able to:

1. Define the tracheostomy.
2. Describe the reasons for tracheostomy.
3. List the most common complications likely to arise from temporary and long-term tracheostomies.
4. Identify tracheostomy tube types currently in use.
5. Describe components of a care plan for a patient with a tracheostomy.



Overview:

- Tracheostomy can be traced back to Egyptian tablets from 3600B.C.
- It is the surgical procedure that creates an opening in the cervical trachea.
- It is rarely done as an emergency.

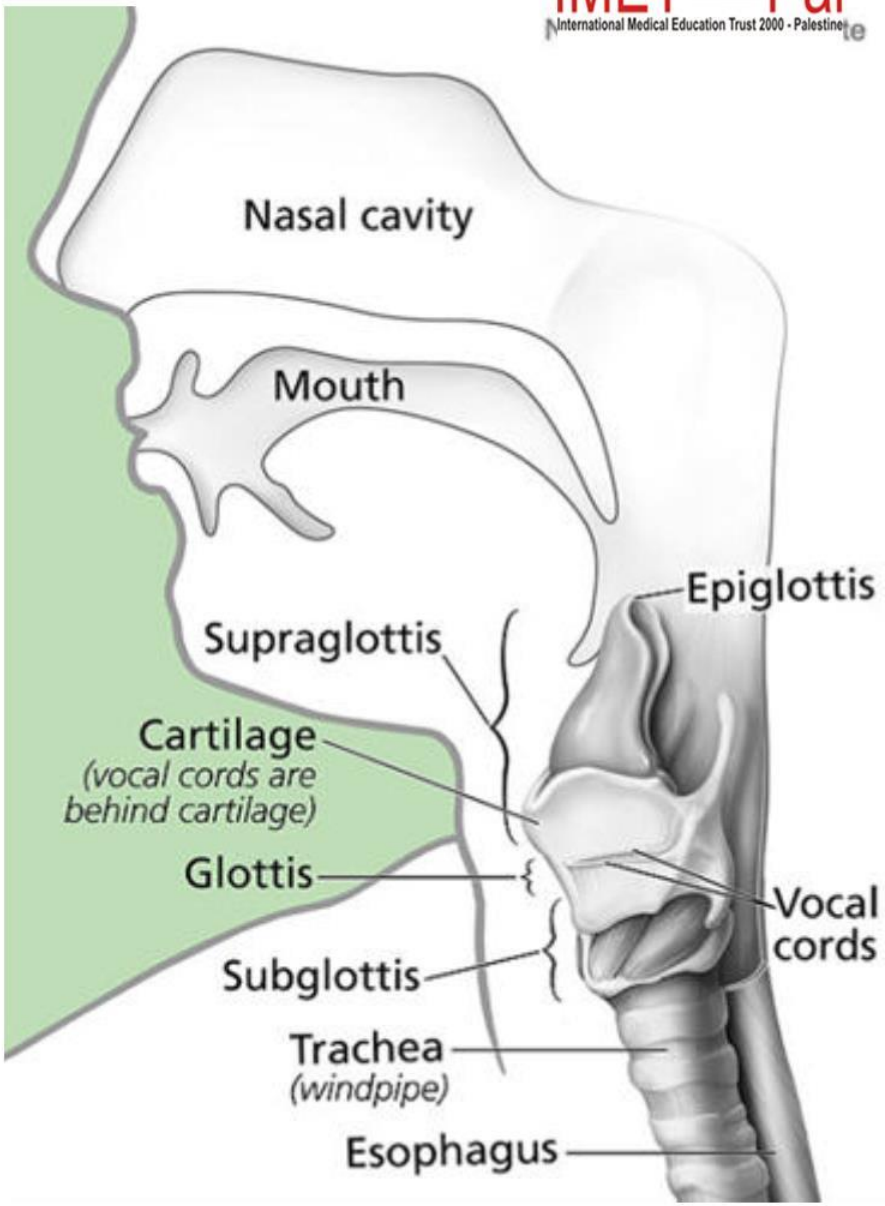


Overview……..Continue

- Tracheostomy is usually performed for the following reasons:
  - To bypass an obstruction
  - To maintain an open airway
  - To remove secretions more easily
  - To oxygenate and/or provide mechanical ventilation on a long-term basis
- Tracheostomy care and tracheal suctioning are high-risk procedures, and it is a nursing procedure.

