# Tracheostomy Care in Critical Care

**Aim** To provide guidance on the insertion, daily care, and emergency management of tracheostomies in Critical Care

**Scope** All adult patients in Critical Care with a tracheostomy

## Tracheostomy Insertion Checklist

<table>
<thead>
<tr>
<th>Check 1: Preparation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T</strong> Team (all introduced)</td>
<td>Airway&lt;br&gt;Airway assistant&lt;br&gt;Operator&lt;br&gt;Operator assistant/runner</td>
</tr>
<tr>
<td><strong>R</strong> Reason</td>
<td>Consider reason for insertion&lt;br&gt;Risks&lt;br&gt;Resources</td>
</tr>
<tr>
<td><strong>A</strong> Anaesthetic plan</td>
<td>Consider risks if high PEEP/FiO₂, difficult anatomy, C-spine concerns&lt;br&gt;Ensure all appropriate equipment present and checked</td>
</tr>
<tr>
<td><strong>C</strong> Choice of tube</td>
<td>Consider patients BMI – is an adjustable flange tube needed?</td>
</tr>
<tr>
<td><strong>H</strong> Haemodynamics</td>
<td>Consent</td>
</tr>
<tr>
<td><strong>E</strong> Expose and position the patient properly</td>
<td>Is a percutaneous tracheostomy still possible? Consider ultrasound</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Check 2: Just prior to starting procedure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Right patient</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Right staff present</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Right equipment (including tracheostomy tube)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Right time to be doing the procedure</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Right method (surgical vs percutaneous)</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Check 3: Post procedure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confirm tube is in airway</strong></td>
<td>End tidal CO₂ (value and waveform)&lt;br&gt;Chest wall movement with ventilation&lt;br&gt;Direct vision with bronchoscope</td>
</tr>
<tr>
<td><strong>Check position of tip tube in relation to carina</strong></td>
<td>Tip should be 2-5cm from the carina</td>
</tr>
<tr>
<td><strong>Ensure inner tube in place</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Check cuff pressure</strong></td>
<td>15-25cm H₂O</td>
</tr>
<tr>
<td><strong>Secure tracheostomy</strong></td>
<td>Dressing and ties</td>
</tr>
<tr>
<td><strong>Ventilator settings/patient sedation</strong></td>
<td>Review post procedure</td>
</tr>
<tr>
<td><strong>Documentation</strong></td>
<td>Complete CIS note, CXR if clinically indicated&lt;br&gt;Handover to bedside nurse</td>
</tr>
</tbody>
</table>

Is everyone present ready to proceed? | Yes | No |
Choice of tracheostomy tube

Insertion *(insertion kits)*

**Small body size**
(e.g. petite elderly female)
Tracoe Twist Plus subglottic aspiration
Size 7

**Default**
Tracoe Twist Plus subglottic aspiration
Size 8 or 9

**Large body size**
Uniperc adjustable flange
Size 7 or 8

Subsequent changes on ICU

**Small body size**
(e.g. petite elderly female)
Tracoe Twist Plus subglottic aspiration
Size 7

**Default**
Tracoe Twist Plus subglottic aspiration
Size 8 or 9

**Large body size**
Uniperc adjustable flange
Size 7 or 8

Discharge to the ward

*Note: NO SUBGLOTTIC ASPIRATION TUBES TO BE SENT TO THE WARD*

**Small body size**
(e.g. petite elderly female)
Tracoe Twist Standard
Size 6 or Tracoe Twist Plus
Size 7

**Default**
Tracoe Twist Plus
Non subglottic aspiration
Size 6, 7 or 8

**Large body size**
Uniperc adjustable flange
Size 7 or 8
CONSIDER WHETHER ADJUSTABLE FLANGE STILL NEEDED
<table>
<thead>
<tr>
<th>Tracheostomy daily care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oxygen therapy &amp; humidification</strong></td>
</tr>
<tr>
<td>• Ensure adequate humidification delivered (ventilated and non ventilated patients)</td>
</tr>
<tr>
<td><strong>Inner cannula</strong></td>
</tr>
<tr>
<td>• Inner cannula should be removed, inspected &amp; cleaned every 4 hours <em>(see note in text)</em></td>
</tr>
<tr>
<td>• Spare inner cannula to be kept at bedside</td>
</tr>
<tr>
<td>• Dirty cannula cleaned with sterile water &amp; left to air dry</td>
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<tr>
<td><strong>Secretions and suctioning</strong></td>
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<tr>
<td>• Deep suctioning should be performed as often as clinically indicated but minimum every 4 hours if fully ventilated</td>
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<tr>
<td>• Secretions can be suctioned from tracheostomy opening using Yankeur sucker if using trache mask</td>
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<tr>
<td><strong>Stoma care &amp; securing the tracheostomy</strong></td>
</tr>
<tr>
<td>• Minimum of once per 24 hours:</td>
</tr>
<tr>
<td>• Inspect stoma site for infection</td>
</tr>
<tr>
<td>• Clean stoma with sterile gauze &amp; saline/water</td>
</tr>
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<td>• Change dressing and ensure tapes secure</td>
</tr>
<tr>
<td><strong>Cuff check</strong></td>
</tr>
<tr>
<td>• Check cuff pressure a <strong>minimum of once per shift</strong></td>
</tr>
<tr>
<td>• Cuff pressure should be below 20-25 cmH₂O <em>(bottom of green on the manometer)</em></td>
</tr>
<tr>
<td>• Check more frequently as indicated</td>
</tr>
<tr>
<td><strong>Oral care &amp; assessment of swallowing</strong></td>
</tr>
<tr>
<td>• Daily oral care (see DCCQ Mouth care SOP)</td>
</tr>
<tr>
<td>• Regular assessment of swallowing</td>
</tr>
<tr>
<td><strong>Documentation</strong></td>
</tr>
<tr>
<td>• All tracheostomy observations should be documented on CIS</td>
</tr>
<tr>
<td><strong>Safety</strong></td>
</tr>
<tr>
<td>• Ensure continuous capnography in place</td>
</tr>
<tr>
<td>• Ensure bedhead sign in place</td>
</tr>
<tr>
<td>• Be familiar with tracheostomy red flags and emergency algorithms</td>
</tr>
</tbody>
</table>

