GUIDELINES FOR THE CARE OF A PATIENT WITH TRACHEOSTOMY

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Introduction

Temporary tracheostomy is now a common procedure in intensive care as it has become regarded as beneficial for the general critical care population who are long-term ventilated. Tracheostomies can be temporary or permanent and performed using either an open surgical technique, or percutaneously. As with all procedures, the benefits are associated with risk, both during and after insertion. The most common problems with tracheostomies in critical care, are related to obstruction or displacement.

Every hospital must have a procedure for managing patients whose tracheostomy is blocked or displaced. Staff must be aware of this and receive appropriate training to manage the problem.

These guidelines are developed in order to reduce morbidity and mortality in this population of patients and also to give a clear guidance for those intensive care givers who encounter difficulties in managing them.

Indications for tracheostomy

- Maintain airway; e.g. reduced level of consciousness, upper-airway obstruction, intubation difficulties
- Facilitate long-term ventilation
- Protect airway; e.g. bulbar palsy
- Bronchial toilet; e.g. excessive secretions/inadequate cough
- Weaning from IPPV; e.g. for patient comfort, reduction of sedation, reduction in dead space

Techniques

- Surgical
- Percutaneous

Cautions and Contraindications

- Coagulopathy
- Difficult anatomy
- Proximity to the site of recent surgery or trauma
- Potential for aggravated morbidity
- Severe gas exchange problems
- Age: <12 (for percutaneous tracheostomy)

Preparation for percutaneous tracheostomy

- Adequate space and light
- Sufficiently aseptic conditions
- A bed capable of tipping
- Suitable resuscitation facilities
- Monitoring
- Anaesthetic and emergency drugs
- Minimum of two trained medical practitioners plus a third member of staff competent to assist

Immediate post-op care

- Chest X-ray
- Check for bleeding
- Check for surgical emphysema
- Check for patency
- Pain relief as required

Complications of tracheostomy

A. Intra-operative complications

- Bleeding
- Tracheal laceration
- Tracheo- oesophageal laceration
- Tube malposition (either complete removal or displacement into a false tract leading to the mediastinum)
- Recurrent laryngeal nerve injury
- Pneumothorax
- Pneumomediastinum (air leaks from the lung inside the parietal pleura and extends along the bronchial walls)

B. Post-operative Complications

- Bleeding
- Peri-stomal abscess
- Cellulitis
- Infection at stoma site / of tracheal tree
- Subcutaneous emphysema (air in the subcutaneous tissues)
- Pneumomediastinum
- Tube malposition / displacement
- Tube occlusion (as a result of impingement on the posterior tracheal wall, partial displacement into the mediastinum, a blood clot or mucous plug or cuff herniation)
- Tracheal stenosis (narrowing of the tracheal lumen attributable to scar tissue at the level of the stoma, the cuff or tube tip)
- Tracheoesophageal fistula (opening between the trachea and the oesophagus attributable to pressure necrosis caused by the tracheostomy tube)
- Tracheocutaneous fistula (opening between trachea and skin usually when a stoma fails to close following removal of the tracheostomy tube)
- Tracheo-innominate artery fistula (opening between trachea and innominate artery causing haemorrhage)
- Tracheomalacia (weakness of the tracheal wall and supporting cartilage usually resulting from ischaemia that damages the tracheal wall)
- Fractured tracheal cartilage rings
- Mucosal ulceration

Essential Equipment for bedside

The following equipment should be immediately available at all times for a patient with a tracheostomy, both by the bedside as well as during transfers.

