Paediatric Tracheostomy
Emergency Algorithm
Outline

Tracheostomy in children
Tracheostomy Emergencies
National Tracheostomy Safety Project
Tracheostomy Package
Emergency Algorithms
Tracheostomy in Children

Increasing complexity of patients
Increase in length of hospital and PICU stay
Increasing numbers of Tracheostomy patients
National demand for LTV
Our mission to keep them safe
National Tracheostomy Safety Project

Dr McGrath (Manchester)
Identified tracheostomy and laryngectomy safety concerns
   Early complications due to haemorrhage, blockage or displacement with a high likelihood of harm
   NAP4 found that death occurred in up to 50% of patients in these areas when a tracheostomy became displaced

Developed with Resuscitation Council UK – training and guidance documentation
Tracheostomy Package
Tracheostomy website
TRACHE poster
BEDHEAD signs
RESUS algorithm

Week Beginning: ___________________

“TRACHE” – ESSENTIAL CHECKS FOR TRACHEOSTOMY PATIENTS

Please tick when task complete and initital during each shift

<table>
<thead>
<tr>
<th>Date</th>
<th>MON</th>
<th>TUE</th>
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<td>Bedhead sign complete &amp; Resus algorithm in bedside</td>
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<td>Core of stoma &amp; neck – check any tissue viability issues</td>
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<td>Humidity present – check have HME or humidifier in use</td>
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<td>Emergency box identified &amp; content checked – TRACHE care</td>
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<td>Must ensure checklist completed*</td>
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National Tracheostomy Safety Project
Tracheostomy box list

2 x spare tracheostomies same size in a sealed package/container
Trache name and size _______________________________  Distal length ______ mm

1 x spare tracheostomy size smaller led package/container. Can be a Shiley.
Spare trache name and size _______________________________  Distal length ______ mm

- Cotton Tape (Twill tape)  - Aquajel x 2
- Tube fixation holders tapes (if appropriate)
- Round ended scissors  - Sleek tape x 1
- 2 ml syringes x 2  - HME appropriate for patient
- 0.9 % sodium chloride vials x 2

If cuffed:
- 1 x 5ml L syringe
- Water (if balloon inflated with water)

Store at head of bed:
- PICU airway bag/Going out bag/community – use appropriate safety checklist list
- Oxygen
- Guerdel Airway
- High Flow Oxygen delivery face mask with reservoir
- Self-inflating bag valve mask with oxygen reservoir and tubing
- Suction and suction catheters
- Gloves
- Eye protection
- Water for cleaning suction tubing
The resuscitation algorithm

Emergency Paediatric Tracheostomy Management

SAFETY - STIMULATE - SHOUT FOR HELP - OXYGEN

SAFE: Check safe area, stimulate, and shout for help. CALL 1122 (hospital) or 999 (home)
AIRWAY: Open child’s airway: head tilt / chin lift / pillow or towel under shoulders may help
OXYGEN: Ensure high flow oxygen to the tracheostomy AND the face as soon as oxygen available
Capnograph: Exhaled carbon dioxide waveform may indicate a patent airway (secondary responders)

SUCTION TO ASSESS TRACHEOSTOMY PATENCY

Remove any attachments: humidifier (HME), speaking valve and change inner tube (if present)
inlet tubes need re-inserting to connect to bagging circuits

Can you pass a SUCTION catheter?

Yes

EMERGENCY TRACHEOSTOMY TUBE CHANGE

Deflate cuff (if present). Reassess patency after any tube change
1st – same size tube, 2nd – smaller size tube
* 3rd – smaller size tube sits over suction catheter to guide
IF UNSUCCESSFUL – REMOVE THE TUBE

IS THE PATIENT BREATHING? - Look, listen and feel at the mouth and tracheostomy/stoma

No

5 RESCUE BREATHS – USE TRACHEOSTOMY IF PATENT

Patent Upper Airway – deliver breath to the mouth
Obstructed Upper Airway – deliver breath to tracheostomy/stoma

CHECK FOR SIGNS OF LIFE? – START CPR

15 compressions : 2 rescue breaths
Ensure help or resuscitation team called

RESPONDS: continue oxygen, reassessment and stabilisation
Plan for definitive airway if tube change failure