For further details please refer to full text and educational resources
Tracheostomy daily care at a glance

**Oxygen therapy & humidification**

- **Mechanical Ventilation**
  - Hypertonic saline, specific mucolytics (e.g., carbocisteine)
  - Saline nebulisers: 5-10mls 0.9% saline

- **Active humidification**
  - Saline nebulisers: 5-10mls 0.9% saline
  - Swedish Nose (if tolerated)

For all patients: Mobilisation as able, regular physiotherapy, encourage coughing if able

**Care of inner cannula**

- Cuff inflated
  - Inner tubes
  - Pilot balloons

Tracheostomy should be kept patent through regular suctioning and care of inner cannula
A blocked inner cannula = a blocked airway

**Cuff management**

- Cuff should be adequately inflated with cuff pressure 20-25cmH₂O
- Loss of cuff pressure or new cuff leak may indicate the tracheostomy is incorrectly sited
- Speaking valve should only be applied when the cuff is fully deflated

**Capnography**

- Sudden loss of waveform:
  - ET tube disconnected, dislodged, kinked or obstructed
  - Loss of circulatory function

- Decreasing ET CO₂:
  - ET tube cuff leak
  - ET tube in hypopharynx
  - Partial obstruction

Continuous capnography can alert to a blocked, partially blocked or displaced tracheostomy

**Safety**
Emergency tracheostomy management (ICU non ventilated)

Red flags including:
- Increased respiratory rate
- Falling saturations
- Unexplained agitation

Consider:
- Blocked tracheostomy
- Displaced tracheostomy
- Non trache related causes

Call for appropriate help
- Nurse in charge
- ICU Registrar (Bleep 1987)
- ICU Consultant

Look, listen & feel at the mouth and tracheostomy
Ensure capnography attached, consider using Mapleson C system

Is the patient breathing?
- No: CPR if no pulse/signs of life
  Refer to cardiac arrest algorithm
- Yes: Apply high flow oxygen to BOTH face and tracheostomy

Assess tracheostomy PATENCY
Position head in neutral position, remove speaking valve
Encourage patient to cough if able
Remove, inspect and replace inner tube

Can you pass a suction catheter easily?
- No: Deflate the cuff
  Look listen & feel at mouth & tracheostomy
  Is the patient stable or improving?
- Yes: The tracheostomy tube appears patent
  Continue ABCDE assessment
  Attach to ventilator if needed
- No: The tracheostomy tube appears partially obstructed or displaced
  Continue ABCDE assessment

Is the patient breathing?
- No: CPR if no pulse/signs of life
  Refer to cardiac arrest algorithm
- Yes: Apply high flow oxygen to BOTH face and tracheostomy

Place head in neutral position
Remove speaking valve
Encourage patient to cough if able
Remove, inspect and replace inner tube

Can you pass a suction catheter easily?
- Yes: The tracheostomy tube appears patent
  Continue ABCDE assessment
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The tracheostomy tube appears patent
Continue ABCDE assessment
Attach to ventilator if needed

The tracheostomy tube appears partially obstructed or displaced
Continue ABCDE assessment

Is the patient stable or improving?
- No: CPR if no pulse/signs of life
  Refer to cardiac arrest algorithm
- Yes: The tracheostomy tube appears partially obstructed or displaced
  Continue ABCDE assessment

REPLACE THE TRACHEOSTOMY TUBE
Ensure oxygen to face & cover stoma with gauze
Consider reinsertion of tracheostomy (established tract), oral intubation or remain decannulated

Primary emergency oxygenation
- Standard ORAL airway manoeuvres
  Cover the stoma (swabs / hand). Use:
  - Bag-valve-mask
  - Oral or nasal airway adjuncts
  - Supraglottic airway device e.g. LMA