- Operational suction unit, which should be checked at least daily, with suction tubing attached and Yankeur sucker or closed suctioning system

- Appropriately sized suction catheters

- Non-powdered latex free gloves, and eye protection (if available)

- Spare tracheostomy tubes of the same type as inserted: one the same size and one a size smaller

- Tracheal dilators

- Re-breathing bag

- Catheter mount
- Tracheostomy tube holder and dressing
- 10ml syringe (if tube cuffed)
- Artery forceps
- Resuscitation equipment (Ambu bag, ET tubes, Laryngoscope etc)

Choosing the correct size of tracheostomy tube

Diameter

When selecting the size of tube for a patient, there is an unavoidable compromise to be made between a desire to maximise the functional internal diameter (and thereby reduce airway resistance and the work of breathing during weaning) and a need to limit the outer diameter (OD) to approximately three-quarters of the internal diameter of the trachea (in order to facilitate airflow through the upper airway when the cuff is deflated). Furthermore, selection of a tube that is too small may result in the need to over-inflate the cuff, thereby increasing the risk of mucosal pressure necrosis, which in turn increases the risk of complications such as tracheal stenosis and tracheo-oesophageal fistula. A need to exceed the quoted nominal cuff volume is often an early indicator that too small a tube has been selected. As a general rule, most adult females can accommodate a tube with an OD of 10mm (approximate ID 7.0), whilst a tube with an OD of 11mm (approximate ID 8.0) is suitable for most adult males.

Need for excessive cuff volume or pressure suggests that the tube size may be too small or it may be misplaced.

Inner cannula (dual cannula tracheostomies)

Many tracheostomy tubes are now manufactured with an inner cannula. Whilst some inner cannulae are disposable and designed for single use, others can be cleaned and re-used.

The principal advantage of an inner cannula is that it allows the immediate relief of life-threatening airway obstruction in the event of blockage of a tracheostomy tube with blood clot or encrusted secretions.

Removal of an obstructed inner cannula may be preferable to removal and repeat tracheal intubation.

The principal disadvantage of dual cannula tubes is that the inner cannula may significantly reduce the effective inner diameter of the tracheostomy tube and thereby increase the work of breathing and impair weaning.

Failure to properly lock the inner tube in place may also result in disconnection of the breathing circuit in circumstances where it is connected to this rather than the outer cannula.

Cuffed tracheostomy tubes

In the ICU setting, most patients will require an air-filled cuffed tracheostomy tube initially, both to facilitate effective mechanical ventilation and also to protect the lower respiratory tract against aspiration.

The cuff should be of a "high volume / low pressure" design, and should effectively seal the trachea at a pressure of no more than 20 – 25 cmH_2O in order to minimise the risk of tracheal mucosal ischaemia and subsequent tracheal stenosis.

The intra-cuff pressure should be monitored regularly.

After careful consideration adequate periods of cuff deflation should be allowed.

Causes of excessive cuff pressures include:

- the use of a tube that is too small (maybe indicated by the need to inflate with more than the nominal cuff volume in order to achieve an effective seal)
- poor tube positioning in the trachea
- tracheal dilatation
- inadvertent over-inflation of the cuff
- cuff herniation

If an air leak occurs with the cuff pressure at the maximum recommended, the tracheostomy may have become displaced or may require changing. Medical professionals who are competent in tracheostomy management should review the patient immediately.

The cuff should be deflated to remove the tube and when a speaking valve or decannulation cap is secured to the tube; it may also be deflated to allow the patient to eat or drink.

Failure to deflate the cuff when the speaking valve or decannulation cap is secured to the tube will result in a total occlusion of the patient's airway.

Cuff should not be deflated in the following situations:

- High risk of aspiration
- PEEP dependent oxygenation (e.g severe ARDS)

Humidification

Inadequate humidification may lead to life-threatening blockage of the tracheostomy with tenacious sputum, keratinisation and ulceration of the tracheal mucosa, sputum retention, atelectasis and impaired gas exchange.
The provision of adequate humidification of inspired gases is therefore essential, and can be achieved in patients in the following manner:

1. HME (e.g Swedish nose, Thermovent)
2. Water Bath
3. Bubble through water bath.
4. Patients with more tenacious sputum, or who require high flow oxygen therapy will require additional saline nebulises and may require heated water humidification.
5. Trache mask

Suctioning

Tracheal suction is an essential component of secretion control and maintenance of tube patency. However, it may be both painful and distressing for the patient, and can also be complicated by hypoxaemia, bradycardia (particularly in patients with autonomic dysfunction such as spinal injuries), tracheal mucosal damage, bleeding, and introduction of infection. As a result, the suction requirements of an individual patient should be re-assessed each shift, and where possible patients should be encouraged to expectorate their own secretions. Basic guidelines for effective, safe suctioning are given below.

