

# TRACHEOSTOMY CARE- general overview

Joy Norton (Tracheostomy clinical Nurse Specialist)  
St James's Hospital, Dublin 8.

## INDICATIONS for tracheostomy tube insertion

- **Prolonged ventilation** -usually short term trachy ie not discharged home with it.
- **Airway obstruction** -usually short term- however can be longer term if difficult airway.
- **Poor cough** - usually long term
- **Vocal cord paralysis** -usually long term

## BED SIGN

- Has all the vital information regarding the patients tracheostomy:

Sign front:

- Indication
- Type of insertion
- Date of insertion
- Tube size and type.
- Emergency contact numbers

Sign back:

- Algorithm of what action to take in emergency situations.



## INDICATIONS FOR TUBE INSERTION

- All staff if caring for a tracheostomy patient must know the reason why the tube was placed in the first instance.
- Knowing this vital information may influence the action taken should the patient run into airway difficulties.

## Why does my patient need this tube?



## Tube insertion techniques

- **Surgical:** Carried out in OT by surgeons (Typically ENT) Between the 2<sup>nd</sup> and 3<sup>rd</sup> tracheal ring is the optimum insertion site. Can be placed higher or lower if clinically indicated. All surgical insertions will have flange sutures and a stay/safety suture.
- **Percutaneous:** Carried out at bedside in ICU by consultant intensivist. Patients must meet criteria- proper landmarks- not obese-no previous neck surgery. Ability to extend neck-spinal injuries not suitable- No clotting disorders-Patients must be >15 years old. Perc tracheostomy insertions will have flange sutures but never stay/safety suture.

## Bedside equipment

### Need to have

- Bed sign in place and completed-
- Tracheostomy emergency tray:
- Suction (portable machine or fixed wall suction)
- Oxygen point-humidification equipment(AIRVO or HME with O2 attachment port)
- Spare inner cannula- must correspond with the patients tube size and brand.
- Patient call bell.
- Ambu-bag/C circuit within eash reach. (i.e. on the crash trolley)

### Nice to have

- Yellow infectious waste bag
- Sterile water/saline
- Gloves-sterile &non-sterile
- Communication aids

## Tracheostomy emergency tray

- 2 x Cuffed Portex BLUselect suction aid tube( 1 x size 7 & 1x size 8)
- 1 x Non-cuffed Portex BLUselect tube (size 7)
- Tracheal dilators
- Stitch cutter
- Scissors
- Tube ties (Velcro & cotton)
- 10ml syringe
- Slick tape
- Surgical lube/KY gel



(If all trays in use- please have tracheal dilator and tube the same size and size smaller available at bedside until tray is located)

## Suctioning equipment

WALL SUCTION



PORTABLE MACHINE



## Suctioning

- Suction equipment must be working and at the patients bedside.
- Suction vacuum pressure <20KPA or 150mmHg
- Sterile tip and technique (acute setting only) Clean technique if patient self suctioning at home.
- Suction catheter inserted no more than 1cm beyond length of tube (approx. pens length) No suction applied on insertion. Deep suctioning only carried out by Physiotherapists in the ward setting and by staff in the ICU.
- Recommended time from insertion to removal =15 seconds.
- Recommended to use non-fenestrated inner cannula when suctioning.
- Ensure suction container changed when ¾ full.
- Calculate correct suction catheter size. (Size of tube x 3 divide by 2) or

**Size of tube plus 4**, e.g. Portex size 8 tube plus 4 = size 12 suction catheter used.

Uneven catheter sizes not stocked so may need to be rounded up or down. Generally size 10 suction catheter used for sizes 7 and below and size 12 for tubes > 7.

**Remember to document on EPR if suctioning carried out.**

- If **resistance noted** on suctioning- catheter not passing freely this is a **red flag** and anaesthetics/ENT/Trachy CNS team need to be informed urgently.



### OXYGEN POINT:

Dry oxygen should never be administered to neck breathers as this can dry out their airway and lead to mucus plugging. Oxygen must always be heated and humidified.

AIRVO heated humidification



HME (Swedish nose) with O2 port



## Spare/replacement inner cannula.



Replacement inner cannula at bedside must be the same size and same brand as the patients has insitu.

## Tracheostomy tubes used at SJH

**Only double lumen tracheostomy tubes are used at SJH meaning they all have an inner cannula.**

### Types of tubes:

- Cuffed
- Cuffed with subglottic port
- Extended length
- Non-cuffed
- Fenestrated
- Non-Fenestrated

**BLUselect suctionAid cuffed tube. (predominant cuffed tube used at SJH)**

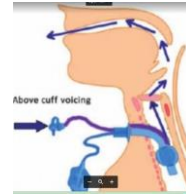
- This is a cuffed tube with which has an above cuff suction port. It allows the clinician to remove aspirated pooled secretions sitting above the cuff.