Secondary emergency oxygenation
- Attempt ORAL intubation
  Prepare for difficult intubation
  Uncut tube, advanced beyond stoma
- Attempt intubation of STOMA
  Small tracheostomy tube / 6.0 cuffed ETT
  Consider Aintree catheter and fibreoptic 'scope / Bougie / Airway exchange catheter

Modified from National Tracheostomy Safety Project www.tracheostomy.org.uk

Draft May 2017 (ICU non vent)
**Emergency tracheostomy management (ICU ventilated)**

**Red flags**
- Increased respiratory rate
- Falling saturations
- Unexplained agitation

**Consider**
- Blocked tracheostomy
- Displaced tracheostomy
- Non trache related causes

**Call for appropriate help**
- Nurse in charge
- ICU Registrar (Bleep 1987)
- ICU Consultant

---

**Assess tracheostomy PATENCY & POSITION**

- **Normal ETCO₂ waveform**
- Chest wall moves easily

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**Disconnect from ventilator**
Remove inspect & replace inner tube
Ensure capnography in place & ventilate gently using Water’s circuit

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**CPR if no pulse/signs of life**
Refer to cardiac arrest algorithm

---

**Apply high flow oxygen to BOTH**
face and tracheostomy

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**The tracheostomy tube appears PATENT**
Check cuff pressure
Continue ABCDE assessment
Consider return to ventilator if stable
Consider fibre-optic assessment of tube position

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**Neck swelling or surgical emphysema developing?**

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**Can you pass a suction catheter easily?**

---

**If patient stable CONSIDER**
fibre-optic assessment of tracheostomy

---

**REMOVE THE TRACHEOSTOMY TUBE**
Ensure oxygen to face & cover stoma with gauze
Plan for oral re intubation *(consider re insertion of tracheostomy IF established tract AND patient stable)*

---

**Primary emergency oxygenation**
- **Standard ORAL airway manoeuvres**
  - Cover the stoma (swabs / hand). Use:
    - Bag-valve-mask
    - Oral or nasal airway adjuncts
    - Supraglottic airway device e.g. LMA

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**Secondary emergency oxygenation**
- **Attempt ORAL intubation**
  - Prepare for difficult intubation
  - Uncut tube, advanced beyond stoma
  - **Attempt intubation of STOMA**
    - Small tracheostomy tube / 6.0 cuffed ETT
    - Consider Aintree catheter and fibreoptic ‘scope / Bougie / Airway exchange catheter

---

Draft May 2017 (ICU vent)
Tracheostomy emergency – CARDIAC ARREST (ICU)

Confirm cardiorespiratory/respiratory arrest | Call for help

Assess tracheostomy patency and provide ventilation

- Position head in neutral position
- Remove speaking valve (if present)
- Ensure cuff inflated
- Ensure capnography in place

Attach Waters circuit to tracheostomy + 15l O₂
Give 2 GENTLE inflations
Does the chest move easily with ventilation?
Is an appropriate end tidal CO₂ trace seen?

No

Remove, inspect and replace inner tube
Suction via tracheostomy
Does the chest move easily with ventilation?
Is an appropriate end tidal CO₂ trace seen?

No

Deflate the cuff
Can you ventilate via FACE using bag + mask?*

SPECIALIST RESPONDER
If tracheostomy displaced - remove tube
Cover stoma with gauze and apply pressure
Ventilate via FACE using bag + mask*
Prepare to secure airway (see over)

Yes

Start chest compressions
If no/inadequate output

Fetch cardiac arrest trolley

Yes

Continue continuous chest compressions
100-120 per minute
Ventilate at 10-12 breaths/min
Management of cardiac arrest as per ALS guidelines

Yes

Continue CPR rate 30:2 with facemask ventilation
Management of cardiac arrest as per ALS guidelines
Once airway secured move to asynchronous ventilation/compressions

No

Academic Department of Critical Care
Queen Alexandra Hospital Portsmouth

* Remember airway opening manoeuvres: head tilt, chin lift, jaw thrust. Consider use of oral and NP airway adjuncts
# Remove tracheostomy tube if no chest wall movement and no appropriate ETCO₂ trace seen

REMEMBER LARYNGECTOMY PATIENTS CANNOT BE INTUBATED VIA THE MOUTH
INSERT ORAL ENDOTRACHEAL TUBE OR TRACHEOSTOMY INTO STOMA TO VENTILATE

Draft. May 2017
Emergency tracheostomy management - Patent upper airway

Call for airway expert help
Look, listen & feel at the mouth and tracheostomy
A Mapleson C system (e.g. ‘Waters circuit’) may help assessment if available
Use waveform capnography when available: exhaled carbon dioxide indicates a patent or partially patent airway

Is the patient breathing?

No

Call Resuscitation Team
CPR if no pulse / signs of life

Yes

Apply high flow oxygen to BOTH the face and the tracheostomy

Assess tracheostomy patency

Remove speaking valve or cap (if present)
Remove inner tube
Some inner tubes need re-inserting to connect to breathing circuits

Can you pass a suction catheter?

