

All About Tracheostomies for RT's
PEL/VIP
LTC RESPIRATORY CONSULTING DIVISION

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OBJECTIVES

- Definition/Rationale for a tracheostomy
- Discussion of the most common types of tracheostomy tubes including rationale/function
- Correctly identify parts of a tracheostomy tube
- Discussion of rationale/procedure for tracheostomy care including suctioning the airway
- Discussion of equipment needed at the bedside

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Definitions

- Tracheotomy
 - The operation of opening the trachea with insertion of a tracheostomy tube (cannula) to provide a means of breathing (airway).
- Tracheostomy
 - The surgical stoma
- Tracheostomy (Trach) tube
 - The tube or cannula that fits into the stoma and supports the airway
- Fenestration- hole in trach tube
- Decannulation- permanent removal of trach tube

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Tracheostomy



adam.cc...

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Indications for a Tracheostomy

○ Maintain the airway

- Bypass upper airway obstruction
 - Foreign bodies, airway edema, tumors, burns
 - OSA

○ Facilitate removal of secretions

- Neuromuscular diseases
- Debilitated (deconditioned)
- Paralysis of chest muscles/diaphragm

○ Long term Positive Pressure Ventilation

- Many reasons why someone is on a ventilator and may have trouble weaning off
- Changing from ETT to trach may:
 - Decreased WOB due to reduction of mechanical deadspace
 - Pt comfort/increase mobility
 - Enable eating/speaking

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Composition of a Trach Tube

Metal (Jackson) -- Very rigid



Polyvinyl chloride (Shiley) -- some flexibility



Silicone (Bivona) -- most flexible

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Dimensions of the Trach tube

• Length
• mm

• Inner diameter
• cm

• Outer diameter
• cm

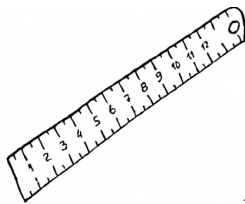
PORTEX REF	IC (mm)	I.D. Tube (mm)	O.D. (mm)	Length (mm)	Shiley® REF
503080	5.0	6.0	8.5	64	4 DCT
503070	6.0	7.0	9.9	70	6 DCT
503090	7.0	8.0	11.3	74	8 DCT
503095	8.0	9.0	12.6	80	9 DCT
503100	9.0	10.0	14.0	80	10 DCT
513080	5.0	6.0	8.5	64	4 DFEN
513070	6.0	7.0	9.9	70	6 DFEN
513080	7.0	8.0	11.3	74	8 DFEN
513090	8.0	9.0	12.6	80	9 DFEN
513100	9.0	10.0	14.0	80	10 DFEN
522070	6.0	7.0	9.6	85.5	6 PERC
522080	7.0	8.0	10.9	90.5	8 PERC
522090	8.0	9.0	12.3	98.0	9 PERC

Inner Cannula	For Use With D.I.C. Series:	Inner Cannula	For Use With Per-fit Series:
526080		516070	
526070	502 503	516080	522
526080	504 505	516090	
526090	512 513		
526100			

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Dimensions of a Trach tube

• Be sure to remember that a Shiley size 6 is NOT the same as a Portex size 6.



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Parts of a Trach Tube



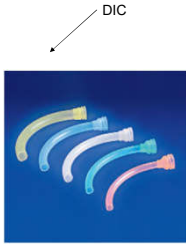
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Standard Vs. Disposable Inner Cannulas

Which works best for your patient?

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Disposable Inner Cannulas



- Disposable inner cannula (DIC)
 - should be changed at least daily and PRN
 - can not be cleaned or sterilized
 - One time patient use
 - Popular with many facilities
 - Shiley- has "clips" or "wings" on the sides to fasten to the trach tube.
 - Portex has a "pull ring" to remove inner cannula.