- METHOD: use 10ml syringe to apply gentle negative pressure with the plunger. Do not apply high vacuum pressure to the subglottic port due to risk of trauma.
- SCHEDULE: carried out 4-6 hourly- only if cuff inflated. Increase frequency if high output.
- DOCUMENT: volume aspirated secretions on EPR/ICCA.

**Subglottic port for voicing**

- In certain cases, when a patient cannot tolerate cuff deflation, above cuff voicing may be considered as a communication option. SLT should be consulted as currently at SJH this is a SLT led practice.



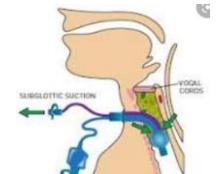
**Colour coded to size**

- Green = size 7
- Grey = size 8
- Blue = size 9



**Indications for cuffed tube.**

- All tracheostomy patients will have cuffed tube on first insertion.
- Cuff helps prevent aspiration- (Cuff should be inflated for the first 24 hours post insertion)
- The cuff seals the trachea during ventilation ie mechanical, CPAP, bagging.



**Cuff Pressure:**

should be checked once per shift or if cuff requires re-inflation to ensure it is at a therapeutic pressure. Recommended cuff pressure is **25CmH2O**.

- Too high-can lead to trauma of the tracheal mucosa i.e. ulceration, stenosis or more fatally a trachea-innominate artery fistula (TIF)
- Too low-can lead to inadequate seal around the cuff increasing the risk of aspiration and causing loss of positive pressure if the patient is ventilated.

**Cuff pressure monitor/gauge**

- If cuff needs to be inflated the cuff pressure needs to be kept within safe pressure range **25-32CmH2O**
- Ventilated patients with persistent airleak on vent requiring high pressures to achieve seal >32CmH2O- Inform intensivists as tube likely needs upsizing or adjustable flange tube.



### Indications for cuff deflation.

- If off ventilation and tube insitu more than 24 hours. (Cuff deflation is step one-weaning process)
- or
- If weaning from vent and for PMV (speaking valve) trials-
- Not showing avert signs of aspiration-managing oral secretions, not drooling saliva.

**How to deflate cuff:**

- If has suction Aid tube aspirate subglottic port using 10ml syringe prior to cuff deflation.
- Slowly aspirate air using 10 ml syringe from pilot blue balloon port until balloon port completely flat.
- If has cuffed tube without subglottic port cuff deflation is a 2 person technique. 1<sup>st</sup> person to suction via trachy as second person slowly aspirates air from pilot balloon port.

**When to reinflate cuff:**

- Not tolerating, excessive coughing respiratory distress.
- Respiratory or cardiovascular arrest- (check inner cannula first)
- Constant oral drooling, no swallowing observed
- Haemorrhage

### Portex BLUselect non-cuffed tubes

**Fenestrated**

- With windows to help improve and better facilitate speech as allows maximum air up to vocal cords during exhalation.
- Post upper airway resection patients such as ENT/Max Fax pt's usually require fenestrated tube to achieve voice. (upper airway swelling)

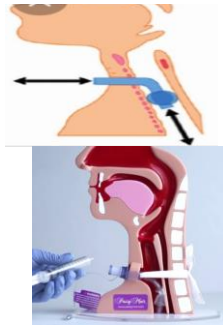
NB: If patient needs mechanical ventilation/ bagging or suctioning the fenestrated inner cannula needs to be changed to a **NON-FENESTRATED** one.

**Non-fenestrated.**

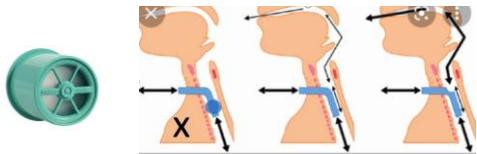
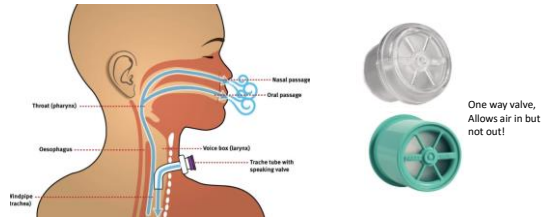
- No windows-better suited for patients with posterior wall excretion or history of distal overgranulation tissue.
- Prolonged ventilated patients usually get good vocal quality without needing fenestrated tube. (upper airway intact)

### Communication issues

- If cuff is inflated air is no longer directed through the larynx so they patient can not speak.
- Important to provide the patient with ways to communicate- pen paper. Access to call bell is essential for all neck breathing patients.
- SLT referral. May require picture chart if unable to read/write
- Passy Muir speaking Valve (PMV) - if placing with a cuffed tube ensure cuff is fully deflated before applying PMV as patient will not be able to exhale and will cause respiratory arrest.