Yes

The tracheostomy tube is patent
Perform tracheal suction
Consider partial obstruction
Ventilate (via tracheostomy) if not breathing
Continue ABCDE assessment

No

Deflate the cuff (if present)
Look, listen & feel at the mouth and tracheostomy
Use waveform capnography or Mapleson C if available

Is the patient stable or improving?

Yes

Tracheostomy tube partially obstructed or displaced
Continue ABCDE assessment

No

REMOVE THE TRACHEOSTOMY TUBE
Look, listen & feel at the mouth and tracheostomy. Ensure oxygen re-applied to face and stoma
Use waveform capnography or Mapleson C if available

Is the patient breathing?

No

Call Resuscitation team
CPR if no pulse / signs of life

Yes

Continue ABCDE assessment

Primary emergency oxygenation

Standard ORAL airway manoeuvres
Cover the stoma (swabs / hand). Use:
Bag-valve-mask
Oral or nasal airway adjuncts
Supraglottic airway device e.g. LMA

Tracheostomy STOMA ventilation
Paediatric face mask applied to stoma
LMA applied to stoma

Secondary emergency oxygenation

Attempt ORAL intubation
Prepare for difficult intubation
Uncut tube, advanced beyond stoma

Attempt intubation of STOMA
Small tracheostomy tube / 6.0 cuffed ETT
Consider Aintree catheter and fibreoptic ‘scope / Bougie / Airway exchange catheter

Tracheostomy care on the Critical Care Unit

<table>
<thead>
<tr>
<th>Version</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of responsible (ratifying) committee</td>
<td>Critical Care Governance Group</td>
</tr>
<tr>
<td>Date ratified</td>
<td>30 Jun 17</td>
</tr>
<tr>
<td>Document Manager (job title)</td>
<td>Dr Sara Blakeley (Consultant ICU) Sr Catriona Sutherland (Lead nurse outreach)</td>
</tr>
<tr>
<td>Date issued</td>
<td>30 Jun 17</td>
</tr>
<tr>
<td>Review date</td>
<td>30 Jun 20</td>
</tr>
<tr>
<td>Electronic location</td>
<td>DCCQ Guidelines &amp; SOPs Intranet Page</td>
</tr>
<tr>
<td>Related Procedural Documents</td>
<td></td>
</tr>
<tr>
<td>Key Words (to aid with searching)</td>
<td>Tracheostomy, Critical Care</td>
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</table>

Version Tracking

<table>
<thead>
<tr>
<th>Version</th>
<th>Date Ratified</th>
<th>Brief Summary of Changes</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>
Quick reference guide:

**Daily tracheostomy care**

<table>
<thead>
<tr>
<th>Category</th>
<th>Instructions</th>
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</thead>
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<td>• Ensure adequate humidification delivered (ventilated and non-ventilated patients)</td>
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| Inner cannula | • Inner cannula should be removed, inspected & cleaned **every 4 hours (see note in text)**  
• Spare inner cannula to be kept at bedside  
• Dirty cannula cleaned with sterile water & left to air dry |
| Secretions and suctioning | • Deep suctioning should be performed as often as clinically indicated but minimum **every 4 hours** if fully ventilated  
• Secretions can be suctioned from tracheostomy opening using Yankeur sucker if using trache mask |
| Stoma care & securing the tracheostomy | • **Minimum of once per 24 hours:**  
• Inspect stoma site for infection  
• Clean stoma with sterile gauze & saline/water  
• Change dressing and ensure tapes secure |
| Cuff check | • Check cuff pressure a **minimum of once per shift**  
• Cuff pressure should be below 20-25cmH₂O (**bottom of green on the manometer**)  
• Check more frequently as indicated |
| Oral care & assessment of swallowing | • Daily oral care (see DCCQ Mouth care SOP)  
• Regular assessment of swallowing |
| Documentation | • All tracheostomy observations should be documented on CIS |
| Safety | • Ensure continuous capnography in place  
• Ensure bedhead sign in place  
• Be familiar with tracheostomy red flags and emergency algorithms |
1. **INTRODUCTION**

A tracheostomy is placed for a number of reasons. The tracheostomy may be a means of creating a patient airway in the case of upper airway obstruction, it may be used in the weaning of patients from mechanical ventilation, it may be placed for patients who are unable to protect their own airway or it may be inserted as part of a head and neck surgical procedure.

Most of the tracheostomies placed on the ICU are temporary and are removed prior to discharge, however some patients may be admitted with a permanent tracheostomy or have a tracheostomy that subsequently becomes permanent. Although most are removed prior to discharge, some patients may be discharged to the ward with a tracheostomy still in place.

While the tracheostomy is in place it needs to be cared for to maintain the patency of the tube, to prevent infections and to prevent or manage complications associated with a tracheostomy.

The elements of care associated with a tracheostomy together form a care bundle and fall under the following headings.

