

GUIDELINE TITLE: TRACHEOSTOMY CARE- STOMA CARE AND CHANGE OF TRACHEOSTOMY TIES/TUBE HOLDER	Document No: pending Version No: 1
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1.0 GUIDELINE STATEMENT

The purpose of this guideline is to provide an educational and evidence-based practice resource for nursing staff involved in the care of a child who has a tracheostomy. This document is intended to outline to the reader, the procedure of attending to tracheostomy stoma care needs and changing the tracheostomy ties/tube holder safely, on a child or infant. Tracheostomy stoma care and changing the ties/tube holder are an integral part of the nursing care of a child with a tracheostomy.

2.0 SCOPE

- 2.1 Employees: All full-time, part-time and fixed term employees employed by Children's Health Ireland are covered by this policy.
- 2.2 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

The tracheostomy incision is a surgical wound; therefore, prevention of infection is paramount. Ideally, the tracheostomy ties/tube holder are not changed until the ENT surgeon deems that a safe tract has formed between the skin and the trachea. This occurs when the first tracheostomy tube change is performed, usually between days 2-5 post-operatively, Woods *et al* (2019). If one needs to remove the tracheostomy ties/tube holder before this, permission must be sought from the ENT team. In the interim period, the area around the stoma can be cleaned using an aseptic technique without removing the tracheostomy ties/tube holder. Prior to the first tube change, stay sutures are present which may impede one's attempts to maintain an aseptic technique.

The stay sutures are removed after the first tube change has been performed. The tracheostomy stoma is deemed to be mature when the tract has epithelialised and the edges of the tracheal wall have adhered to the tracheal wall, Okonkwo (2020)

Infants and children are susceptible to stomal complications and skin breakdown due to their delicate skin and the presence of a tracheostomy tube, Zustiak *et al* (2020). In a study performed by D'Souza *et al*

(2016) 19.9% of the children studied had a tracheostomy complication, of these 65% were wound or tracheostomy stoma related complications.

Fear of accidental decannulation may lead to hesitation to manipulate the tracheostomy tube and inadequate examination and care of the stoma site and the skin under the tracheostomy ties/tube holder, D'Souza *et al* (2020). A tracheostomy tube is a foreign body and may elicit an inflammatory response from the surrounding tissues, which may become colonised with bacteria. Granulation tissue may form and is a major complication of tracheotomy tubes.

Tracheostomy tubes may cause pressure ulcers by creating a constant pressure interface over the skin on the neck with additional disruption of skin integrity due to wetness from respiratory secretions and sweat, Odom *et al* (2020), because a child's/infant's skin is immature and the percentage of body surface area covered by the tube and the ties/tube holder is greater than in adults. Factors which can contribute include, the children's comorbidities, children's comparatively shorter necks, increased wet environment from secretions and perspiration, more frequent rapid head and neck movements compared with adults, D'Souza *et al* (2016). Friction and pressure related wounds secondary to the tracheostomy tube and ties/tube holder require special attention Odom *et al* (2020). Prevention and early detection are the cornerstones to effective tracheostomy care, Gaudreau *et al* (2016). Children are often unable to communicate discomfort related to pressure therefore vigilance is required by nursing staff.

Tracheostomy tube holders are referred to tracheostomy ties informally. Tracheostomy ties will be used throughout this document when referring to the tube holder. Several types of material and design of ties can be used to secure the tracheostomy tube in place. In CHI, the most frequently used method of securing the tracheostomy tube is a foam pad with cotton twill ties. The soft foam pad covers a greater surface area, better distributing the pressure on the cervical skin. Tracheostomy ties are made from durable nonfraying material and have cotton twill ties incorporated into them.

Caution: Velcro ties are not suitable for young children who are active and mobile unless nursed under continuous observation i.e., in an ICU setting. The concern is that small children may pull the Velcro apart leading to accidental decannulation.

In CHI, it is generally advised to avoid using Velcro ties on children under 8 years of age. Children over 8 years of age should be individually risk assessed to determine their suitability before using Velcro ties.

