

Airway Management Secretion Removal

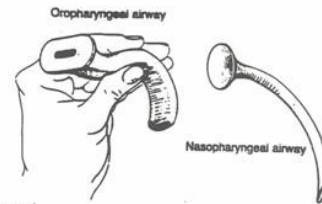
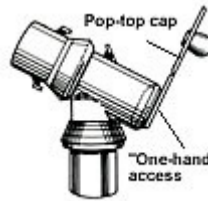
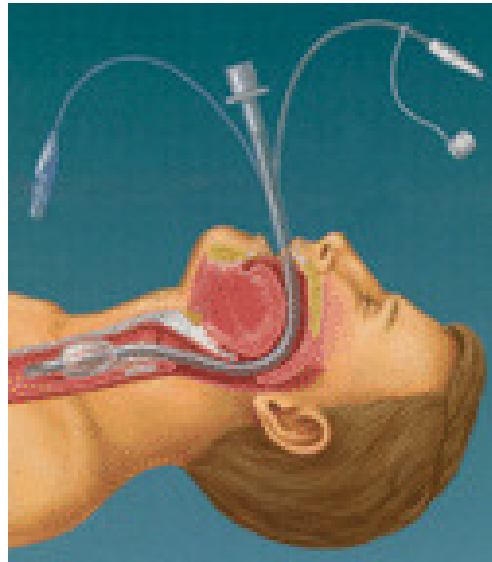


Figure 1

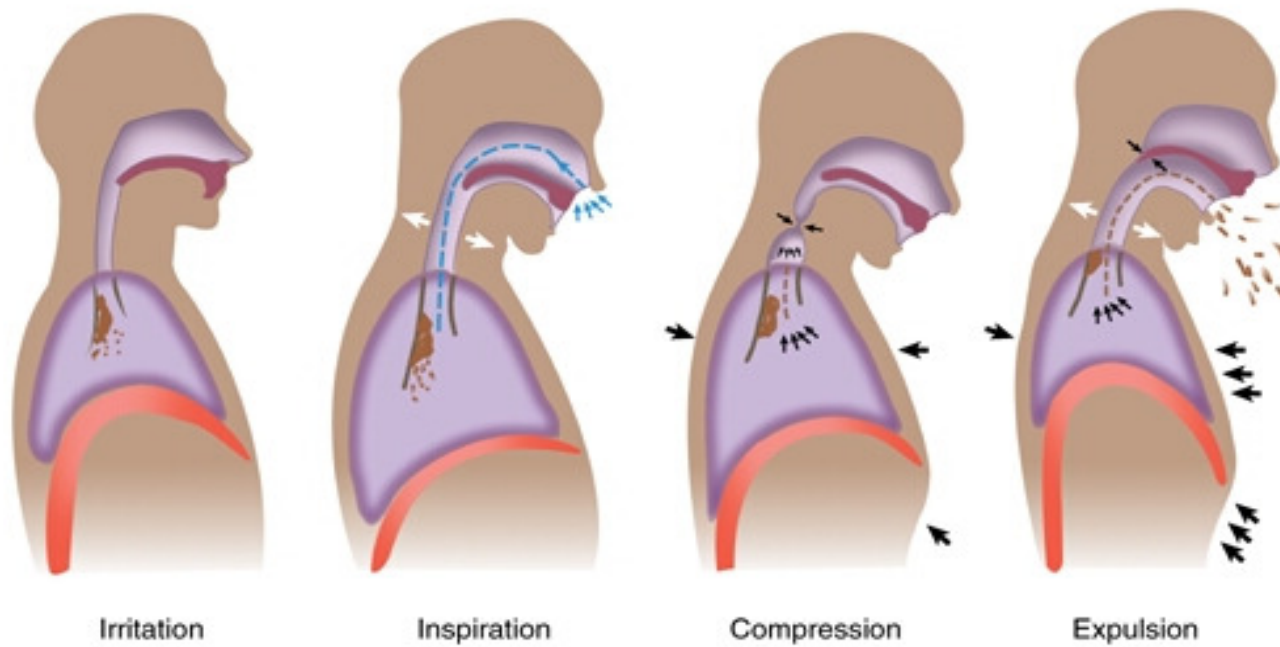


Lesson Objective

- **Students learn to perform secretion removal and its indications.**
- **The student will demonstrate the ability to perform secretion removal safely**

Components of an effective cough

1. Adequate volume
2. Abdominal contraction
3. Glottic closure



If cough is **INEFFECTIVE**

- May be due to inadequate VC
 - Emphysema
 - Age
 - Weakness
 - Surgery
- IPPB **may** assist with volume
- **BUT** you still have to get that cough!!!