Guidelines for tracheal suction

Suctioning should be performed using aseptic techniques, with the patient upright and in a neutral head alignment.

Always suction with the inner tube in situ; change to a non-fenestrated inner tube.

The suction catheter should have a diameter no greater than half internal diameter of the tracheostomy tube.

Suction catheter size (Fg) = 2 x (Size of tracheostomy tube – 2)

For example, 8.0mm ID tube: 2 x (8 – 2) = 12 Fg

The lowest possible vacuum pressure should be used - ≤ 100-120mmHg (13-16kPa) to minimise atelectasis.

Patients with high oxygen requirements may require pre-oxygenation.

Insert the suction catheter approximately 10-15cm (or less, depending on the length of the tracheostomy tube) into the tube before applying suction and slowly withdrawing the catheter.

Suction should be applied for a maximum of 10 seconds.

To prevent the occurrence of adverse events, bolus instillation of normal saline should not be used routinely during suctioning

Closed suctioning is preferred, especially in patients who are PEEP dependant.

The upper airway should be suctioned periodically to remove oral secretions and to minimise stasis of pooled secretions above the tracheostomy cuff with subsequent potential for aspiration to lower airway.

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

Guidelines for changing inner cannula

- Position patient with neck slightly extended.
- Pre-oxygenate and suction as necessary.
- Using a sterile technique, remove or change inner cannula. If non disposable, clean the inner cannula with sterile saline 0.9% or water and dry thoroughly.
- Clear persistent secretions on cannula in line with manufacturer's instructions, rinsing the inner cannula thoroughly with normal saline or water before re-insertion. Do not leave inner cannula to soak.

Dressings

Secretions that collect above the cuff ooze out of the stoma site producing a moist environment leading to excoriation and infection. The site should be assessed and stoma cleaned at least once in every 24 hours using a clean technique using a dry dressing.

Guidelines for the initiation of oral intake in patients with a tracheostomy

- Confirm that patient can tolerate cuff deflation (see above for exceptions)
- Sit patient up with head slightly flexed and deflate cuff
- Start with sips of water, moving on to thickened fluids and then soft diet providing patient shows no signs of respiratory distress (coughing, desaturation, increased tracheal secretions, increased respiratory rate etc)

Basic principles for changing a tracheostomy tube

• Tracheostomy tubes without an inner cannula should ideally be changed every 7-14 days, the frequency then decreasing once the patient is free of pulmonary secretions and has a well formed clean stoma

• Tracheostomy tubes with an inner cannula can remain in place for a maximum of 30 days.

• The first tracheostomy tube change:

Should not be performed within 72 hours following a surgical tracheostomy and not before 3 – 5 (and ideally 7 – 10) days after a percutaneous tracheostomy to allow the stoma to become established.

The decision to change the tube must be made in conjunction with a medical practitioner competent in the care of tracheostomies.

Must be carried out by either:

- a medical practitioner with appropriate, advanced airway skills, or
- another suitably skilled practitioner.

In practice, the frequency with which the tube needs to be changed will be affected by the individual patient's condition and the type of tube used. Elective changes are inherently safer than those done in a crisis.

Emergencies, Common Complications and their Management

The main life threatening complications associated with a tracheostomy are blockage, dislodgement and bleeding.

Signs of respiratory distress:

Difficult, laboured or noisy breathing - In complete tracheostomy tube occlusion, there are no breath sounds heard - however in partial obstruction air entry is diminished and often noisy.

Use of accessory muscles - A sign of airway obstruction. In complete airway obstruction patients often develop a see-saw pattern of breathing in which inspiration is concurrent with outward movement of the abdomen and inward movement of the chest wall and vice-versa.

No or limited expired air from the tracheostomy tube, reduced chest movement or reduced air entry upon auscultation - all indicate a lack of air movement into and out of the respiratory tract.