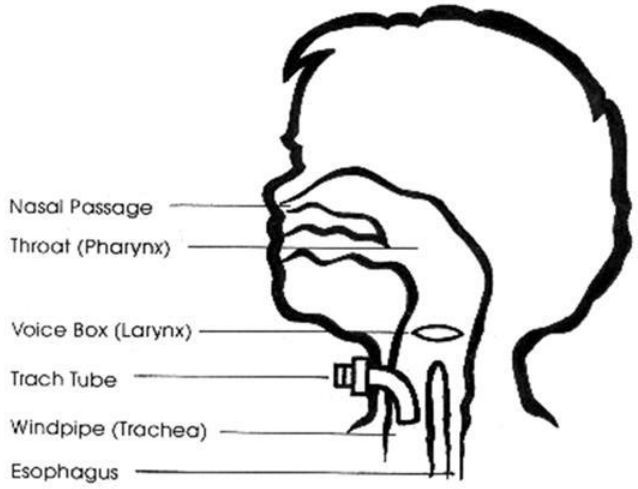
Anatomy:

- The trachea is nearly but not quite cylindrical, flattened posteriorly.
- It is D-shaped (Cross section).
- Measures about 11 cm in length.
- Starts from the inferior part of the larynx in the neck, opposite the 6th cervical vertebra, to the intervertebral disc between T4-5 vertebrae in the thorax.

