

<b>GUIDELINE TITLE:</b> TRACHEOSTOMY CARE – PLANNED TRACHEOSTOMY TUBE CHANGE	<b>Document No:</b> pending  <b>Version No:</b>
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## 1.0 GUIDELINE STATEMENT

Planned tracheostomy tube changes are an integral part of the nursing care of a child with a tracheostomy. The purpose of this guideline is to provide an educational and evidence-based practice resource for nursing staff involved in the nursing care of a child who has a tracheostomy. This document is intended to outline to the reader, the procedure of performing a planned tracheostomy tube change safely, on a child or infant.

## 2.0 SCOPE

This guideline applies to all nursing staff caring for a child who has a tracheostomy.

### Employees

All full-time, part-time and fixed term employees employed by Children's Health Ireland are covered by this policy.

### Agents

Agents may be employees of suppliers, volunteers, students on placement or any other individuals associated with Children's Health Ireland. All such agents are covered by this policy.

## 3.0 PROCEDURES

A tracheostomy is a surgical opening of the trachea between the 2<sup>nd</sup> and 4<sup>th</sup> tracheal rings. A tracheostomy stoma is an opening in the neck formed by an ENT surgeon under general anaesthetic. A tracheostomy tube is then inserted through the stoma. To ensure that the stoma will remain open in the event of accidental dislodgement of the tube prior to a tract forming, the surgeon places stay sutures and maturation sutures. The first tracheostomy tube change is performed post operatively between day two and day five, **it is performed by the ENT team in the intensive care unit**, (Woods *et al* 2019). Once the ENT surgeon deems that a safe tract has formed between the skin and the trachea, the stay sutures are removed after the first tube change. Trained caregivers perform Planned tube changes after this. Changing the tracheostomy tube involves removal of the old tube and replacement with a new tracheostomy tube.

Planned tracheostomy tube changes are performed for the following reasons;

- to reduce the build-up of mucus
- to prevent tracheostomy tube obstruction
- to prevent infections due to the colonisation of pathogens in the tube
- to maintain caregiver proficiency (Bowden & Smith Greenberg 2016)

Using the correct technique when changing the tracheostomy tube will assist in prevention of complications. Complications may include:

- Discomfort
- Cross infection
- Anxiety and fear
- Tissue injury
- Unsuccessful placement of the tube
- Malposition of the tracheostomy tube

#### 4.0 OBJECTIVE OF THE GUIDELINE

- Standardise the care of planned changing of the tracheostomy tube.
- Ensure and maintain patient safety when changing a tracheostomy tube.
- Ensure research-based knowledge underpins nursing practice.
- Ensure safety of the child's airway, the child, and the tracheostomy tube.
- Promote comfort and well-being of the child.
- Prevent infection, malposition of the tracheostomy tube, unsuccessful replacement of the tube and tissue injury.
- Prevent anxiety, fear, and discomfort.

A planned tracheostomy tube change is always a **two-person procedure**, (Davison *et al* 2020). A nurse or parent competent in the procedure performs the tube change with an assistant. The assistant can be a nurse, a student nurse, a healthcare assistant, a carer or a parent who has received or is in receipt of tracheostomy training (Davison *et al*

Performing a planned tracheostomy tube change is an aerosol generating procedure, use the Point of Care Risk Assessment Tool to determine what PPE (Personal Protective Equipment) is recommended

<https://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/infectioncontrolandhai/posters/A3%20Poster%20Resist.final%20online%20version.pdf>

2020).