Pale/cyanosed skin colour - Central cyanosis is a sign of late airway obstruction.
Anxiety / agitation - The patient will become anxious and agitated as they struggle to breathe and become hypoxic.
Increased pulse/respiratory rate - Increased respiratory and pulse rate are signs of illness and an indicator that the patient may suddenly deteriorate.
Clammy / diaphoretic skin - Associated with an increased work of breathing from an occluded airway and stimulation of the sympathetic nervous system causing vasoconstriction
Stridor - Is caused by an obstruction above or at the level of the larynx

Blockage and displacement

A blocked or displaced tracheostomy tube generally presents with respiratory difficulty. The nature of the problem will often be obvious, but if not, it is important to adopt a systematic approach and be aware that acutely ill patients may have other cardio-respiratory reasons for difficulty in breathing.

Tracheostomy tubes may become dislodged or displaced for a number of reasons. This can be a stressful event for both patients and staff, and prevention is better than cure. It is important to ensure that the tracheostomy tube holder is adjusted regularly so that the tube is fixed in a secure, comfortable position all times. Tracheostomy tubes may become dislodged when a ventilated patient is turned, or moved from their bed to a trolley. Restless or agitated patients may pull at their tracheostomy tubes, or ventilator tubing attached to the tracheostomy.

A partly dislodged tracheostomy tube is just as dangerous, if not more dangerous, as a completely removed tracheostomy tube.
Airway: is the airway (at least partially) patent?

• If the tube is displaced, the patient may be breathing through their nose or mouth. The patient may be safe in the short term, requiring urgent but not emergency action. Only experienced staff should try to replace the tube under such circumstances. If in doubt it will usually be safer to remove a partly dislodged tube, although a suction catheter or airway exchange catheter may be first advanced through it to allow oxygen administration. The airway should be maintained by other methods until experienced help arrives.

• If tube is partially occluded, the patient may still be able to breathe through it, but with difficulty. If the tube has an inner cannula, this should be removed and changed. If the tube does not have an inner cannula, but a suction catheter can be passed down the tracheostomy tube, then it must be at least partially patent. It may be possible to change the tube over a catheter or other airway exchange device.

Staff treating patients with a tracheostomy in an emergency situation need to be aware that 'bag and mask' ventilation via the mouth is not possible with a cuffed tracheostomy tube in situ.

A]. Displaced tracheostomy tube

This guidance is appropriate for patients capable of spontaneous respiration. In a patient who is fully ventilated, critically ventilator dependent or paralysed, prompt replacement or removal and replacement by a tracheal tube will be required. Such a situation is only likely to arise in a level 3 area, but can also occur in a cardio-respiratory arrest elsewhere. Remember that tube displacement as a possible cause of cardio-respiratory arrest.

1. Call for help – senior medical and nursing staff
   If in doubt, call for anaesthetic assistance
2. Reassure patient (if aware)
3. Assess patency of airway (A) and patient's breathing (B). Is air passing through the tracheostomy tube or stoma? Is the patient breathing via mouth or nose? Check oxygen saturation with a pulse oximeter.
4. If the patient is breathing adequately at this point, there may be no need to artificially assist ventilation. Check the oxygen saturation with a pulse oximeter and administer oxygen as required via a facemask or resuscitation bag with an oxygen reservoir.
5. If airway is not patent, it must be cleared immediately.

   • ONLY SENIOR STAFF WITH APPROPRIATE EXPERIENCE OF TRACHEOSTOMY MANAGEMENT SHOULD ATTEMPT TO RE-INSERT A DISLODGED OR DISPLACED TRACHEOSTOMY.

   • ANY SUCH ATTEMPT SHOULD BE QUICKLY ABANDONED IF UNSUCCESSFUL.

   • MULTIPLE ATTEMPTS SHOULD NOT BE MADE.

   • IF IN ANY DOUBT, REMOVE TRACHEOSTOMY TUBE AND ALLOW BREATHING THROUGH THE STOMA OR THE MOUTH/NOSE.

   • APPLY OXYGEN MASK OVER ONE OR BOTH SITES OF AIR ENTRY.