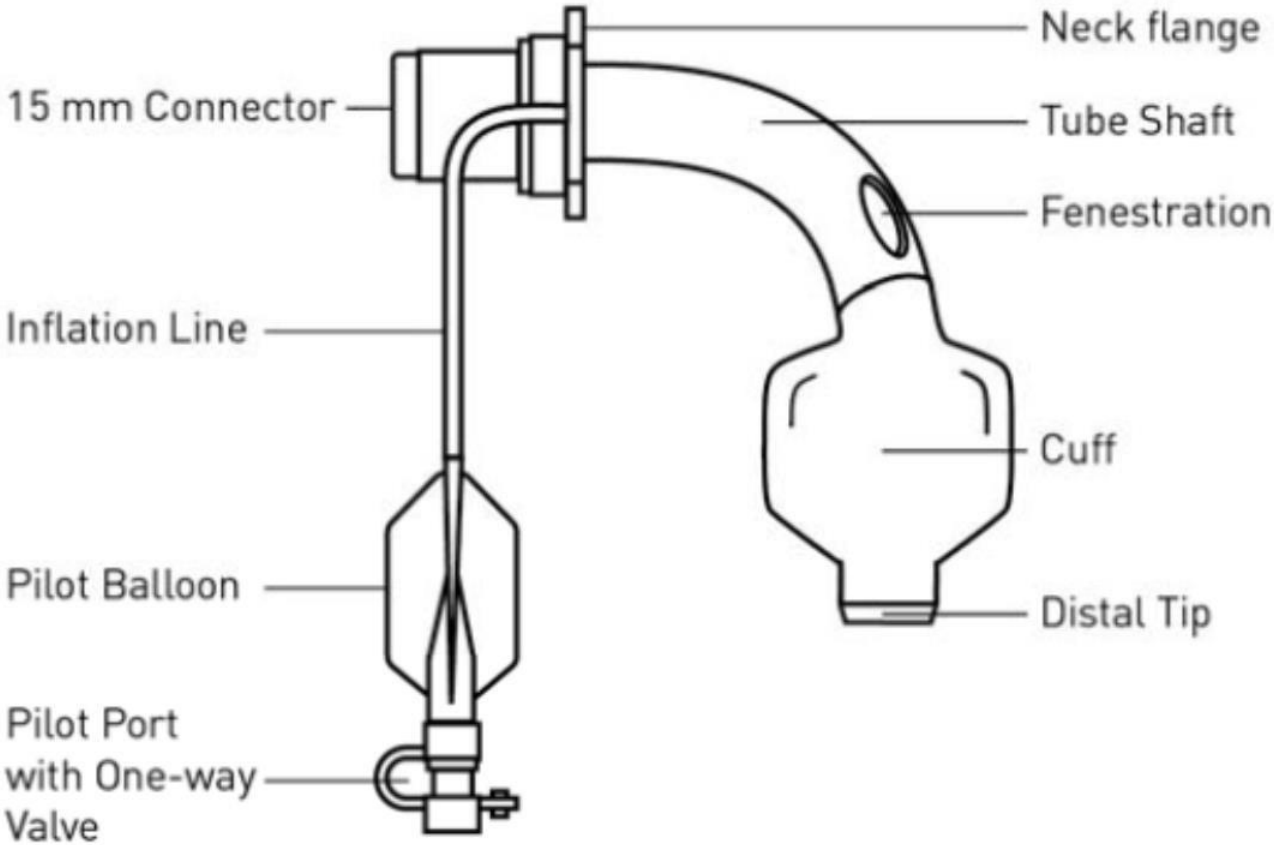


What is a Tracheostomy?

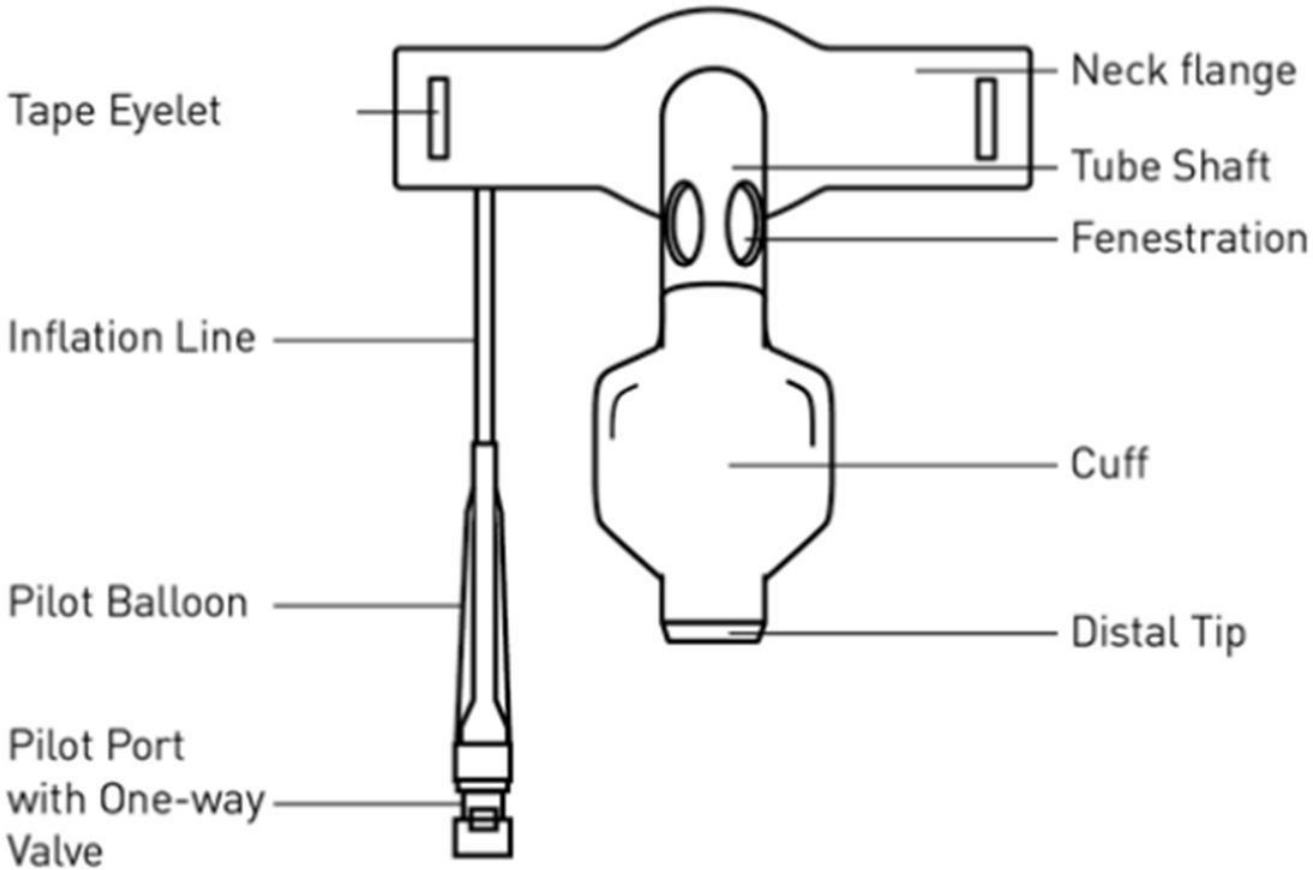
- Tracheostomy is a surgical procedure that is usually done in the OR under general anesthesia.
- A tracheostomy is an incision into the trachea that forms a temporary or permanent opening.
- The terms tracheotomy and tracheostomy are interchangeable.
- The opening is called a “stoma”.
- It is one the oldest surgical procedures.