EQUIPMENT AND SUPPLIES	
Personal protective Equipment(PPE) for aerosol generating procedures	Skin protector e.g. Trachi-wipe
A new tracheostomy tube in date and the correct size	Skin emollient
Clean dressing trolley or work surface	Water soluble sterile lubricant on a piece of sterile gauze

Gauze squares	Tracheostomy dressing
Receiver or gallipot	Sodium Chloride 0.9% w/v ampoules
Waste bag	Double round ended scissors
Stoma and neck cleaning supplies	Clean humidification device
Tracheostomy Tube Holder	
5 ml Syringes for deflating +/- cuff inflation (if cuffed tube in place)	Water for injection (if cuff to be inflated)
<ul style="list-style-type: none"> <li>• A Trachi-Case or emergency bag, which contains the equipment and supplies necessary for an emergency tube change (Appendix I)</li> <li>• Suction equipment with appropriately sized suction catheters</li> <li>• Oxygen supply with oxygen attachment for a tracheostomy tube, if prescribed and indicated.</li> </ul>	

ACTION	RATIONALE/REFERENCE
The nurse and assistant perform hand hygiene and both don personal protective equipment (PPE)	This procedure is aerosol generating. The use of PPE ensures protection of staff & child and family. (HSPC 2023)
The nurse prepares the child by ensuring that the procedure is performed at least one hour before or after food has been consumed, but not when the child is hungry	To reduce the risk of vomiting during the procedure.
Explain the procedure to the child / parents/ carer and gain their consent to proceed (if appropriate)	To ensure that the child feels at ease; understands the procedure and gives their consent (NMBI 2021)
Ensure that all emergency equipment is readily available	In case, it is not possible to secure the airway, (Davison <i>et al</i> 2020).
The use of portable visual devices are used as aids to distract the baby or child. If the baby uses a soother ensure one is available if needed. Consider parental presence and/or play specialist	Promotes distraction and comfort. (Bowden & Smith Greenberg 2016)
Consider the role of the patient in the tube change process, this is age-dependent.	To promote self-care and independence
The baby or child should be at a safe working level.	For the safety of the personnel who are performing the procedure. (HSA 2011)
The baby should lie flat, width ways in the cot or in a position that allows for good access by the person performing the tube change- A rolled sheet is placed under the shoulders so that the neck is extended.	For the safety of the personnel who are performing the procedure. (HSA 2011)

The neck and shoulders are exposed by opening or removing the clothing from the area.	A roll under the shoulders extends the neck, ensures good visualisation of the stoma site, and aids insertion of the tube (Davison <i>et al</i> 2021).
If appropriate, a child can sit upright, with the head tilted slightly backwards, with their back, and their head supported by a hard surface. The neck and shoulders are exposed by opening or removing clothing from the area.	To extend the neck to ensure good visualization of the stoma site and aid insertion of the tube (Davison <i>et al</i> 2021)
The humidification device or speaking valve are removed	To improve accessibility
Hand hygiene is performed	To adhere to infection control standard precautions and to prevent cross infection (CHI at Crumlin 2019a).
The person who is inserting the new tube stands in a position that will make insertion of a new tube easier, depending on whether they are right or left-handed	To allow for ease of insertion and to ensure safety for the child
The assistant interacts with the child and observes their condition during the procedure.	To ensure that the child is comfortable, reassured and monitored throughout.
The nurse opens up the new tracheostomy tube and removes the tube from its packaging by holding the flange of the tube without touching the tube itself.	To adhere to infection control universal precautions and to prevent cross infection (CHI, 2022).
Inspect the tube for damage, cracks or stiffness. Discard any damaged tubes.	Individual flexible Silicone tracheostomy tubes can be reprocessed. They must be inspected prior to reuse. (Bowden & Smith Greenberg 2016)
The introducer is inserted ensuring it moves easily in and out of the tube.	To assist with insertion of the tube and promote comfort for the child. To ensure the tube is patent and in good working order, and ensure safety for the child's airway. (Bowden & Smith Greenberg 2016).
A small amount of water-based lubricant is placed on the curve of the cannula of the tube. The tube with the introducer in place is put back into the open box.	To ensure safety for the child and ease of insertion of the tube (Davison <i>et al</i> 2020, Cooke 2023).
If a cuffed tube is to be inserted, fully inflate the cuff using a 5ml syringe. When satisfied that the cuff is functioning correctly deflate the cuff.	To ensure that there is no air leak and that the cuff inflates correctly (Davison <i>et al</i> 2020).
The nurse performs hand hygiene	To adhere to infection control standard precautions and prevent cross of infection.
The assistant stands facing the child and holds the tracheostomy tube securely in place using minimal pressure and a "U" shaped hold. This must be maintained throughout the whole procedure whilst observing and supporting the child.	To prevent accidental dislodgement of the tube and allow for cleaning under the flanges of the tube. Stabilising the tube promotes comfort as tube movement causes coughing and risks tube dislodgement (Davison <i>et al</i> 2021).