- May be due to inadequate abdominal contraction or splinting due to pain
- Surgical site
- Broken ribs
- What should YOU do?
- **Assist the cough**
 - Sheet splint
 - Pillow splint
 - Chest wall splint
 - Huff cough
 - Abdominal thrust

Glottis does not close properly

- Artificial airway in place
- Stroke (CVA)
- Post-extubation
- Vocal cord malfunction
- Drugs
 - Narcotics
- Abnormal mucous blanket
 - thick, inspissated
 - humidity deficit

If cough is **INEFFECTIVE**

- **YOU MAY NEED TO SUCTION**

We suction when:

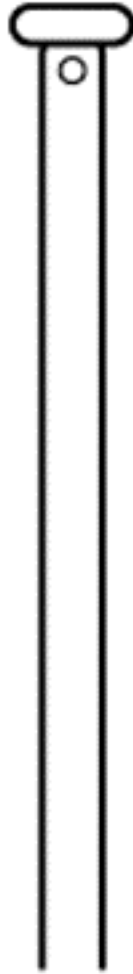
- Secretions are seen
- Secretions are heard
- Secretions are felt
- The patient is unable to clear the secretions without help

Types of suction catheters



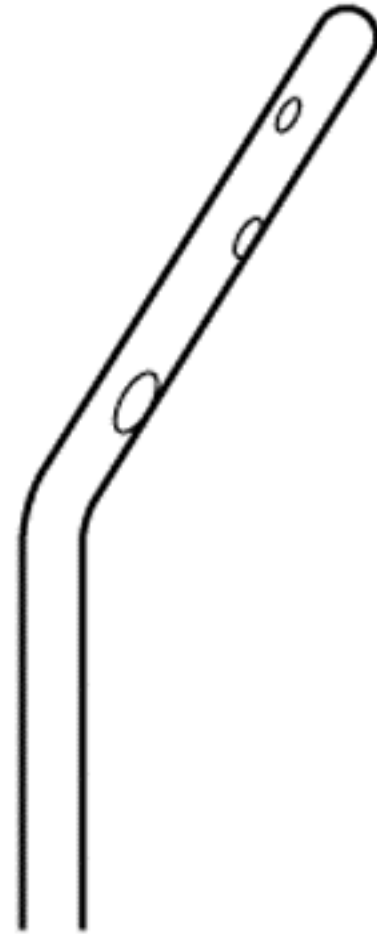
A.

(A) Whistle Tip



B.