4.0 OBJECTIVES

- To standardise the care of tracheostomy stoma and changing of tracheostomy ties
- To ensure and maintain patient safety when caring for tracheostomy stoma and changing a tracheostomy ties
- To ensure that research-based knowledge underpins nursing practice
- To ensure safety of a) the child's airway, b) the child, c) the tracheostomy tube
- To maintain skin integrity
- To promote the comfort and wellbeing of the child
- To prevent infection

5.0 INDICATIONS FOR TRACHEOSTOMY STOMA CARE AND CHANGING THE TRACHEOSTOMY TIES

Tracheostomy stoma care, attending to the skin care under the ties and tie change is performed as required; this is usually performed daily on a baby, Walsh (2019) or twice daily if required (Hockenberry *et al* 2022) and can be performed on alternate days in children when the stoma and skin are healthy and intact. Tracheostomy stoma care is usually performed in conjunction with the tracheostomy ties being changed but it may be necessary to perform stoma care or attend to the skin under the ties without changing the ties themselves. Cleaning may need to be performed much more frequently during the immediate post-operative period because of the greater risk of infection; and when clinically indicated, for example, during teething and when the area becomes wet or soiled. The tracheostomy tie tension should be checked at the beginning of each shift and if indicated, regularly throughout the day. The tracheostomy ties should be readjusted if the tension is too tight or too loose.

6.0 COMPLICATIONS ASSOCIATED WITH TRACHEOSTOMY STOMA CARE AND CHANGING THE TRACHEOSTOMY TIES

Using the correct technique when performing tracheostomy stoma care and changing the tracheostomy ties will assist in the prevention of complications which can include:

- Accidental dislodgement/displacement of the tracheostomy tube
- Introduction of liquid or small particles into the trachea e.g., encrusted exudates, particles of dressing products.
- Anxiety and fear
- Discomfort or pain
- Stoma and/or skin infection or skin breakdown
- Cross infection
- Restricted blood supply to/from the head

7.0 EQUIPMENT AND SUPPLIES

PPE for aerosol generating procedures
Double round ended scissors
Tracheostomy Tube Holder/Ties – example Marpac
Flannel or sponge, towel
Bowl of warm water
Mild emollient wash
Clean humidification device
Rolled sheet for under the child’s shoulder
Clean dressing trolley or work surface
Gauze squares
Sodium Chloride 0.9% w/v ampoules
Receiver or gallipot
Oxygen supply with oxygen attachment for a tracheostomy tube if indicated.
Suction equipment with appropriately sized suction catheters
A Trachi-Case or emergency bag, which contains the equipment and supplies necessary for an emergency tube change
<ul style="list-style-type: none"> • Optional Supplies <ul style="list-style-type: none"> ○ Skin protector example Provox or Trachi Wipe ○ Skin emollient – non perfumed ○ Tracheostomy dressing ○ Cotton tipped applicators

8.0 PREPARATION

The nurse ensures a safe environment by checking that the following items are present:

- The Trachi Case or emergency bag, which contains the equipment and supplies necessary to perform an emergency tube change.
- Suction equipment with appropriately sized suction catheters.
- Oxygen supply with oxygen attachment for a tracheostomy tube and a non rebreathe face mask.

Two people are required to change the tracheostomy ties, to prevent accidental tube dislodgement by the child moving or coughing, Davison *et al* (2020). One person holds the tube while the second person removes the old ties, cleans the stoma site and surrounding area and applies the new ties, Davison *et al* (2020). This procedure is performed by a nurse competent in the procedure with an assistant. The assistant can be a fellow nurse, a nursing student, healthcare assistant, a carer or a parent. If the child is self-caring, they can assist with the procedure.

Note: Options for keeping the child still during the procedure are discussed with the child and parents/carers, swaddling the child or infant is not routinely performed in CHI, and may cause increased distress (Department of Health and Children 2009, CHI, Crumlin 2011). Involve the play specialist if necessary.

Performing a stoma care and changing tracheostomy ties can be 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.finaal%20online%20version.pdf>

ACTION	RATIONALE/REFERENCE
The nurse and assistant perform hand hygiene and 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 ensures that all of the equipment and supplies are available.	To be efficient during the procedure (Watters & Mancuso 2019).
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.
The nurse introduces her/himself, explains the procedure to the child / parents / carer and gains their consent to proceed (if appropriate)	To ensure that the child / parents / carer feels at ease; understands the procedure and gives their consent (NMBI 2021)
Assess the child's level of pain and administer analgesia if required	To reduce pain during the procedure and promote comfort for the child.
The child's clothing is adjusted. All efforts must be made to protect the privacy and dignity of the child during the procedure	To improve visualisation of the stoma site and neck area To protect the child's best interest Department of Children and Youth Affairs (2011)
Ensure that all emergency equipment is readily available	In case of accidental dislodgement of the tube during the procedure Davison <i>et al</i> (2020).
Prepare the supplies, prepare the ties, fill the bowl with warm water. Open the dressing and skin protector if necessary	To ensure that all the supplies are available and prepared prior to starting the procedure Davison <i>et al</i> (2020),
Dampen gauze squares with Sodium Chloride 0.9%	Sodium Chloride 0.9% is recommended as the solution for cleansing of the stoma Davison <i>et al</i> (2020), Walsh (2019). Moisten gauze swabs enough only to clean without the risk of excess saline dripping into the stoma
The tracheostomy tube is suctioned before during and after the procedure as needed.	To ensure patency for the tube.