	To securely hold the tracheostomy tube and to facilitate observation of the child To maximize comfort for the child by not pushing down on the tube. See Appendix 2
The nurse cuts the ties with a <b>round ended scissors</b> and removes them from the tube.	To prepare for the old tube removal.
If the tube is cuffed; deflate the cuff	To ensure the child's safety and prevent tissue damage during removal.
The nurse takes out the new tube from the box in her/his dominant hand and ensures that the introducer is secure as (s)he holds the tube	Adhere to standard infection control precautions and prevent the cross of infection.
The nurse checks that the assistant and child are happy to proceed and a second check that all the necessary equipment is at hand. Reassure the child	To ensure the child's safety and reduce their anxiety. (Davison <i>et al</i> 2021).
The nurse makes a count to three, on three, the assistant removes the old tube and the nurse inserts the new one. The nurse removes the introducer immediately. Removal and replacement of the tube is carried out by using controlled gentle curved movement using an aseptic non touch technique.	To reduce stimulation of a cough and distress to the child The introducer occludes the tube so the child will not be able to breathe while it is in.  To ensure the child is comfortable and reassured.
If the cuff is to be inflated, inflate the cuff using water for injection or air (follow manufacturer's instructions) in the 5ml syringe to the prescribed volume	To ensure the child's safety and ensure adequate ventilation
The nurse continues to hold the new tube in a 'u' shaped hold and the assistant brings the equipment closer to the child and starts cleaning the stoma and the child's neck.	To maximize comfort for the child by not pushing down on the tube. (See Appendix 2) As per the guidelines on Tracheostomy stoma care and changing the tracheostomy tube holder. CHI (2023)
The child's respiratory status is monitored by checking the following: <ul style="list-style-type: none"> <li>• No evidence of breathing problems</li> <li>• Bilateral chest movement</li> <li>• Exhaled air felt through the tracheostomy tube</li> <li>• Air entry heard on auscultation</li> <li>• Suction catheter can pass through the tube</li> </ul> For difficult procedures capnography or a fiberoptic scope can be used to confirm placement	To ensure that the tube is correctly placed in the trachea and that the child is being ventilated and oxygenated (Davison <i>et al</i> 2021). The tracheostomy tube can inadvertently enter the soft tissues or a false passage and the child will not have a patent airway
The tube is secured with the tracheostomy tube holder.	As per the guideline Tracheostomy stoma care and changing the tracheostomy tube holder. (Children's Health Ireland, Crumlin 2023)
Doff PPE and discard in an appropriate waste bag.	Infection Control Standard Precautions (CHI at Crumlin 2019b)
Check that the child is comfortable and praise them	To ensure comfort, dignity and privacy

Perform hand hygiene	Adhere to standard infection control precautions and prevent the cross of infection.
Document how the procedure was tolerated. Record and report to the ENT team if abnormalities or difficulties were experienced for example: <ul style="list-style-type: none"> <li>• Bleeding from the stoma</li> <li>• Difficulty inserting the tube</li> <li>• Discharge or odour from the stoma</li> <li>• Altered skin integrity including granulation tissue</li> <li>• Discomfort / distress for the child</li> </ul>	Good recording is keeping part of the professional and legal accountability of registered nurses and midwives. (NMBI 2015)
If the tracheostomy tube can be reused, it should be washed under running water, dried, labelled with a patient identifying label and sent to HSSD for reprocessing.	To reduce, recycle and reuse.
Complete a new tracheostomy information sheet if the tracheostomy tube size was changed	To update the child's tracheostomy information sheet and to inform healthcare professionals of the change in tube size. (Davison <i>et al</i> 2021).