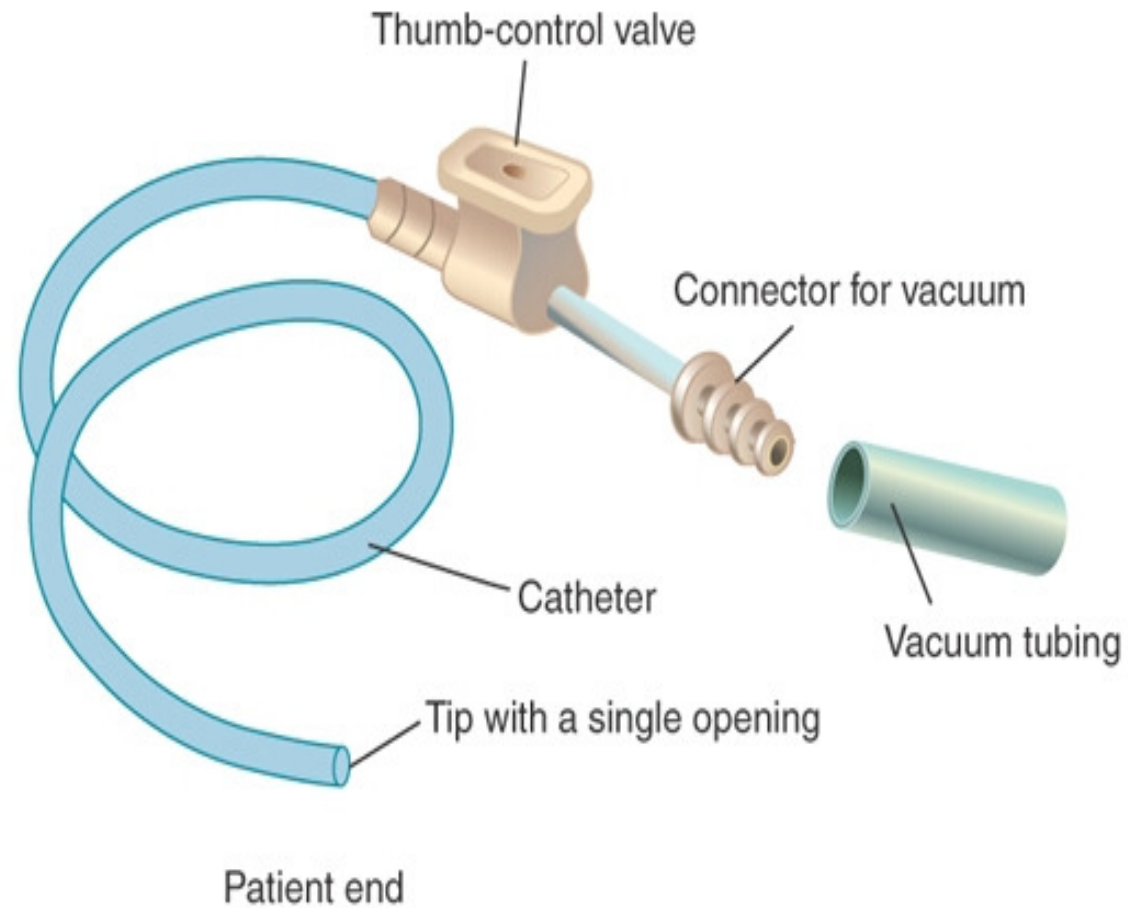
(B) Argyle Airflow



C.

(C) Coudé Directional

Suction Catheter



DEFINITION

WHISTLE TIP

- A hole near the distal end that prevents the catheter from adhering to mucosa.
- **Coudé Tip**
 - Curved at the end (directional catheter)
- Purpose:
 - Easier to direct into the left mainstem bronchus
 - **May not always work**
 - For best results:
 - Position patient on left side

Suction catheter sizing

French

The French catheter scale or "French units" (Fr) is commonly used to measure the outside diameter of needles, catheters, and other cylindrical medical instruments.

1 Fr is equivalent to 0.33 mm = .013" = 1/77" of diameter. Thus, the size in French units is roughly equal to the circumference of the catheter in millimeters.

- O.D. of the catheter should not be more than $\frac{1}{2}$ the I.D. of the tube being suctioned
- Usual adult sizes: 12-14 Fr