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FYI



- Red-tipped inner cannula (top middle)
 - Used for a "temporary" inner cannula
- Green-tipped inner cannula (top right)
 - Used for fenestrated patient. Inner cannula ITSELF has a fenestration in it
- White cap (bottom left) is for capping trach
- Red plug (middle lower) is for capping trach tubes with a non-disposable (standard) inner cannula
- Red plug (right lower) is for capping trach tubes with a disposable inner cannula
- Inner cannulas need to be removed for use with both red caps (plugs)

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Standard (non disposable) Inner Cannulas



- Standard (non-disposable) inner cannula (SIC)
- Should be inspected/cleaned every time you do trach care and PRN
- Gets changed when whole tube is changed
- Shiley-has a turn-lock mechanism (two blue dots should "line up")

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Different Types of Trach Tubes

Shiley, Portex, Bivona, and Metal Jackson

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Metal Jackson Trach Tube



- Used commonly many years ago
- Can not comingle sizes
- Comes in sizes 5.0-10.0; come in regular and short length
- Does not have 15mm connector for ambu
 - *Adapt Portex ETT connector to this tube for ambu
 - *The newer versions of the metal Jackson have an inner cannula that has the 15mm dimension at the end of it.

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Metal Jackson Trach Tube

- Can not comingle sizes as each set is handmade and there is no guarantee that the inner cannula of one will fit into the inner cannula of another.
- One can purchase the connectors from a Portex ETT; that when placed inverted into the trach tube opening of a metal trach tube, you can connect the ambu and ventilate the patient.
- Be sure not to use Hydrogen Peroxide when cleaning metal Jackson trach.
- Manufacturer suggests cleaning trach tube in gentle dishwashing liquid for 1 hour to clear and loosen mucus

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Shiley Trach Tube



- Very common brand
- Composed of PVC
- Comes in several styles
 - Cuffed/Un-cuffed
 - Disposable/Standard inner cannulas
- Adult Sizes 4.0-10.0
- Does come in some single cannula styles (odd numbered sizes)



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Shiley Trach Tube XLT

Proximal



Distal



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When to Use Extra Length Trach Tubes

- Proximal
 - to accommodate patients with full or thick necks who have increased skin-to-tracheal-wall distances
- Distal
 - to compensate for conditions requiring extra length, such as tracheal stenosis or malacia.

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Specific features for XLT

- Four adult sizes, cuffed and cuffless, with proximal or distal extension, representing 16 options for patients with anatomical challenges.
- Flexible, disposable inner cannula has a unique locking ring that fastens it securely to the outer cannula.
- Flexible, soft, free-swiveling neck flange improves patient comfort and provides easy inspection of the stoma site.
- Outer cannula tip-to-tip radiopaque line facilitates proper tube positioning.
- High volume, low pressure cuff meets all published cuff criteria.
- 100% latex-free

<http://www.qualitymedicalsupplies.com/Tracheostomy-Products/Tracheostomy-Tubing/Tracheostomy-Tubes/TracheoSoft-XLT-Extended-Length-Tracheostomy-Tube-Cuffed-Distal-Extension.aspx>

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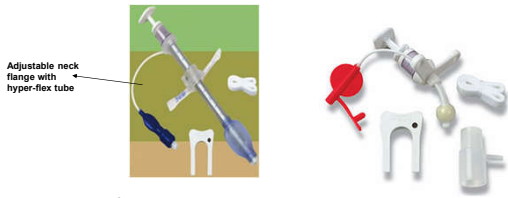
Types of Trach Tubes - Portex Trach Tube



- More flexible PVC
- Disposable inner cannula has "ring"
 - Pull "ring" to remove it
- Adult Sizes from 5.0 to 10.0
- Comes in several styles
 - Has color-coded style to better visualize size/inner cannula
 - Yellow-size 10 Blue-size 9
 - White-size 8 Green-size 7
 - Orange-size 6

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Types of Trach Tubes - Bivona Trach tube



- Composed of Silicone
 - Outer cannula is very flexible
 - Decreased adherence of secretions
 - No inner cannula
 - Do not use Hydrogen Peroxide when cleaning silicone tubes; clean with mild detergent
- Not the best choice for a patient with a large amount of secretions.