## 5.0 TERMS AND DEFINITIONS

The most commonly used tracheostomy tubes in Children's Health Ireland are Bivona (Portex) and Shiley (Covidien). The manufacturers include recommendations for planned changes of tracheostomy tubes in their product data sheets. Portex and Covidien both recommend tracheostomy tube usages should not exceed 29 days. Shiley (covidien) tracheostomy tubes are routinely changed every 7 – 10 days due to the small internal diameter of the tracheostomy tubes commonly used in Paediatrics.

**Stay sutures** are sutures, which are placed intraoperatively through the tracheal rings and brought out onto the skin where they are secured with tape and labelled. In an emergency they are used to aid opening the tracheal lumen prior to the tract or stoma formation, before the planned first tube change. See Fig 3

**Maturation sutures:** The pediatric tracheostomy stoma can be matured via a technique that places 4-quadrant sutures from the tracheal cartilage to the dermis. This has the potential of decreasing the risk of accidental decannulation and the formation of granulation tissue. See Fig 3

## 6.0 MONITORING, AUDIT AND EVALUATION

This PPPG will be reviewed and updated at least every three years by the document author/owner, or earlier if required due to updated guidance, evidence or legislation. Compliance with key principles or procedures described within this PPPG should be audited on an annual basis by the CNS Airways/ENT.

## 7.0 KEY STAKEHOLDERS

The following key stakeholders were involved in developing and/or reviewing this document:

Name	Title	Department	Location
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Jillian Quinn	CNS	ENT/Airway Management	CHI at Crumlin
Blaithin Edmonds	CNS	ENT/Airway Management	CHI at Crumlin
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Kathy Roche	CNS	ENT	CHI at Temple Street
Triona McAndrew	CNSp	ENT	CHI at Temple Street

## 8.0 COMMUNICATION AND TRAINING

All approved PPPGs will be available on the Qpulse system. Heads of Department and Line Managers must ensure that their staff are aware of all PPGs relevant to their role and have access to same. Where required, training should be provided on the contents of this PPPG. <https://www.childrenshealthireland.ie/healthcare-professionals/nursing-guidelines-landing/>

## 9.0 REFERENCES

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10.0 APPENDICES

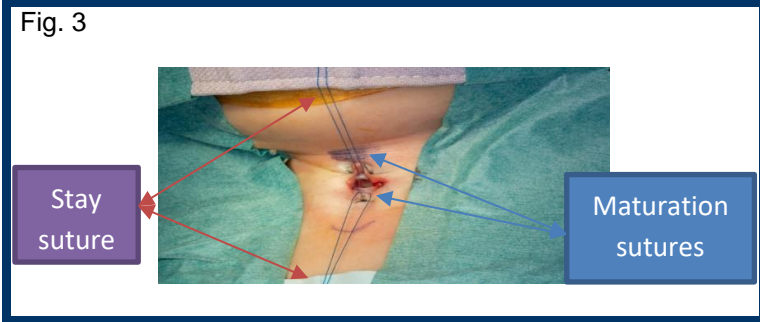
9.0 Appendices: Tracheostomy Planned Tube Change



- Contents of the emergency case/bag**
- Tracheostomy tube same size with Velcro ties attached
  - Tracheostomy tube size smaller
  - Double round ended scissors
  - Suction Catheter (for Seldigner technique)
  - Water Soluble Lubricant
  - Tracheostomy Tube Holder
  - Normal Saline
  - Gauze Swabs
  - Disconnect wedge
  - Mouth to tracheostomy valve
  - Anti-viral filter



U – shaped hold



Maturation and Stay Sutures