1. **Assessment of the patient**

2. **Maintenance of the tracheostomy and stoma**
   a. Humidification to prevent secretions blocking the tracheostomy
   b. Regular cleaning and inspection of inner tube to prevent narrowing and blockage
   c. Regular suctioning to prevent secretion build up
   d. Change of tracheostomy dressing and attention to tracheostomy tapes/ties

3. **Infection control**
   a. Correct method of suctioning to avoid introduction of infection
   b. Regular assessment of tracheostomy stoma
   c. Regular assessment of respiratory secretions

4. **Safety**
   a. Check list of essential bedside equipment
   b. Use of bedhead signs containing key information regarding the tracheostomy for use in an emergency

2. **PURPOSE**

This document has been developed to:

- Guide ICU staff in the care of adult patients with temporary tracheostomies while they are on the Intensive Care Unit
- To provide best available local/national evidence for the management of tracheostomies.
- To help reduce potential complications associated with tracheostomies.
- To provide clear guidance in identification of warning signs (red flags) associated with the tracheostomy and emergency management.
3. **SCOPE**

This guideline applies to all patients on the Intensive Care Unit having a tracheostomy inserted and all those who have a tracheostomy in place (regardless of the location of its insertion).

This guideline does not apply to paediatric patients with tracheostomies.

4. **DEFINITIONS**

**Tracheostomy:** A tube placed through an incision at the base of the neck into the trachea.

**Airway:** This refers to the structures that air passes through leading from the nose and mouth down to the lungs.

**Patent airway:** An airway that allows free flow of air down to the lungs, and allows expelled air to pass from the lungs back out again is called a patent airway.

**Obstructed airway:** This is an airway where there is complete or partial obstruction to the free flow of air. This could be due to a blockage (e.g. tumour, swelling) or due to reduced muscular tone leading to the collapse structures.

**Protected airway:** This is an airway where reflexes are in place to prevent fluid (e.g. stomach contents, drink) going into the lungs. An airway can be patent yet not protected.

**NTSP:** National Tracheostomy Safety Project, national guidelines for management of patients with tracheostomies.

5. **DUTIES AND RESPONSIBILITIES**

The authors and Tracheostomy Support Team

6. **PROCESS – see following**
1. ASSESSMENT OF PATIENT

As part of patient assessment at the start of each shift, the tracheostomy should be specifically discussed and important points communicated.

When taking over the care of a patient with a tracheostomy: Think TRACHE

| T | Time/type | When was it inserted? |
| R | Reason    | Why was it inserted? |
| A | Airway    | Are there any concerns regarding intubation? |
| C | CO₂/cuff  | Is continuous capnography in place (value + trace) |
| H | Help      | What is the cuff pressure? Any problems? |
| E | Emergency | Do I know who to ask for help? |

2. MAINTENANCE OF TRACHEOSTOMY AND STOMA

A. Humidification

Inadequate humidification may lead to life-threatening blockage of the tracheostomy tube

Increasingly thick secretions may indicate new infection and/or inadequate humidification. Thick secretions may lead to blockage of the tracheostomy so should be managed promptly and appropriately.

All patients on the ICU

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization as able Early referral to physiotherapy if indicated Encourage coughing where appropriate (especially self-ventilating patients)</td>
<td>To aid removal of secretions</td>
</tr>
<tr>
<td>All patients should have a humidified circuit if ventilated Ensure inspired oxygen is humidified if self-ventilating via a tracheostomy mask</td>
<td>To moisten inspired gases. To ensure adequate humidification. Warm water carries a greater relative humidity than cold water Tracheostomy HME filters can be considered in</td>
</tr>
</tbody>
</table>
If secretions remain problematic consider nebulized saline To aid removal of secretions

Review daily the degree of humidification needed (refer to humidification ladder) To reduce unnecessary interventions and to assess whether present level of humidification adequate

The degree of humidification can be shown as a ‘humidification ladder’ with a stepwise increase, or decrease in the intensity of humidification depending on the clinical situation. (Modified from NTSP 2013).

**B. Care of inner cannula**

The inner cannula must be removed, inspected and cleaned at least 4 hourly to prevent narrowing and blockage.

**Blockage of the inner tube** may be caused by respiratory secretions - this may be a complete or partial blockage and may lead to respiratory distress