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 access and visibility of the area. A rolled sheet is placed under the shoulders so that the neck is extended	To extend the neck to ensure good visualization of the stoma site and the surrounding area, 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	Promotes distraction and comfort. Bowden & Smith Greenberg (2016)
If appropriate, a child can sit upright, in a semi recumbent position with the head tilted slightly backwards, with their back, and their head supported by a hard surface. Clothing around the neck and shoulders exposed.	To make observation and cleaning of the stoma easier To ensure that they don't pull away and dislodge the tube. To ensure comfort Davison <i>et al</i> (2020)
The humidification device/speaking valve is removed	To improve accessibility
Decontaminate hands	To adhere to infection control standard precautions and to prevent cross infection (CHI 2019a).
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> 2020). 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 Figure 3b
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 decontaminates their hands	To adhere to infection control standard precautions and to prevent cross infection (CHI 2019a).
The nurse checks that the assistant and child are happy to proceed and checks a second time 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> (2020).
Standing behind the child the nurse, using the double round ended scissors cuts the ties between the knots and the flanges, removes and discards the old tracheostomy ties and dressing if present into the clinical waste bin	To minimise the risk of cross infection, Davison <i>et al</i> (2020) Wet or soiled tracheostomy dressings can predispose the peristomal area to skin breakdown, Hockenberry <i>et al</i> (2022)
Inspect the stoma site and surrounding skin for signs of inflammation and altered skin integrity including granulation tissue	Early detection of complications facilitates early intervention (Odom <i>et al</i> ,2020).
Clean the stoma with the dampened gauze squares, using a single sweep clean from the skin nearest the stoma in an outward direction using each piece of gauze once. Dry the area.	To remove wet or dried secretions from the stoma site, to prevent cross infection, Davison <i>et al</i> (2020). Reduces the risk of bacteria moving towards the stoma To attend to hygiene needs, to provide comfort. Excess moisture can predispose the area to skin breakdown (Odom <i>et al</i> 2020)
Clean and dry under the flanges/wings of the tracheostomy tube, above and below the stoma site taking care not to accidentally dislodge the tracheostomy tube. Continue to clean the stoma site using a new piece of gauze each time until the whole area has been cleaned. Cotton tipped applicators moistened in Sodium Chloride 0.9% can be used to remove loosen and remove crusts from the stoma site if necessary	Avoid using products that contain lint or small fibres, which could inadvertently enter the stoma. To prevent dried or encrusted secretions from entering the stoma, Bowden & Smith Greenberg (2016)

Decontaminate hands	To adhere to infection control standard precautions and to prevent cross infection (CHI 2019a).
Wash the skin on the neck with warm water to which a mild emollient wash has been added using a sponge or flannel. Dry the skin on the neck thoroughly with a towel with a dabbing motion. Apply emollient if required.	Maintains cleanliness of the skin and helps to prevent skin breakdown. To reduce the transfer of microorganisms (Bowden & Greenberg 2016)
Check the skin daily for any signs of irritation, inflammation, pressure or friction.	Early detection of complications facilitates early intervention (Odom <i>et al</i> ,2020).
Assess the need for a skin protector, e.g. Provox or Trachi Wipe.	To protect the skin from tracheal secretions and reduces skin irritation (Manufacturer's information) Atos Medical or Kapitex Healthcare 2023. See Figure 3a
Change dressing daily or as required.	The use of dressings around a healthy stoma site is unnecessary unless clinically indicated. There are specifically designed tracheostomy dressings available, e.g., Trachi Dress or Trachi Dress Foam. A tracheostomy dressing absorbs mucous, aids in keeping the area dry, minimises skin excoriation, diminishes the pressure from the tube on the skin (Manufacturer's information, Kapitex Healthcare 2022) See Figure 2a & 2b.
Skin creams or ointments are not routinely used around the stoma site. Creams/ointments may be applied around the stoma site only after consultation with the CNS/ENT team, taking extreme care that no particles enter the stoma.	Due to increased absorptive capabilities of the trachea, the use of materials or substances that can cause toxicity or potential irritation are avoided (Hartzell 2014).
Carefully place the new tracheostomy ties in the middle of the back of the child's neck snugly fit the sides towards the flanges of the tracheostomy tube.	Follow manufacturer's instructions (Marpac 2023) See Figure 1a & 1c.