Lateral Tracheostomy



Anterior/ Posterior Tracheostomy



Types of Trach Tubes

- **Cuffed or uncuffed.**

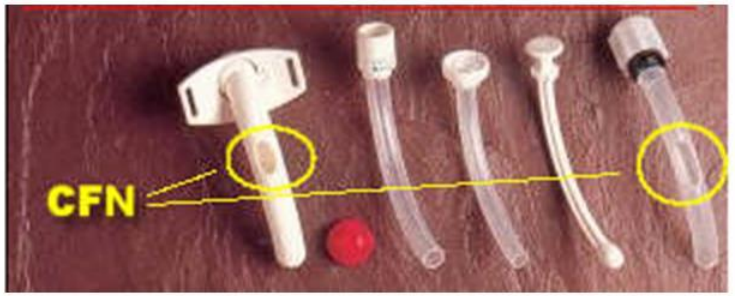
Most pediatric tubes do not have cuffs and inner cannulas due to smaller diameter. Most adult tubes have inner cannula to allow for less frequent outer cannula changes.

- **Metal (Jackson) or plastic (bivona, portex, shiley)**
- **Single or double cannula**
- **Fenestrated or non-fenestrated**

Types of Trach Tubes

Bivona® Uncuffed Neonatal and Pediatric Silicone Tracheostomy Tubes

Shiley® cuffless tube



Shiley® fenestrated cuffless tube

Metal Jackson tube

Types of Trach Tubes…..Continue

Image of a cuffed tracheostomy tube showing the inflated balloon.

Fenestrated Tube

Reasons for Performing Tracheostomies:

- Inherent abnormality of larynx or trachea.
- Blockage of the airway by a tumor, foreign object, soft tissue swelling or collapse of throat structure.
- Severe throat, neck or mouth injuries.
- Inability to swallow or cough.
- Long term coma / unconsciousness.
- Need for long term mechanical ventilation.

Types of Patients Requiring Tracheostomies:

- A comatose patient.
- A patient with cancer of the larynx.
- A burn patient with inhalation damage.
- A COPD patient on mechanical ventilation.
- A pediatric patient with a congenital airway obstruction.

Tracheostomy Contraindications:

- **Absolute Contraindications (Rare):**
  - Soft tissue infections of the neck.
  - Anatomic aberrations.
- **Relative Contraindications:**
  - Sever respiratory distress with refectory hypoxemia and hypercapnia.
  - Hematologic and coagulation disorders.

Nursing Care: Assessment

1. Assessment should be completed at the start of every shift.
2. Observe patient for signs of hypoxia, infection, and pain.
3. Examine the trach tube, any tubing and equipment connected to it.
4. Observe and examine the stoma site for redness, purulent drainage, and abnormal bleeding around the stoma.
5. Note the amount, color, consistency, and odor of secretions.