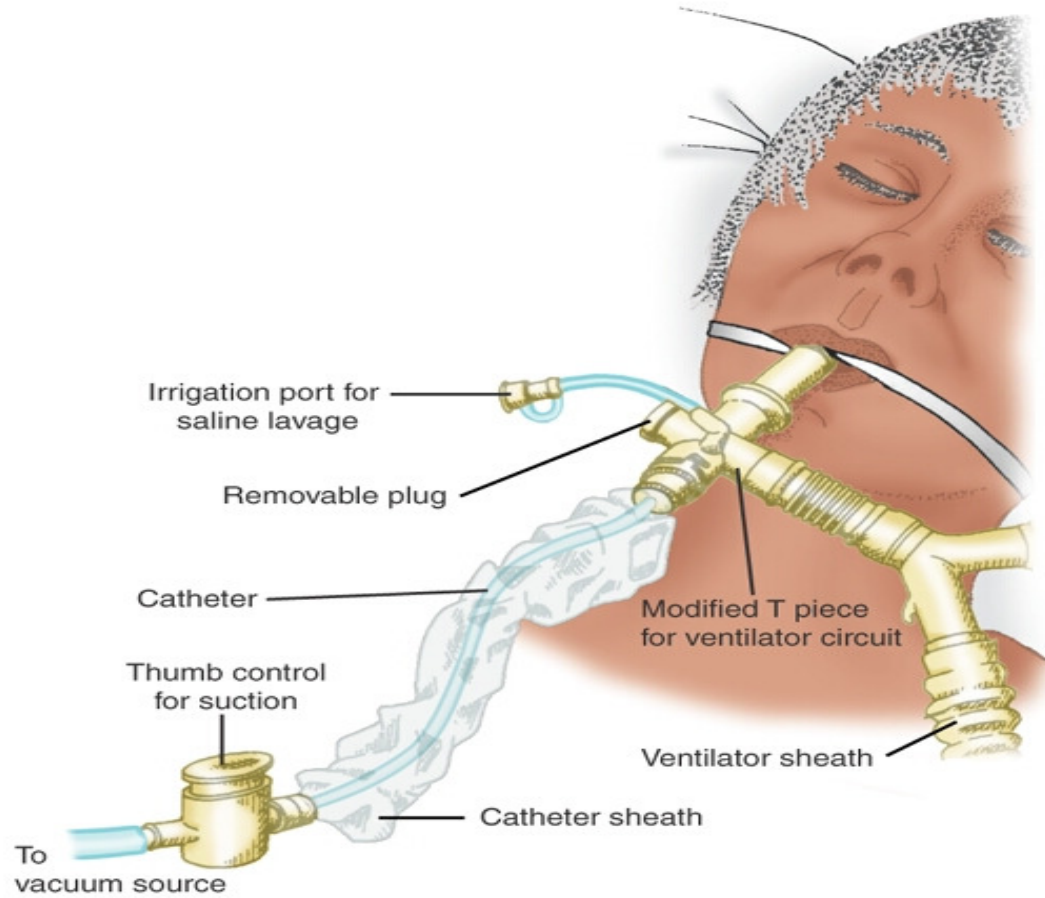
Choosing the right catheter

- Multiply the tracheal tubes inner diameter by 2. Then use the next smallest size catheter.

Example: 6mm ETT: $6 \times 2 = 12$; next smallest catheter is 10 French

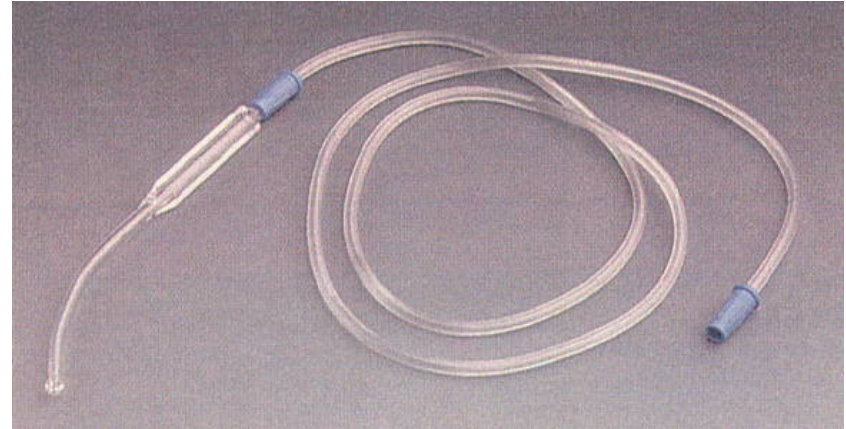
Example: 8mm ETT: $8 \times 2 = 16$; next smallest catheter is 14 French

Closed System



Yankauer Suction

- Also known as
 - tonsil tip



- Used to suction mouth to clear oral secretions
- Used to suction vomitus (steak, burrito)
- If the patient bites it. . . it still works

EQUIPMENT NEEDED:

Suction Canister



Vacuum source



Connecting Tube



Suction Kit



Catheter

Gloves

Basin

Drape

Sterile H₂O or NS

Water Soluble Gel



Goggles or face shield



Ambu Bag (with mask) and connected to oxygen source



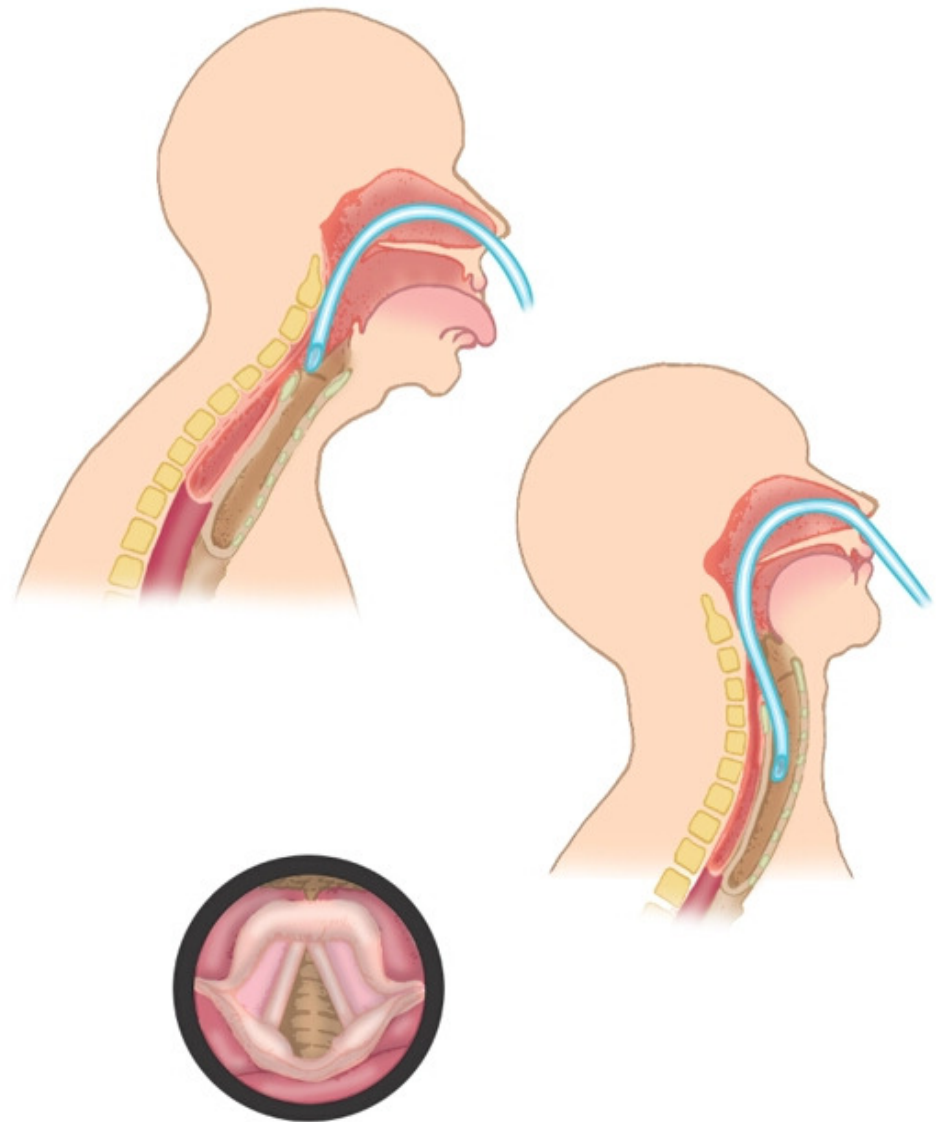
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Brand X Pictures

Procedure for Nasotracheal Suctioning (NTS)

Proper head position for nasotracheal suctioning:

- (A) Place patient's head in the sniffing position.**
- (B) After suction catheter is in the trachea, the patient may relax his/her head in a more comfortable position.**
- (C) A view of the vocal cords from the top. They are most widely separated during inspiration, so entry into the trachea is easiest when the patient is inhaling.**