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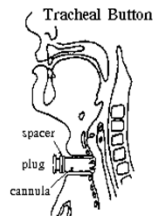
Trach Buttons

- Used as a stent to maintain patency of the stoma
- Allows patient to fully breathe entirely through their upper airway
- Intended for temporary use only
 - Teflon material will weaken and deteriorate over time
- Used in patients who require repeated tracheostomies
 - Myasthenia Gravis
 - Spinal Cord Injuries
 - Sleep Apnea
 - Patients working towards decannulation

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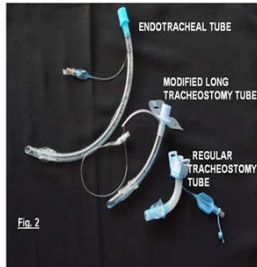
Trach Buttons

- Consists of 3 parts
 - Cannula
 - Closure plug
 - spacers



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Different types of Airways
Size comparison



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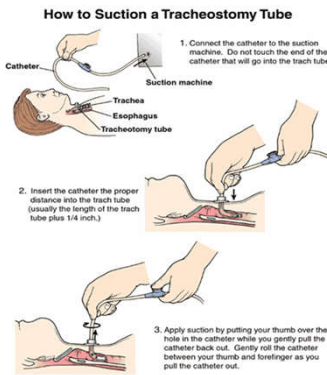
Suctioning a Trach

***How do you know when to Suction:**

- Auscultation
- Observation

***Tips**

- Do not routinely instill saline prior to suctioning
- Do not apply suction when inserting the catheter
- Do not reuse catheters
- Suction pass should not last longer than 15 seconds



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Standard Trach Care Kits



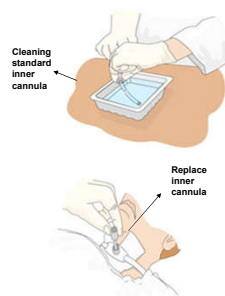
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Other items needed at bedside for trach care



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Basic Steps to perform Trach Care

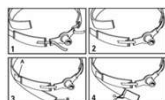


- Assess for need to suction/suction if needed
- Don gloves/remove old trach dressings/assemble all needed supplies at bedside
- Open trach care kit/assemble sterile field
- Pour ¼ to ½ strength hydrogen peroxide/sterile water solution in one basin and sterile water solution in other basin
- Clean/change inner cannula
 - Standard vs disposable cannula
- Clean stoma area aseptically
 - Inspect stoma area
- Change trach ties
 - Inspect neck area

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Changing Trach Ties

- Types of trach ties
 - Strings (not used anymore due to strings cutting into patient's skin)
 - Velcro (ie: Dale)
- Tips
 - Do not over tighten
 - If using velcro, ensure that it is securely fastened



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Changing Trach Ties



- Trach ties fit right if you can put two fingers between the ties and your patients neck.
- You want trach holder to be snug, but not too loose or too tight.

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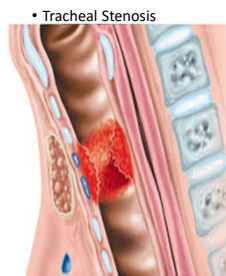
Early Trach Tube Complications

- Pneumonia
- Stoma infection
- Pneumomediastinum
- Pneumopericardium
- Obstruction
- Subcutaneous emphysema
- False passage
- Mucus plugs

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Long term Trach Complications

- Infection
 - Tracheal
 - Stomal
- Tracheal Stenosis
- Tracheal-Esophageal Fistula
- Voice changes and vocal cord abnormalities
- Mucus plugs
- Pneumonia



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Tracheal Decannulation

- When to decannulate?
 - Reason for requiring trach has resolved
 - ENT evaluation has cleared airway for procedure
- How to decannulate?
 - MD/SLP/RT/Nursing involved
 - Requires Physician order to begin
 - Methods
 - Slowly downsize trach
 - Early method-not utilized much anymore
 - Capping
 - Slowly increase times until able to tolerate >24 hrs

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Standards and Guidelines

What is the best practice for the patient?