   Appropriately experienced staff may attempt to re-insert a tracheostomy tube in a patient with a well-formed tract from skin to the tracheal stoma. Typically, this would be more than 72 hours following surgical tracheostomy or more than 7 days after percutaneous tracheostomy. It is advisable to attempt any such re-insertion using a gum elastic bougie or, if time permits, a fibre-optic bronchoscope.

6. Re-establish the airway in the usual fashion if reinsertion of tracheostomy tube fails– tilt the head back to extend the head on the neck, perform a jaw thrust. If necessary insert an oral airway (Guedel). Note that if 'bag and mask' ventilation is attempted, air will escape through the stoma. In this situation, get a colleague to occlude the stoma by applying pressure over it with gauze swabs or a pad.

7. Tracheal intubation may be needed – a doctor competent in tracheal intubation should only perform this. It may be necessary to push the tracheal tube distal to the stoma. (use an 'uncut' tube.)

8. If assisted ventilation is needed, use a resuscitation bag and mask in the standard fashion. Maintain occlusion of the stoma as above to prevent an air leak. If the patient has been intubated, the person controlling the airway (usually an anaesthetist or intensivist) will ventilate with the resuscitation bag. Measurement of oxygen saturation with a pulse oximeter will confirm adequacy of oxygenation.

9. A decision should now be taken regarding re-insertion of tracheostomy tube in a controlled manner.

B]. BLOCKED TRACHEOSTOMY TUBE

A tracheostomy tube may become blocked with thick tracheal secretions, blood or foreign bodies. The patient may present with increasing respiratory distress over a few hours, or with a much more rapid deterioration. In either case, a blocked tracheostomy tube is an emergency situation in which the patient's life is at risk if it is not rapidly resolved.

• Patients with tracheostomies must always receive adequate humidification of their inspired gas to lessen the risk of tube blockage.

• The risk of tube blockage is reduced by the use of a tracheostomy tube with an inner cannula. Such tubes should have their inner cannula cleaned regularly to prevent the build-up of secretions. The precise frequency will depend on individual risk assessment.

• Certain specialist tracheostomy tubes (e.g. adjustable length or custom-made long tubes) may not have an inner cannula. Extra vigilance is needed in these patients to minimise the risk of tube blockage.

If a blocked tracheostomy tube is suspected, rapid diagnosis will enable prompt treatment.
YOU NEED TO KNOW IF THE TRACHEOSTOMY TUBE HAS AN INNER CANNULA
1. If the tracheostomy tube has an inner cannula, remove it.

2. Patient with tracheostomy tube develops respiratory embarrassment or distress.

3. Call for help: senior medical and nursing staff, other relevant healthcare personnel with tracheostomy care skills.

4. Reassure the patient.

5. Assess patency of airway (A) and patient's breathing (B). Is air passing through the tracheostomy tube or stoma? Is the patient breathing via the mouth or nose? Check the oxygen saturation with a pulse oximeter.

6. If the airway is not patent, this must be dealt with first.

7. If the patient is awake, breathing spontaneously and co-operative, encourage the patient to give a vigorous cough – this may be sufficient to relieve the obstruction by shifting a plug of thick secretions.

8. Attempt tracheal suction with a suction catheter – this alone may be sufficient to remove a thick plug of secretions.

10. If the obstruction is not relieved, then deflate the tracheostomy tube cuff. Administer oxygen via a facemask if the patient is breathing spontaneously. If the patient is not breathing spontaneously, it will be necessary to ventilate the patient with a resuscitation bag and mask – an oral airway (Guedel) may be necessary. Monitor the oxygen saturation with a pulse oximeter.

11. If it is not possible to achieve adequate oxygenation, then remove the tracheostomy tube and suction and proceed as per dislodged tracheostomy tube protocol. Consider passing Yankeur or other large bore suction catheters directly into the trachea via stoma to remove thick secretions or blood clot. Suction applied directly via the tracheostomy tube or translaryngeal tube may also be required to remove big clots or large mucus plugs.

12. If the patient is now adequately oxygenated, then it is now safe to consider changing the tracheostomy tube. This is not necessary if removal of the inner cannula has relieved the obstruction.