Nursing Care: Interventions

- Provide Humidification.
- Mobilizing Secretions.
- Suctioning.
- Cuff Pressure.
- Changing The Trach Tube.
- Trach Site Care & Dressing Changes.
- Nutrition & Communication.

Nursing Care: Providing Humidification

- When a tracheostomy is inserted, the natural warming, humidification and filtering of inhaled air is lost.
- It is essential to provide an alternate form of humidification.
- There are various humidification methods available, including:
  - Heated humidification (Increases heat and water vapor inhaled).
  - Cold water humidification.
  - Heat and moisture exchangers (HME).
  - Stoma protectors.

Note:
Humidifiers and nebulizers may be used with, or independent of, mechanical ventilation.

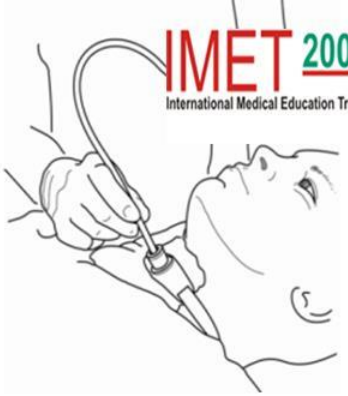
Nursing Care: Providing Humidification…….Continue

- Heat Moisture Exchange (HME) or artificial nose
- Can be worn 3-4 hrs a day, at least twice a day.
- Discard it after use

Nursing Care: Mobilizing Secretions

- Trach patients often experience a temporary increase in the production of secretions, and usually require assistance to mobilize these secretions.
- Frequent repositioning, deep breathing and coughing, chest physiotherapy, postural drainage, oral and parenteral hydration, and supplemental humidification all help to thin and mobilize secretions.

Nursing Care: Suctioning



- Suctioning is necessary for all trach patients

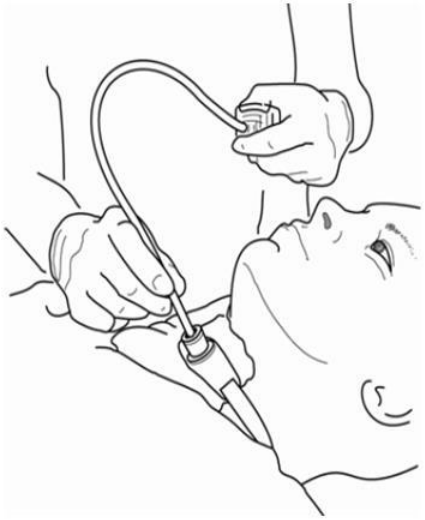
to remove secretions and assess airway patency.

- Acute care patients need to be assessed every **two hours** for the need for suctioning.
- Suctioning is routinely done twice a day but more often if needed.
- They may have severe hypoxia, cardiac arrhythmias, and even cardiac arrest when the airway is occluded by the catheter during suction.
- Suctioning prior to meals.

Suctioning activates psychological and physiological reflexes????

Indications for Suctioning:

1. Dyspnea: Flared nostrils, chest retractions and/ or prolonged wheezing.
2. Noisy breathing.
3. Cyanosis and clammy skin.
4. Restlessness and agitation.
5. Copious secretions; moist cough.
6. Low oxygen saturation.
7. Increased peak inspiratory pressure on mechanical ventilator.



Selecting A Suction Catheter:

- Selection of the appropriate size suction catheter **is vital** in reducing the risk of trauma during suctioning.

Size suction catheter= $\frac{\text{Internal diameter of the tracheostomy}}{2} \times 3$

For example: When a size 8 tracheostomy tube is used.

Size suction catheter= (8mm/2) X 3 = 12.

Nursing Care: Suctioning

- The pressure setting for tracheal suctioning is 80-120mmHg to avoid tracheal damage.

The suction pressure setting should not exceed 120mmHg.

- It is recommended that the episode of suctioning (including passing the catheter and suctioning the tracheostomy tube) is **completed within 5-10 seconds.**

Clean Suction Procedure:

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A clean suction technique utilizes clean gloves, but not sterile gloves each time the patient is suctioned.