**Signs of respiratory distress:**
Unexplained increased respiratory rate
Unexplained fall in tidal volumes
Falling saturations
Change in end tidal CO2 value/tracing
Indicating they cannot breath properly (where able)
<table>
<thead>
<tr>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>Explain procedure to patient</td>
<td>To gain verbal consent, co-operation and</td>
</tr>
<tr>
<td></td>
<td>reassure the patient</td>
</tr>
<tr>
<td>Pre oxygenate with 100% (oxygen breath)</td>
<td>To prevent hypoxia</td>
</tr>
<tr>
<td>Wash and dry hands, don apron, gloves and goggles</td>
<td>To reduce cross infection.</td>
</tr>
<tr>
<td>With one hand stabilize the actual tracheostomy tube and with the</td>
<td>To maintain airway, prevent early build up of</td>
</tr>
<tr>
<td>other hand remove the inner cannula and insert clean inner cannula</td>
<td>secretions and to maintain oxygenation.</td>
</tr>
<tr>
<td>Ensure that the clean inner cannula is locked in position</td>
<td></td>
</tr>
<tr>
<td>Clean inner cannula with sterile water/saline, use cleaning brush if</td>
<td>To reduce infection risk</td>
</tr>
<tr>
<td>heavily soiled</td>
<td>Cannula should not be left to soak in water</td>
</tr>
<tr>
<td>Dry and store in a dry clean container</td>
<td>as it is an infection risk</td>
</tr>
<tr>
<td>If very heavily soiled then dispose of and replace a new inner</td>
<td></td>
</tr>
<tr>
<td>cannula at the bedside</td>
<td></td>
</tr>
<tr>
<td>Document procedure on CIS</td>
<td>To facilitate communication and evaluation.</td>
</tr>
</tbody>
</table>

C. Suctioning

Any difficulty in passing the suction catheter should lead to consideration that the tube may be partially blocked or misplaced and requires immediate attention.

**Difficulty in passing a suction catheter through the tracheostomy** into the trachea may indicate the inner cannula is **blocked** or the tracheostomy is **displaced**. This requires urgent attention.

**Blood on suctioning** requires urgent attention

**Suctioning via tracheostomy (using in-line suction catheter)**

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the procedure to the patient</td>
<td>To obtain consent, co-operation and reassure</td>
</tr>
<tr>
<td></td>
<td>the patient</td>
</tr>
<tr>
<td>Wash hands and don apron and gloves. Goggles should be worn</td>
<td>To reduce the risk of cross infection.</td>
</tr>
<tr>
<td>if in-line suctioning is not being used</td>
<td></td>
</tr>
<tr>
<td>Pre oxygenate with 100% (oxygen breath)</td>
<td>To prevent hypoxia</td>
</tr>
<tr>
<td>Ensure head is in neutral alignment</td>
<td>To provide patient comfort and ease procedure</td>
</tr>
<tr>
<td>In line suctioning should be used for all mechanically ventilated</td>
<td>Too great a suction pressure can cause</td>
</tr>
<tr>
<td>patients. Ensure the circuit is the correct size and in date</td>
<td>prevent mucosal trauma, hypoxaemia and</td>
</tr>
<tr>
<td>Suction pressure on circuit occlusion should not exceed - 150mmHg</td>
<td>atelectasis</td>
</tr>
<tr>
<td>(20 kPa pressure) Suctioning should be performed with the inner</td>
<td></td>
</tr>
<tr>
<td>cannula in place Repeat as clinically indicated</td>
<td></td>
</tr>
<tr>
<td>Observe the patient throughout the period to ensure no adverse</td>
<td>Tracheal suction may cause vagal stimulation</td>
</tr>
<tr>
<td>effects</td>
<td>(leading to bradycardia), hypoxia and stimulate</td>
</tr>
<tr>
<td></td>
<td>bronchospasm</td>
</tr>
<tr>
<td>Record the procedure on CIS</td>
<td>To facilitate communication and evaluation.</td>
</tr>
</tbody>
</table>
Sequence of events for non in-line suctioning

1. Pre oxygenate the patient, explain procedure and apply personal protective equipment
2. Ensure inner cannula in place
3. Put a sterile glove on dominant hand (double glove)
4. Insert suction catheter without applying suction until approximately 1/3 of the catheter is in situ or until the patient coughs
5. Withdraw the catheter 0.5-1cm and apply suction by occluding the suction port with gloved thumb
6. Continue withdrawing the catheter applying continuous suction until it is removed from the tracheostomy tube
7. The entire process should not exceed 10 seconds
8. Remove glove from dominant hand by inverting over used catheter, dispose of in clinical waste bag
9. Reattach oxygen within 10 seconds
10. If another suction is needed a new sterile catheter and sterile glove must be used
11. No more than 3 suctions in succession
12. Flush through the connection tubing with clean water and wash hands after
13. Record procedure and secretions on CIS

Note: For self-ventilating patients on a tracheostomy mask, if the patient is able to cough secretions to the opening of the tracheostomy then a Yankeur sucker can be used to suction the secretions from the opening rather than perform a deep suction.

Emergency note for suctioning: Unable to pass suction catheter

- Do not force suction catheter, withdraw and ensure patients head is in alignment
- Suction catheter will not pass
- Suction catheter will not pass
- Remove, check and replace inner tube to ensure it is patent
- Call for assistance
- Significant blood noted on suctioning = tracheostomy emergency

+ Respiratory distress = tracheostomy emergency
D. Tracheostomy dressing and ties
This is a two person procedure which needs to be performed at least once per 24 hour period. The tracheostomy should be adequately secured to prevent displacement.