### PMV (Passy-Muir speaking valve)



- **Nb\*** Ensure patient has some form of humidification insitu as PMV will not humidify the patients air.
- **NB NEVER** apply PMV to a laryngectomy patient

**PMV**  
Air guided up to vocal cords



Tracheostomy Patient

**Electrolarynx/ Blom singer**  
Vocal cords surgically removed



Laryngectomy Patient

Bed sign for laryngectomy patient.  
Remember. No upper airway

### Tube change

- Tubes are routinely changed monthly if the patients condition permits. Adhering with EU regulations and manufacturers guidelines.
  - Long-term community patients tube changed in OPD every 5-6 weeks.
  - Or for weaning purposes (ENT/Max Fax patients sometimes require downsizing to facilitate speech/capping pre decannulation)
- High risk of losing tract if tube change carried out before day 5.
- Provox lary tubes are changed monthly.

#### When/who performs tube change?

- 1<sup>st</sup> tube change post initial insertion should be carried out by competent doctor/ anaesthetist/Tracheostomy CNS/ICU ANP.
- Subsequent tube changes can be carried out by registered nurses who have completed their tube change competency-Tracheostomy champions.
- Must be documented on EPR and on patients bedside date of change and tube type inserted.

### Care of inner cannula

- Inner cannula should be checked at the beginning of every shift and then 4 hourly but more frequently if secretions are thick and sticky.
- Portex tubes have a pull ring system. It is important to support the tube by holding the tracheostomy flange when removing the inner cannula. This will help prevent tube displacement.
- Please document on EPR/ICCA whenever the inner cannula is checked and record if it required replacement.



### Stoma site

- Inspect and clean stoma site using normal saline and gauze at least once daily but more frequently to keep site clean and dry.
- If copious ooze/secretions around tracheostomy site remember to regularly aspirate subglottic port, use barrier such as Cavilon advanced and absorbent dressing such as Aquacel non-adhesive foam or PolyMem if skin breaks noted or tube still sutured to skin.



- Monitor site for signs of bleeding in the initial post operative phase. Some bloody ooze is common post initial insertion. Kaltostat dressing is recommended if site has bloody ooze. However if kaltostat dressing becoming soaked with blood and requiring dressing change every 15-30 minutes please inform team that inserted it as may require diathermy to bleeding point.
- Flange sutures are removed on day 7 or before if site red. **\*If ENT/Max Fax patient check with plastic surgeons prior to removal.** Neck ties often contraindicated in the initial post op phase as can restrict blood flow to the newly constructed flap. Regular trachy care and cleansing is essential in these patients as they are at increased risks of pressure damage as tube is often sutured to skin >10 days. PolyMem dressing should be applied beneath flange to help protect skin.



- Stay/safety sutures are removed from day 10 or on first tube change if difficult to access. If still in place stay sutures should be removed at time of decannulation.

### Tracheostomy Ties

#### Velcro ties



#### Cotton Ties



**Nb\*:** use both Velcro and cotton ties combined if patient ventilated or confused

## Decannulation.

- **Must meet weaning criteria in order to decannulate**
- Off vent for at least 24 hours with no issues
- Tolerating continuous cuff deflation.
- Tolerating PMV prolonged periods
- O2 requirements <40%
- Minimal suctioning requirements in the past 24 hours.
- No profound myopathy
- ENT Max Fax patients post surgical resection -tolerate capped tube x 24 hours.

## To remove tube

- Ensure cuff fully deflated.
- Monitor and record Oxygen saturations.
- Explain procedure to patient.
- Remove tube on expiration (neck muscles etc relaxed)
- Clean site with saline and gauze and inspect for over granulation. If has over granulation tissue- don't treat until air leak resolved.
- Apply air tight dressing. (Dry gauze, Duoderm, Hypafix, ECG dot)
- Encourage patient to apply digital pressure to ECG dot when talking or coughing to prevent leakage of secretions and air from stoma = faster closure.
- Keep tracheostomy emergency tray at bedside for 24 hours post decannulation.

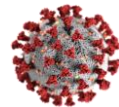
- If respiratory distress noted remove airtight dressing from exit site. Oxygenate patient via face and neck stoma.
- Contact anaesthetics #6666 or 2222 if respiratory arrest.
- If ENT/Max Fax patient inform the Reg on call.

### **If no issues post decannulation**

- Airtight dressing can be discontinued once air leak has resolved. Over granulation tissue can be treated with Hydrocortisone 1% topical cream and AMD dressing and Hypafix to secured. Dressing daily x 1-2 weeks until over granulation tissue resolved.
  - Tracheostomy site usually closes over in 7 to 10 days. Can take longer if has been in for several months/years. Occasionally requires surgical closure (not closed after 3-4 months).
- Tracheocutaneous fistula.**

## COVID and neck breathers

- All neck breathers are considered high risk regardless of COVID status and full PPE should always be worn.
- FFP2/FFP3
- Goggles/eye shield
- Surgical gown
- Gloves



## COVID screening

### **Tracheostomy swab site**

- Nose
- Tracheostomy Tube

### **NOT Mouth**

- Swab to be kept in a straight position and not manipulated downwards into the airway.

### **Laryngectomy**

- Nose
- Posterior wall of laryngeal stoma

### **Not Mouth**

- Swab to be kept in a straight position and not manipulated downwards into the airway.