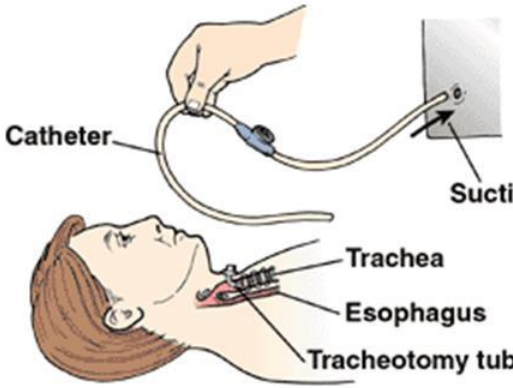
Procedure for Suctioning:

Instructions:

1. Wash your hands before starting the procedure
2. Plug in the suction machine, connect the tubing to the suction canister.
3. Set the vacuum gauge to the proper suction pressure.
   - Adult: -80 to -120mmHg
   - Children: -80 to -100mmHg
   - Infants: -60 to -80mmHg
4. Put on clean gloves.
5. Attach a clean suction catheter to the suction tubing.
6. Connect the patient to an ambu bag and ventilate for 30 seconds
7. Gently insert the catheter into the trach tube until resistance is met. Do not apply suction as you withdraw the catheter from the airway. Never suction
   longer than 10-15 seconds.
8. Reconnect the patient to the ambu bag and ventilate for 30 seconds.
9. Repeat suctioning until the airway is clear.
10. You may clear the mouth and around the trach with the same catheter and glove if needed. It is important to remember you can not re-suction the trach until you replace the catheter with a new one.

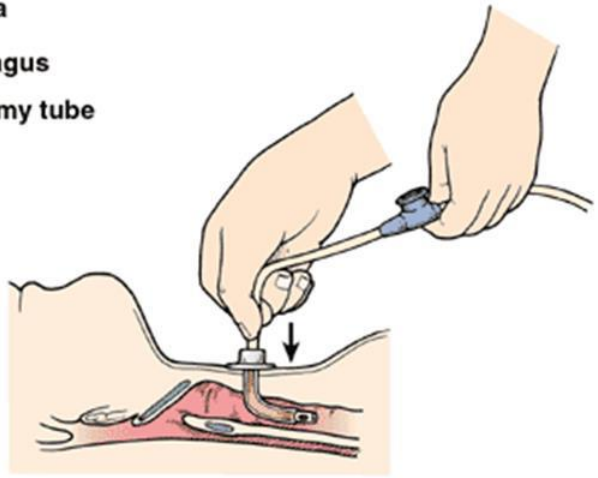
11. Place the patient back on the ventilator and ensure that he or she is comfortable.
12. Rinse the catheter and suction connecting tube with distilled water until it is clear of mucus.
13. Wash your hands

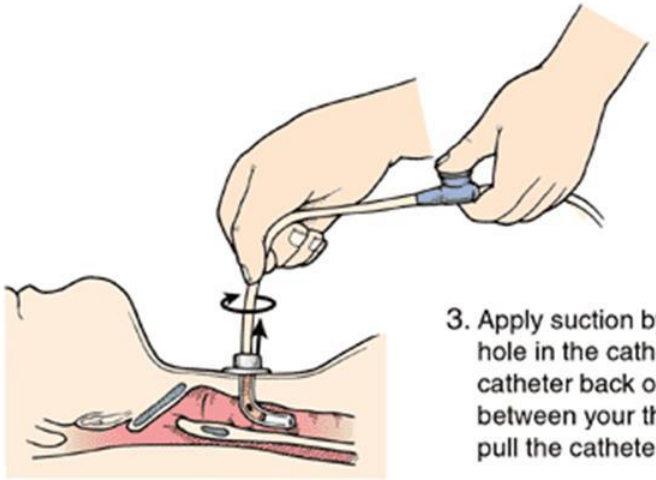
How to Suction a Tracheostomy Tube



1. Connect the catheter to the suction machine. Do not touch the end of the catheter that will go into the trach tube.

2. Insert the catheter the proper distance into the trach tube (usually the length of the trach tube plus 1/4 inch.)





3. Apply suction by putting your thumb over the hole in the catheter while you gently pull the catheter back out. Gently roll the catheter between your thumb and forefinger as you pull the catheter out.