<p>Insert one twill tape into the opening of the flange while the assistant holds and keeps tension on the tapes on the other side. The tape is gently pulled until the tension is estimated to be adequate and tied to the other twill tape, make a bow.</p> <p>Repeat on the other side.</p>	<p>To secure the tracheostomy tube (Davison <i>et al</i> 2020)</p> <p>See Figure 1a & 1c</p>
<p>Lie the infant on his/her side or sit the infant or child upright with the head flexed gently forward or lift the infant over the assistant's shoulder. The assistant holds the tube securely throughout.</p> <p>Check the tension. One finger should fit between the ties and the child's neck</p>	<p>To secure the tracheostomy tube ensuring that the ties are neither too tight nor too loose. (Davison <i>et al</i> 2020)</p> <p>It is easier to ensure a correct fit when the head is flexed forward, Hockenberry <i>et al</i> (2022)</p> <p>The tracheostomy ties must be tight enough to secure the tracheostomy tube in place and loose enough to avoid skin breakdown or damage (D'Souza 2016) See Figure 3c.</p>
<p>If the tension is not correct, lie the infant/child down with the roll under the shoulders, undo the bows and readjust.</p> <p>When the tension is correct change the bows into knots, tie two further knots on each side.</p>	<p>To ensure correct tension of the ties</p> <p>It is difficult for a child to undo 3 knots and dislodge the tube</p>
<p>Change the area where the knot is positioned daily or as required</p> <p>Remove the roll from beneath the child's shoulders</p> <p>Cut off excess tape, leaving approximately 4cm remaining</p>	<p>To prevent pressure ulceration</p> <p>To promote patient comfort</p>

	To decrease the risk of the child pulling out the tube
The child's clothing is readjusted. Check that the child is comfortable and praise them	To ensure comfort, dignity and privacy To maintain a trusting relationship between the child and the nurse (Hockenberry <i>et al</i> 2022)
The child's respiratory status is monitored throughout by checking the following: <ul style="list-style-type: none"> • No evidence of breathing problems • Bilateral chest movement • Exhaled air felt through the tracheostomy tube • Air entry heard on auscultation • Suction catheter can pass through the tube 	The tracheostomy tube can inadvertently be displaced during the procedure 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> (2020).
Discard used supplies appropriately	Infection Control Standard Precautions. (CHI 2019b)
Doff PPE and discard in an appropriate waste bag.	Infection Control Standard Precautions. (CHI 2019b)
Perform hand hygiene	Adhere to standard infection control precautions and prevent the cross of infection (CHI 2019a).
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"> • Bleeding from the stoma • Discharge or odour from the stoma • Altered skin integrity including granulation tissue • Discomfort / distress for the child • Wound care or dressing performed 	To maintain an accurate record of nursing care and to facilitate communication. Good recording is keeping part of the professional and legal accountability of registered nurses and midwives. NMBI (2015) <ul style="list-style-type: none"> • This may indicate trauma or the formation of granulation tissue • This may indicate infection • This may indicate trauma or infection and may cause external obstruction of the stoma

To identify any concerns or clinical deterioration early and escalate in a timely manner if required, Davison *et al* (2020).

10.0 GLOSSARY OF ACRONYMS, TERMS AND DEFINITIONS

The **tracheostomy stoma** is an opening in the neck through which a tracheostomy tube is inserted. A **tracheostomy tube holder** is made of durable, non-fraying material and holds the tracheostomy tube in place (Hockenberry *et al*, 2022) and are also known as tracheostomy **ties**.

11.0 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.

12.0 KEY STAKEHOLDERS

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

Name	Title	Department	Site
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Triona McAndrew	CNS	ENT Department	CHI at Temple Street

13.0 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.

14.0 REFERENCES

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15.0 APPENDICES

Appendix 1 - Tracheostomy stoma care and changing the tracheostomy ties

Figure 1a. Tracheostomy tube holder/ties



Figure 1b. Velcro Tracheostomy tube holder/ties



Figure 1c. Tracheostomy tube holder/tie instructions



Figure 2a. Tracheostomy Dressing – a thin dressing



Figure 2b. Tracheostomy Dressing – a thicker tracheostomy dressing



Figure 3a. Skin Protector – an example of a skin protector Wipe



Figure 3b. U – shaped hold



Figure 3c. One finger between the tracheostomy tie and the skin with the infant sitting upright and their head gently flexed forward