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain procedure to patient where appropriate</td>
<td>To gain verbal consent, co-operation and reassure patient.</td>
</tr>
<tr>
<td>Wash and dry hands, don apron, clean gloves and goggles.</td>
<td>To reduce the risk of cross infection.</td>
</tr>
<tr>
<td>One practitioner should hold the tube and oxygen (if required) while the other removes tapes and dressing and discards dirty gloves.</td>
<td>To reduce the risk of dislodgement.</td>
</tr>
<tr>
<td>Assess tracheostomy site for signs of trauma, infection or maceration</td>
<td>To take further action if required.</td>
</tr>
<tr>
<td>Take a swab if there are clinical signs of infection (e.g. purulent discharge, odour, cellulitis and discolouration)</td>
<td>To ensure the back of the neck for signs of redness/soreness from tapes.</td>
</tr>
<tr>
<td>Gently clean around stoma using sterile gauze squares soaked in saline and then pat dry</td>
<td>To remove debris while not causing irritation. To protect area around stoma.</td>
</tr>
<tr>
<td>Apply new tracheostomy dressing starting from below the stoma with shiny side to skin.</td>
<td>For patient comfort and to prevent migration of the tube.</td>
</tr>
<tr>
<td>Secure in place with tracheostomy tapes/holder.</td>
<td>For patient comfort and to prevent migration of the tube.</td>
</tr>
<tr>
<td>Not too tightly - 2 fingers should be a comfortable fit between the tapes and patients neck</td>
<td></td>
</tr>
<tr>
<td>Dispose of all soiled dressings as per trust policy.</td>
<td>To reduce infection risk.</td>
</tr>
<tr>
<td>Document assessment and procedure on CIS</td>
<td>To facilitate communication and evaluation.</td>
</tr>
</tbody>
</table>

E. Cuff pressure check
The cuff pressure should be checked a minimum of once every 8 hour shift

An ongoing/worsening cuff leak despite continual inflation of air to maintain adequate pressures should raise the possibility of tube movement or cuff herniation

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check pressure in cuff using pressure device</td>
<td>To ensure cuff is not over or under inflated</td>
</tr>
<tr>
<td>Cuff pressure should be 20-25cmH₂O (below the green zone)</td>
<td></td>
</tr>
</tbody>
</table>

If there is no air present when the cuff is fully deflated this suggests an incompetent cuff - in all other situations the position of the cuff should be checked.
F. Continuous capnography

For all ventilated patients with a tracheostomy, continuous capnography should be in place with the waveform and the value displayed on the monitor.

An unexplained loss of ETCO2 waveform or change in value may indicate a blocked or displaced tracheostomy. It should be investigated urgently.

3. SAFETY

BEDHEAD SIGNS

These should be in place for every patient. They will be initially completed by the doctor performing the tracheostomy. The front side (facing out) indicates that the patient has a tracheostomy, but the reverse side provides relevant airway information which may be very important to be aware of in an emergency.
Summary of RED FLAGS

**Increasingly thick secretions** may indicate new infection and/or inadequate humidification. Thick secretions may lead to blockage of the tracheostomy so should be managed promptly and appropriately.

**Blockage of the inner tube** may be caused by respiratory secretions - this may be a complete or partial blockage and may lead to respiratory distress.

**Difficulty in passing a suction catheter through the tracheostomy** into the trachea may indicate the inner cannula is blocked or the tracheostomy is displaced. This requires urgent attention. Blood on suctioning requires urgent attention.

**An ongoing/worsening cuff leak** despite continual inflation of air to maintain adequate pressures should raise the possibility of tube movement or cuff herniation.

**An unexplained loss of ETCO2 waveform or change in value** may indicate a blocked or displaced tracheostomy. It should be investigated urgently.
### Daily tracheostomy care

**Note:** One shift = One 8 hour period

<table>
<thead>
<tr>
<th>Task</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen therapy &amp; humidification</td>
<td>• Ensure adequate humidification delivered (ventilated and non ventilated patients)</td>
</tr>
</tbody>
</table>
| Inner cannula                             | • Inner cannula should be removed, inspected & cleaned every 4 hours **(see note in text)**  
• Spare inner cannula to be kept at bedside  
• Dirty cannula cleaned with sterile water & left to air dry |
| Secretions and suctioning                 | • Deep suctioning should be performed as often as clinically indicated but minimum **every 4 hours** if fully ventilated  
• Secretions can be suctioned from tracheostomy opening using Yankeur sucker if using trache mask |
| Stoma care & securing the tracheostomy    | • Minimum of once per 24 hours:  
• Inspect stoma site for infection  
• Clean stoma with sterile gauze & saline/water  
• Change dressing and ensure tapes secure |
| Cuff check                                | • Check cuff pressure a minimum of once per shift  
• Cuff pressure should be below 20-25cmH₂O (**bottom of green on the manometer**)  
• Check more frequently as indicated |
| Oral care & assessment of swallowing      | • Daily oral care (see DCCQ Mouth care SOP)  
• Regular assessment of swallowing |
| Documentation                             | • All tracheostomy observations should be documented on CIS |
| Safety                                    | • Ensure continuous capnography in place  
• Ensure bedhead sign in place  
• Be familiar with tracheostomy red flags and emergency algorithms |
7. TRAINING REQUIREMENTS

Training and competency will be disseminated through the Critical Care teaching team.