Nursing Care: Cuff Pressure

- Cuff pressure should be maintained in a range from 20 mmHg to 25 mmHg.
- Cuff pressures are measured

with a manometer and should

be measured every shift.

- Complications can arise quickly

from excessive pressure that can inhibit capillary perfusion.

Nursing Care: Cuff Pressure…….Continue

- The need to increase the volume to inflate the cuff may indicate that the valve may be faulty or tracheal changes may have occurred.
- Deflating and inflating the cuff is a way to:
  - Assess how the cuff is working.
  - Periodically relieve pressure on the trachea.
  - Let secretions above the cuff to drain down so you can suction them.

Nursing Care: Changing The Trach Tube:

- Trach tubes are changed every one to four weeks.
- When a patient has had a tracheostomy for several months, tube changes monthly as basis.

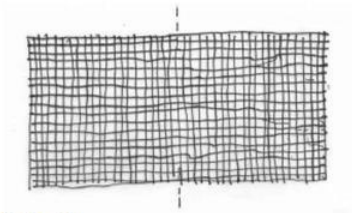
Nursing Care: Trach Site Care & Dressing Changes

- Clean the stoma with a Q-tip or gauze square moistened with normal saline solution. ***Avoid using hydrogen peroxide unless the site is as it can impair healing.***
- Dressings around the stoma are only changed for excessive exudate.
- Tracheostomy dressing changes promote skin integrity and help prevent infection.
- At least once per shift, apply a new dressing to the stoma site.
- Change wet dressings immediately.

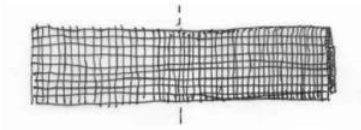
Nursing Care: Trach Site Care & Dressing Changes…….Continue

- **If there are signs of infection:**
  - The skin around the stoma can be cleaned with swabs soaked in half-strength hydrogen peroxide, rinsed with normal saline solution (NSS) and patted dry.
  - Topical treatment can be used for minor infections.

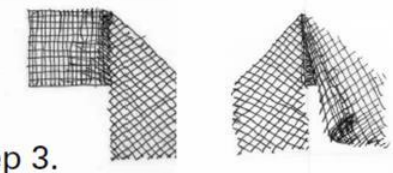
Most people who use trach dressings purchase "pre-cut" tracheostomy gauze dressings, but you can make your own with 4 x 4 gauze. DO NOT cut the gauze. The fraying can make lint or



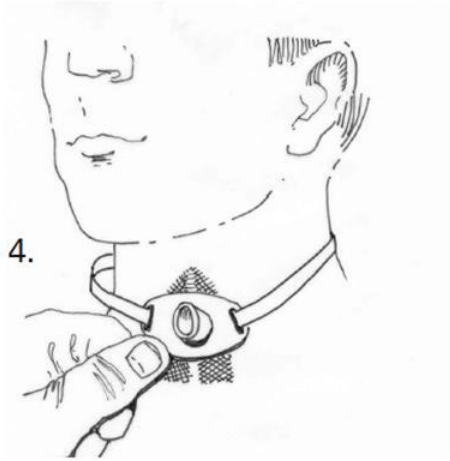
Step 1.



Step 2.



Step 3.



Step 4.

Nursing Care: Nutrition & Communication

- A tracheostomy will not prevent a patient from eating although some patients may have concurrent swallowing problems that need evaluation by an otolaryngologist or speech pathologist.
- Patients may have poor appetite because of disease or in reaction to copious respiratory secretions.
- Inability to speak is anxiety-provoking for most patients and you will need to devise alternative methods of communication for your patient until long-term speaking solutions are initiated.
- The patient should always have a call bell within reach at all times. A writing pad or a yes/no system to communicate will assist with communication.