C]. BLEEDING FROM A TRACHEOSTOMY

Bleeding is the most common complication of tracheostomy. Bleeding may occur early (within 48 hours of formation of the tracheostomy) or late (several days afterwards). It may be minor (settles with simple conservative management) or major (requiring transfusion of blood and/or blood products) and surgical exploration may be needed to identify and deal with the source of bleeding. The management of bleeding from a tracheostomy therefore depends upon the context in which the bleeding occurs.

Early minor bleeding

Oozing from the stoma site is the most common type of bleeding seen following formation of a tracheostomy. Most commonly, this is the result of the effects of the vasoconstrictor used to infiltrate the incision site wearing off. Blood staining of the dressings may be noted, or there may be blood staining of tracheal secretions. Large volumes of fresh blood represent significant bleeding, which may require surgical exploration.

Check full blood count and a coagulation screen. Correct any abnormalities in the standard fashion.
If bleeding is not stopped by these measures, refer to ENT or other appropriate surgeon for surgical exploration.

Weaning & Decannulation

Decannulation should be undertaken as soon as it is feasible, to minimize the risk of complication. However, de-cannulation is itself associated with potential hazards such as airway obstruction, aspiration, ventilatory failure, sputum retention and difficulty in oral re-intubation. The decision and process should therefore demonstrate a balancing of risk and benefit and should be performed:

- using objective criteria
- by competent staff
- in an appropriate environment (ICU or HDU)
- with appropriate monitoring (SPO2, RR, BP, PR)
- with a range of drugs and equipment to address any predictable hazard

A tracheostomy should be removed as soon as it is no longer required.

Reviewing the 'need' for a tracheostomy and planning weaning should be part of the daily assessment. Some patients may tolerate rapid airway decannulation, especially if their ventilation period has been short or if they do not suffer significant lung or airway pathology. Others, particularly those with underlying cardiopulmonary disease, muscle weakness, neurological deficits, upper airway oedema or problems managing airway secretions, will take much longer to wean and it is important that the process is both planned and sequential.
Prior to removal of a tracheostomy, the patient will be breathing spontaneously and the following points should be considered:

- The pathological process necessitating the insertion of a tracheostomy has resolved.
- The patient is able to cough and swallow effectively and protect their airway.

• Ventilatory reserve is adequate (decannulation increases anatomical dead space and may increase the work of breathing).

• Reversible bronchopulmonary infection or pathology has been treated and is resolving.

• Pulmonary secretions are not excessive.

• Nutritional status is adequate.

• Patient is comfortable with the cuff deflated.

• The airway is patent above the level of the stoma.

Cuff deflation: Weaning often includes increasing the periods of time with the cuff deflated. The inflated cuff provides some protection from aspiration and means that the patient becomes unaccustomed to managing their own oral secretions and swallowing. Before cuff deflation for the first time, warn the patient about the possibility of an alteration in tracheal airflow sensation and that they may cough.
The cuff should be deflated slowly and completely. The tracheostomy tube should be occluded briefly with a clean, gloved finger to check for airflow around the tube. If the patient continuously coughs with the cuff deflated and this does not resolve with suction and reassurance, re-inflate the cuff.

Speaking Valves

A one way speaking valve attached to the tracheostomy, allows air in through the valve on inspiration, but closes on expiration, thus diverting the air past the vocal cords and out through the nose and mouth.

- It should only be used with an uncuffed tube, a cuffed tube with the cuff deflated or a fenestrated tracheostomy tube with the cuff deflated.
- If the patient finds it hard to breathe, or they are unable to vocalise (which they should be able to do) or they begin to sound wheezy or stridulous, then the speaking valve must be removed immediately and the cause of the problem sought.
- It is not uncommon for a patient to experience breathlessness when starting to use a speaking valve. They need reassurance and if this does not settle the speaking valve must be immediately removed.
- If difficulties persist:

1. Check that the tracheostomy is fenestrated and that the inner lumen is clean with patent fenestrations.

2. Consider changing the tracheostomy to ensure that the fenestrations of outer lumen are clear.

3. Consider downsizing the tracheostomy or changing it for an uncuffed one to increase space around tracheostomy in the trachea.

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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