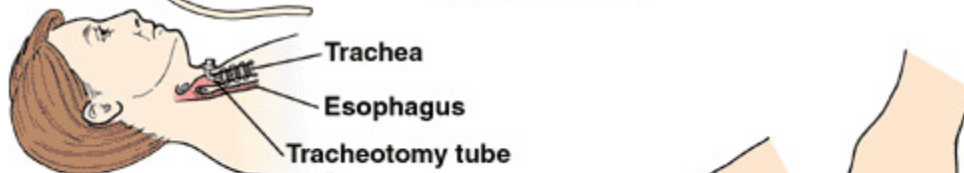
NASOTRACHEAL SUCTION (NTS) PROCEDURE

- Prepare equipment
- Pre-ventilate and pre-oxygenate
- Maintain asepsis
- Insert catheter without suction until meet obstruction
 - head in “sniffing position” to ease entry
 - advance into trachea during inspiration
- Withdraw slightly before applying suction
- Start withdrawing catheter
- Rotate catheter, applying suction intermittently
- Suction no more than 15 sec
- RE oxygenate and ventilate
- Repeat PRN

How to Suction a Tracheostomy Tube



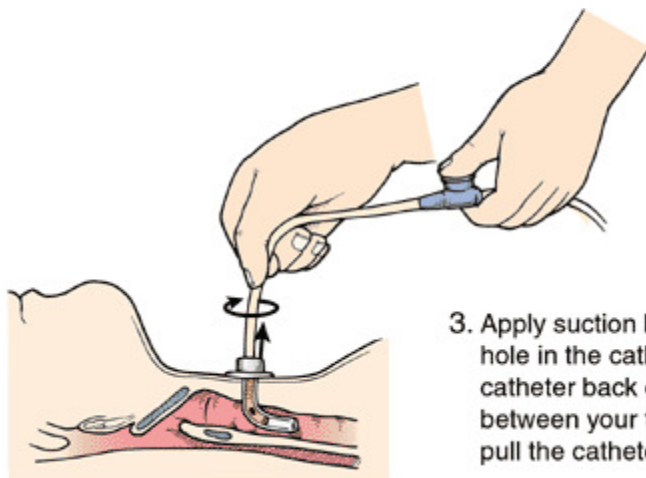
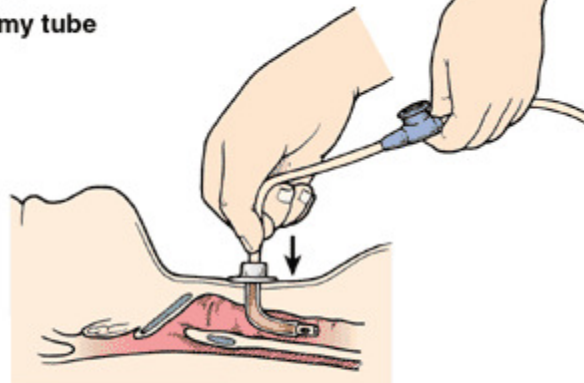
1. Connect the catheter to the suction machine. Do not touch the end of the catheter that will go into the trach tube.



301 Tracheostomy Tube Neckband



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.



Complications and Hazards of Suctioning

Hypoxemia - #1 complication

- give oxygen before **and** after
- catheter size
 - if the catheter is too big, there will be little or no air entrained
- Time – suction no more than 15 secs.

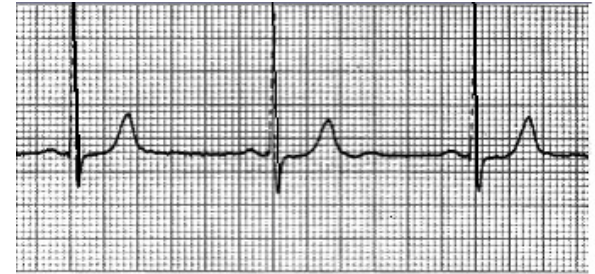
Tissue trauma

- May be able to prevent it . . .
- catheter selection?
- intermittent vs. continuous
- a “delicate touch”
- vacuum adjustment

Complications and Hazards of Suctioning

Cardiac arrhythmias

- Vagal stimulation will cause
 - bradycardia
- Hypoxemia can cause
 - PVCs
 - tachycardia
- If these occur...