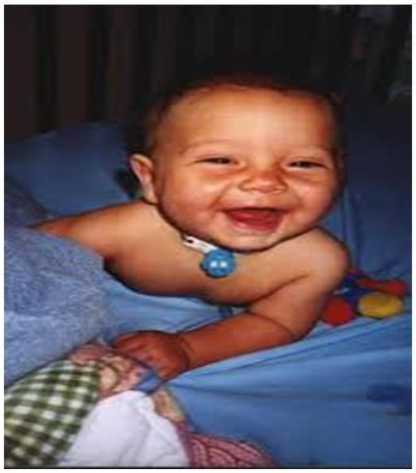
Speaking Valves:

A speech valve is a one-way valve that allows air in, but not out. This forces air around the trach tube, through the vocal cords and out the mouth upon expiration, enabling the child to vocalize.

Speaking Valves:

Benefits of using a speaking valve include:

- Enhancing normal flow of air through the airway/nose and mouth.
- Louder and clear voice.
- Improved ability to taste and smell foods.
- Improved secretions.
- Improved protection of the airways during swallowing and feeding.
- Improves development of speech in infants/toddlers.



Tracheostomy ties

The ties hold the tracheostomy tube in place and keep it from coming out. The tube could fall out or be coughed out if the ties weren't there. The ties need to be changed when they are soiled or more often if your health care provider tells you. If possible, have another person help you change the ties.

Deflating the Cuff

Why????

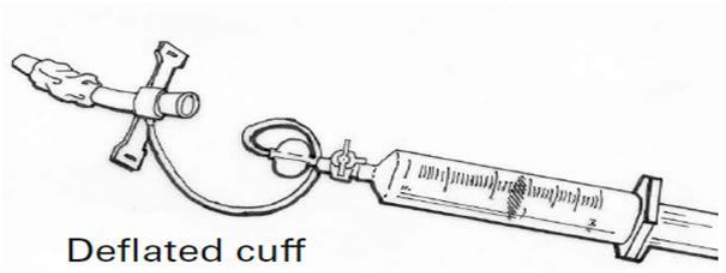
- To assess the patient's ability to maintain their own airway.
- To assess the patient's ability to cope with their secretions.
- Follow trache guidelines ie. Cuff down 24 hours prior to decannulation

Deflating the Cuff

Who?

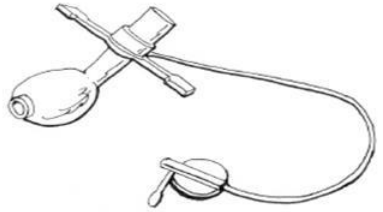
- Doctor, nurse or physio, who are competent.

How?????



Deflated cuff

Fome cuff automatically inflates



red cap is open

Removing the Tracheostomy Tube

When?

- Joint decision with doctor, nurses + physio.
- **Following tracheostomy guidelines:**

(1) able to expectorate independently.

(2) minimum of 1 deep suction per shift.

(3) no sign of chest infection.

(4) FiO2 of less than 60%.

(5) Deflation of cuff for more than 24 hours.

Removing the Tracheostomy Tube

Who?

- Doctor, Nurse or Physio who are competent.

How?

- Ensure cuff fully deflated
- Explanation to patient
- Equipment – dressing, gauze, O2 mask, stitch cutter.
- Oximeter

Risk of Complications:

- Some complications are more likely to occur soon after the procedure is done.
- Others are more likely to happen over time.
- Some complications are mainly related to the presence of the trach tube.
- The risk of complications often can be reduced with proper care and handling of the tracheostomy and the tubes and other related supplies.

Immediate Comp.:

1. Bleeding and infections.
2. Pneumothorax.
3. Subcutaneous emphysema.

Later Comp.:

1. Infections may scar the windpipe.
2. A fistula or abnormal connection, may form between the windpipe and esophagus (possibly cause pneumonia.

Trach Tube Comps.:

1. Accidently slip or fall out of the tracheostomy.
2. Granulations in the airways.
3. Narrowing or collapse of the airway above the trach tube's location.
4. Irritation and bleeding from the tube rubbing against the lining's surface.
5. Blockage of the tracheostomy (dried secretions).
6. Failure of the tracheostomy to close.

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The End?