Primary emergency oxygenation

Standard ORAL airway manoeuvres may be appropriate.
If so cover the stoma (swabs / hand).
Use:
Bag-valve-face mask
Oral or nasal airway adjuncts
Supraglottic airway device e.g. Laryngeal Mask Airway (LMA)

Secondary emergency oxygenation

ORAL intubation may be appropriate with a downsized ET tube
Uncut tube, advanced beyond stoma
Prepare for difficult intubation
‘Difficult Airway’ Expert and Equipment**

Attempt intubation of STOMA
3.0 ID tracheostomy tube / ETT
‘Difficult Airway’ Expert and Equipment**

**EQUIPMENT: Fibreoptic scope, bougie, airway exchange catheter, Airway trolley

National Tracheostomy Safety Project
Bedhead Sign

Essential information
- Patient
- Tracheostomy
- Suction
- Upper airway
- Emergency plan

In an Emergency: Call 2222 and request the Resuscitation Team and ENT surgeon
Follow the Emergency Paediatric Tracheostomy Management Algorithm on reverse

In an Emergency - call for help!
2222 - ENT surgeon (consultant) & Resuscitation Team
At home - 999

This patient has a
New TRACHEOSTOMY

Patient ID: [Patient Label/Details]
Tracheostomy: [Add tube specification including cuff or inner tube]

Suction: [___ FG Catheter to Depth ____ cm]

UPPER AIRWAY ABNORMALITY: Yes / No
Document laryngoscopy grade and notes on upper airway management or patient specific resuscitation plans

Due 1st tracheostomy change: ____ / ____ / ____ (by ENT ONLY)

National Tracheostomy Safety Project
SAFETY – ensure you are safe to approach, stimulate the patient ‘hello .....’

Shout for help

AIRWAY – try to get a position suitable for the child – placing a roll under the shoulders can help to open up the neck and give access to the stoma

OXYGEN – if available, high flow oxygen should be provided to the face and stoma – this will allow oxygen to get in to the lungs if there is any air movement

CAPNOGRAPH – a trained secondary responder may be able to put capnography (CO2 monitoring) in line with the tracheostomy to help assess if it is patent.
SUCTION the tracheostomy to assess whether it is patent (unblocked).
To do the suction, make sure any attachments are removed.
Humidifiers (HME), speaking valves or inner tubes can all become blocked.
Remember – if you remove the inner tube you will need to replace it with a fresh or unblocked inner tube before you can use it to bag-ventilate.

**If the suction catheter doesn’t pass, assume the tracheostomy is blocked.**
In an emergency, if the tracheostomy is blocked – you must remove it. Once the tracheostomy is removed, you must then replace it with a suitable tube. In an established tracheostomy, start by attempting to place the same size tube. If this won’t pass, then try the size smaller from your emergency TRACHE box. If unsuccessful, you can try passing the smaller tube in over a suction catheter being used as a guide (& try spreading the skin either side of the stoma).

IF YOU CAN’T GET A TUBE IN QUICKLY, DON’T KEEP TRYING, REMOVE THE TUBE AND MOVE ON TO ASSESSING BREATHING.
Suction catheter guided tube change
If the patient isn’t breathing adequately, give **5 rescue breaths**

May use UPPER airway (mouth/nose) but if this is ineffective you can also use the TRACHEOSTOMY or DIRECT STOMA with a small face mask / LMA

CPR should be started if the child is not showing signs of life or if Heart Rate <60

Continue CPR and make sure the resuscitation team or 999 emergency services are contacted

If the patient responds to the treatments, continue giving oxygen

Observe closely and check for any developing problems.
The Advanced response prioritises ways to administer OXYGEN. This can be to the upper airway or through the stoma. Once a trained assistant attends, the process of intubating the upper airway or stoma can be attempted if safe. Additional equipment should be available in the Emergency Department or intubating areas in the hospital.
Established Tracheostomy Bedhead Sign

A combined form with a bedhead sign and the Basic Response algorithm in one place which is easy to see and access. A copy of this can be kept in the TRACHE box.