A ‘Guide to tracheostomies on the ICU’ providing further background reading is also available.

8. REFERENCES AND ASSOCIATED DOCUMENTATION

Documents used when preparing this care bundle are:

1. National Tracheostomy Safety Project http://www.tracheostomy.org.uk/

This document will be updated as further evidence becomes available.

9. EQUALITY IMPACT STATEMENT

Portsmouth Hospitals NHS Trust is committed to ensuring that, as far as is reasonably practicable, the way we provide services to the public and the way we treat our staff reflects their individual needs and does not discriminate against individuals or groups on any grounds.

This policy has been assessed accordingly
10. MONITORING COMPLIANCE WITH PROCEDURAL DOCUMENTS
This document will be monitored to ensure it is effective and to assure compliance.

<table>
<thead>
<tr>
<th>Minimum requirement to be monitored</th>
<th>Lead</th>
<th>Tool</th>
<th>Frequency of Report of Compliance</th>
<th>Reporting arrangements</th>
<th>Lead(s) for acting on Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of continuous capnography</td>
<td>Dr Sara Blakeley - Consultant Critical Care</td>
<td>Observation audit</td>
<td>2 yearly</td>
<td>• Through DCCQ annual audit report</td>
<td>Dr Sara Blakeley - Consultant Critical Care</td>
</tr>
<tr>
<td>Compliance with tracheostomy care standards (all elements)</td>
<td>Dr Sara Blakeley - Consultant Critical Care</td>
<td>Observation audit</td>
<td>2 yearly</td>
<td>• Through DCCQ annual audit report</td>
<td>Dr Sara Blakeley - Consultant Critical Care</td>
</tr>
</tbody>
</table>
APPENDIX A: STANDARD EMAIL FOR DISTRIBUTION OF RATIFIED TRUST PROCEDURAL DOCUMENTS

To: CSC General Managers/Heads of Corporate Functions

Dear Colleagues

RE: Tracheostomy care on the Critical Care Unit

Please find attached a copy of the above recently revised/developed* procedural document. I should be grateful if you would ensure:

- Withdrawal of any paper copies of the previous document entitled .........................................................., dated ......................... (delete if new document)
- Appropriate distribution of the attached document throughout your area of responsibility.
- That processes are in place so that staff can access the document: either electronically or in hard copy.

Yours sincerely

Risk Management Team
### APPENDIX B: TRUST PROCEDURAL DOCUMENT RATIFYING COMMITTEES/GROUPS

<table>
<thead>
<tr>
<th>POLICY CATEGORY</th>
<th>RATIFICATION BODY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Board approval required</td>
<td>Trust Board</td>
</tr>
<tr>
<td>Trust Procedural Document - Quality</td>
<td>Governance and Quality Committee</td>
</tr>
<tr>
<td>Blood Related Procedural Document</td>
<td>Hospital Transfusion Committee</td>
</tr>
<tr>
<td>Clinical Procedural Document – Nursing</td>
<td>Nursing &amp; Midwifery Advisory Committee</td>
</tr>
<tr>
<td>Clinical Procedural Document – Medical</td>
<td>Clinical Directors Forum</td>
</tr>
<tr>
<td>Education and Training Procedural Document</td>
<td>Learning and Development Team</td>
</tr>
<tr>
<td>Emergency Preparedness Procedural Document</td>
<td>Major Incident Planning Committee</td>
</tr>
<tr>
<td>Health &amp; Safety Procedural Document</td>
<td>Health &amp; Safety Committee</td>
</tr>
<tr>
<td>Human Resources Procedural Document</td>
<td>Human Resources Policy Group</td>
</tr>
<tr>
<td>Infection Control Procedural Document</td>
<td>Infection Control Management Committee</td>
</tr>
<tr>
<td>Information Governance Procedural Document</td>
<td>Information Governance Steering Group</td>
</tr>
<tr>
<td>Financial Procedural Document</td>
<td>Trust Board</td>
</tr>
<tr>
<td>Medicines Related Procedural Document</td>
<td>Formulary and Medicines</td>
</tr>
<tr>
<td>Medical Devices Procedural Document</td>
<td>Medical Devices Management Committee</td>
</tr>
<tr>
<td>Patient Safety</td>
<td>Patient Safety Steering Group</td>
</tr>
<tr>
<td>Procurement Related Procedural Document</td>
<td>Director of Procurement and Commercial Services; and Director of Finance and Investments</td>
</tr>
<tr>
<td>Research Governance Procedural Document</td>
<td>Research and Governance Committee</td>
</tr>
<tr>
<td>Resuscitation Related Procedural Document</td>
<td>District Resuscitation Committee</td>
</tr>
<tr>
<td>Risk Management Procedural Document</td>
<td>Risk Assurance Committee</td>
</tr>
</tbody>
</table>

This list is not exhaustive: any advice can be obtained from the Risk Management team.