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Standards and Guidelines for Trachs

- Although there are not any evidence-based guidelines, there are standards that different facilities practice by.
- The standards for trachs and trach care are the following:
 - Trach care= AT LEAST Qday and PRN
 - Trach tube change= 30-90 days
 - Trach tube holder= Qday to Qweekly and PRN, most facilities change holders Qdaily and PRN
 - Inner Cannula= AT LEAST Qday and PRN
 - Aerosol tubing= Q72 hours and PRN to Qweekly and PRN

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Standards and Guidelines for Trachs

- Suctioning
 - Evidenced based recommendations are: only suction when secretions are present
 - Routine use of instillation of normal saline is not recommended
 - Duration of suctioning event should be less than 15 seconds

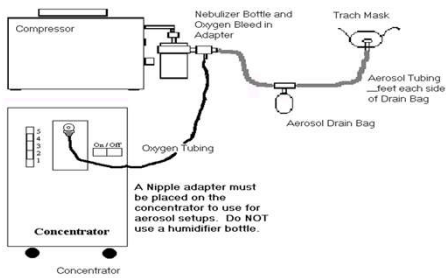
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Trach Admission Equipment and Supplies

- Continuous Aerosol Setup to Tracheostomy
 - Aerosol Tubing
 - Aerosol Drain Bag
 - Air Compressor
 - Tracheostomy Mask
 - Oxygen Bleed in Tee
 - Oxygen Tubing
 - Aerosol Bottle (Refillable or Prefilled)
- Suction Machine – Aspirator
- Oxygen Concentrator or Liquid Tank with Flowgauge
- Pulse Oximeter
- Oxygen Analyzer
- Oxygen Nipple Adapter
- Manual Resuscitator (single resident us)
- Tracheostomy Tubes (Spare and one size smaller)
- Tracheostomy Ties
- Suction Catheters
- Tracheostomy Care Kits
- Suction Bottles
- Suction Tubing (6 foot and 18 inch)
- Sterile Water
- Transport E Cylinder with Venti/Mixing mask set for current oxygen percentage
- Orders require documentation of desired oxygen percentage to be delivered: _____ %

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Aerosol Set-up Example (trach)



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**Humidity options for trach patients
HME (Heat/Moisture Exchanger)**



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Heat Moisture Exchangers

- Patients who produce large volume of secretions or froth may be adversely effected due to increased resistance or HME occlusion. HME's should not be used on patients with copious or frothy secretions.
- HME is contraindicated in patients with a large air leak distal to the HME (such as a large bronchopleural fistula).
- HME is contraindicated in patients with a minute volume > 10 L/min.
- Difficult to wean patients may require removal of HME. (Replace with humidity system).
- HME must be removed during medicated aerosol therapy.
- HME products are single patient use items and will be replaced every 24 hours or per facility policy.
- Use of an HME is contraindicated for patients with body temperatures less than 32°C.

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Trach Accessories- Speech



- Speaking valve
 - Pasy Muir (PMV)
 - Shiley
- Requires MD order
- Pt must be assessed for use
 - Nursing/SLP/RCP
- Should only be used with trained caregivers in attendance
 - Never use when sleeping

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Trach Accessories-Speech



•Tips

- Use PMV with O2 port if needed
- Suction, if needed, prior to placement
- Observe that valve is working properly after placement

•Cleaning

- Wash with mild detergent and rinse
- Place in plastic container that comes with valve

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Other Considerations with the PMV/Shiley Speaking valve

- To use the valve, the tracheostomy cuff HAS TO BE deflated
- To use the valve, patients should also be medically stable, be able to exhale around the tracheostomy tube and out through the nose and mouth.
- Stay with the patient during first wearing. (i.e.5-10mins)
- Increase wear-time as tolerated.
- Ensure patient has a sputum container or tissues and bag for orally expectorated secretions.
- Assess the patient's work of breathing.
- Observe secretions. Thick unmanageable secretions are a contraindication for wearing the valve.
- **DO NOT WEAR SPEAKING VALVE WHILE SLEEPING**
 - this is to avoid the risk of the membrane becoming clogged with sputum and preventing the patient breathing while sleeping.
- **DO NOT THROW VALVE AWAY**
 - speaking valves are not disposable, they are single patient use.

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Trach Capping

- Prevents air from entering or exiting through the tracheostomy tube
- Is used as a form of weaning
- Should never be applied to a patient with a standard cuffed tube (low pressure, high volume) even if cuff is deflated
- Restores phonation as well as subglottal pressure and improves taste, swallow, cough, and the Valsalva maneuver
- PEL policy- patient who is undergoing capping trials needs a Physician order as well as a continuous pulse oximeter at bedside.

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Questions???



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