From Davis D. *Differential Diagnosis of Arrhythmias*. Philadelphia: WB Saunders; 1992.



STOP procedure and give oxygen

Complications and Hazards of Suctioning

- **Nosocomial Infection**
 - oral to nasal secretion transport
 - poor technique
 - hand washing
- **Atelectasis**
 - time vs. suction
 - do not suction longer than 15 seconds
 - catheter size
- **Increased intracranial pressure**
 - secondary to coughing

Collecting a Specimen

1. Cough into a Kleenex

- can't use the specimen for anything more than observing color and consistency

2. Specimen cup

- used if the patient can cough and spit
- sterile vs. non-sterile



3. Leuken's Trap

- use with suction catheter provides a sterile specimen

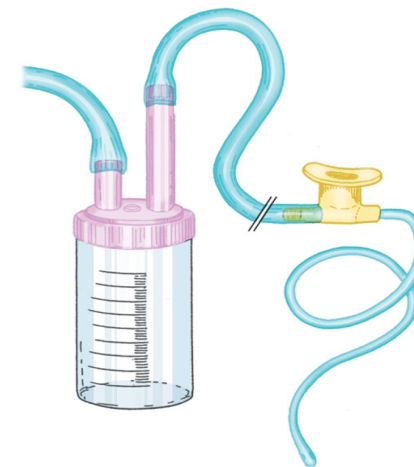
4. For C&S

- sterile
- normal saline



5. For cytology

- 50% ethyl alcohol
- 2% carbowax



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Stoma Care

- **Purpose**
 - prevent infection
 - maintain patent airway
 - promote healing
- **Hazards**
 - dislodge the tube
 - decannulation
 - infection

Clinical Do's and Don'ts in Providing Tracheostomy Care

Your patient may have a tracheostomy to bypass an upper airway obstruction, prevent aspiration, manage tracheobronchial secretions, or allow for prolonged mechanical ventilation.

DO

- Always keep supplies at your patient's bedside for suctioning; tube and stoma care; delivery of oxygen, heat, and humidity; tracheostomy tube replacement; and artificial ventilation (resuscitation bag).
- Begin assessing the tracheostomy by inspecting the stoma site, which is typically slightly larger than the tracheostomy tube.
- Note the amount, color, consistency, and odor of tracheal and stoma secretions. Confirm the tracheostomy tube size and whether it's cuffed or fenestrated.
- When your assessment findings (coarse breath sounds, noisy breathing, and prolonged expiratory sounds) indicate that your patient's airway needs clearing, suction it using sterile technique. Hyperoxygenate the patient before and after suctioning and between passes to compensate for suctioning-induced hypoxemia.

DO

- Stabilize the neck flanges and remove the inner cannula.
- If the inner cannula is designed for reuse, clean it in a solution of equal parts of hydrogen peroxide and 0.9% sodium chloride (normal saline) or sterile water. Wear sterile gloves and maintain aseptic technique. Remove encrusted secretions from the lumen of the tube with sterile pipe cleaners or a soft sterile brush. After cleaning, thoroughly rinse the inner cannula with normal saline or sterile water.
- Reinsert the inner cannula and securely lock it in place.
- Using sterile cotton-tipped swabs, clean the peristomal skin with half-strength hydrogen peroxide solution, rinse with normal saline or sterile water, and pat dry with sterile gauze.
- Remove the old ties and secure new ties to the tracheostomy tube flanges. Be sure you can insert your little finger easily between the tie and the patient's neck to check the fit and to ensure his comfort.
- Place a sterile split gauze under the tube flanges to absorb secretions.
- Place the call bell where your patient can easily reach it.

DON'T

- Don't clean and reuse an inner cannula designed for one-time use.
- Don't cut gauze and place it under the tracheostomy tube flanges; inhalation could draw fibers into the patient's trachea. Use a manufactured split sponge or fold a gauze sponge with creativity (see lab for details).
- Don't lavage with normal saline during suctioning unless you need to clear a blockage of clots or mucus or unless the patient has thick, tenacious secretions.
- Don't allow a humidifier to empty.
- Don't allow condensation to accumulate in the oxygen delivery tubing.