2K – LARYNGECTOMY/TRACHEOSTOMY MANAGEMENT ADULT & PEDIATRIC

EMT

EMT-INTERMEDIATE 85

ADVANCED EMT

PARAMEDIC

Laryngectomy vs Tracheostomy

- Laryngectomy is the permanent surgical removal of the larynx. The trachea is brought to the skin surface as a stoma. The lungs no longer have anatomical connection with the oropharyngeal cavity. Laryngectomy patients may have a surgically created tracheoesophageal fistula with insertion of a voice prosthesis so that they may speak.
- Tracheostomy is the surgical opening of the tracheal lumen, with the entire larynx remaining intact. This is usually performed emergently to relieve an obstruction of the upper airway or electively when a tracheal tube is needed for a prolonged or even permanent timeframe. There is usually a tracheal tube in place.

Emergency Management:

- Most adults and children with either a laryngectomy or tracheostomy are dependent on the laryngectomy stoma and/or tracheostomy tube as their primary airway. Cardiopulmonary arrest often results from obstruction of their surgical airway. Obstruction may be due to thick secretions/mucous plug, blood clot(s), a foreign body, or kinking or dislodgement of the tracheal tube. Assess expeditiously and deliberately to re-establish airway patency and support oxygenation/ventilation.
- Early warning signs of obstruction include tachypnea, tachycardia, and hypoxia. Cyanosis, bradycardia and apnea are late signs - do not wait for these to develop before intervening.

Complications:

- Airway obstruction
- Aspiration
- Blocked tube
- Bleeding
- Tracheal trauma
- Pneumothorax
- Subcutaneous and mediastinal emphysema
- Respiratory and cardiovascular collapse
- Dislodged tube
- Tracheo-esophageal fistula
- Infection

PROTOCOL 2K: Stoma/Tracheostomy Management– Adult & Pediatric, cont.

Tracheostomy Suctioning:

Suctioning is necessary to remove thick secretions/mucus, maintain a patent airway, and avoid blockages of the tracheostomy tube/ostomy. Indications for suctioning include:

- Audible or visual signs of secretions in the tube/ostomy
- Signs of respiratory distress
- Suspicion of blocked or partially blocked tube
- Inability to clear the tube by coughing out the secretions.
- Increases in required ventilation pressures (in ventilated patients)
- Request by patient for suction

Tracheal suctioning should be carried out regularly for patients with a tracheostomy. The frequency varies between patients and is based on individual assessment. Tracheal damage may be caused by suctioning. This can be minimized by using the appropriately sized suction catheter and limiting suctioning.

Table 1: recommended suction catheter sizes

Tracheostomy tube size (in mm)	3.0 mm	3.5 mm	4.0 mm	4.5 mm	5.0 mm	6.0mm	7.0mm	7.5mm	8.0mm	9.0mm – 10mm
Recommended suction catheter size (Fr)	7	8	8	10	10	10-12	14	14-16	14-16	16

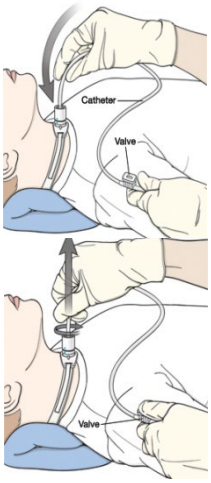
Helpful Tips in Tracheostomy Suctioning:

- The suction depth is determined by the estimated length of the tracheostomy tube and no deeper than the estimated depth of the carina.
- The depth of insertion of the suction catheter needs to be determined prior to suctioning to avoid trauma.
- Using the patient's spare tracheostomy tube of the same size (if available) to estimate needed depth of suctioning.
- The pressure setting for tracheal suctioning (suction machine pressure) for small children is no more than 50-100 mmHg and for older children/adults is no more than 100-120 mmHg) to avoid tracheal damage.
- In most circumstances, it is best to limit the duration of suctioning (including passing the catheter and suctioning the tracheostomy tube) to 5-10 seconds.
- Routine use of normal saline is not necessary although there is anecdotal evidence it may thin secretions. In situations where this may be of benefit, only 1-2 mL is usually needed.

PROTOCOL 2K: Stoma/Tracheostomy Management– Adult & Pediatric, cont.

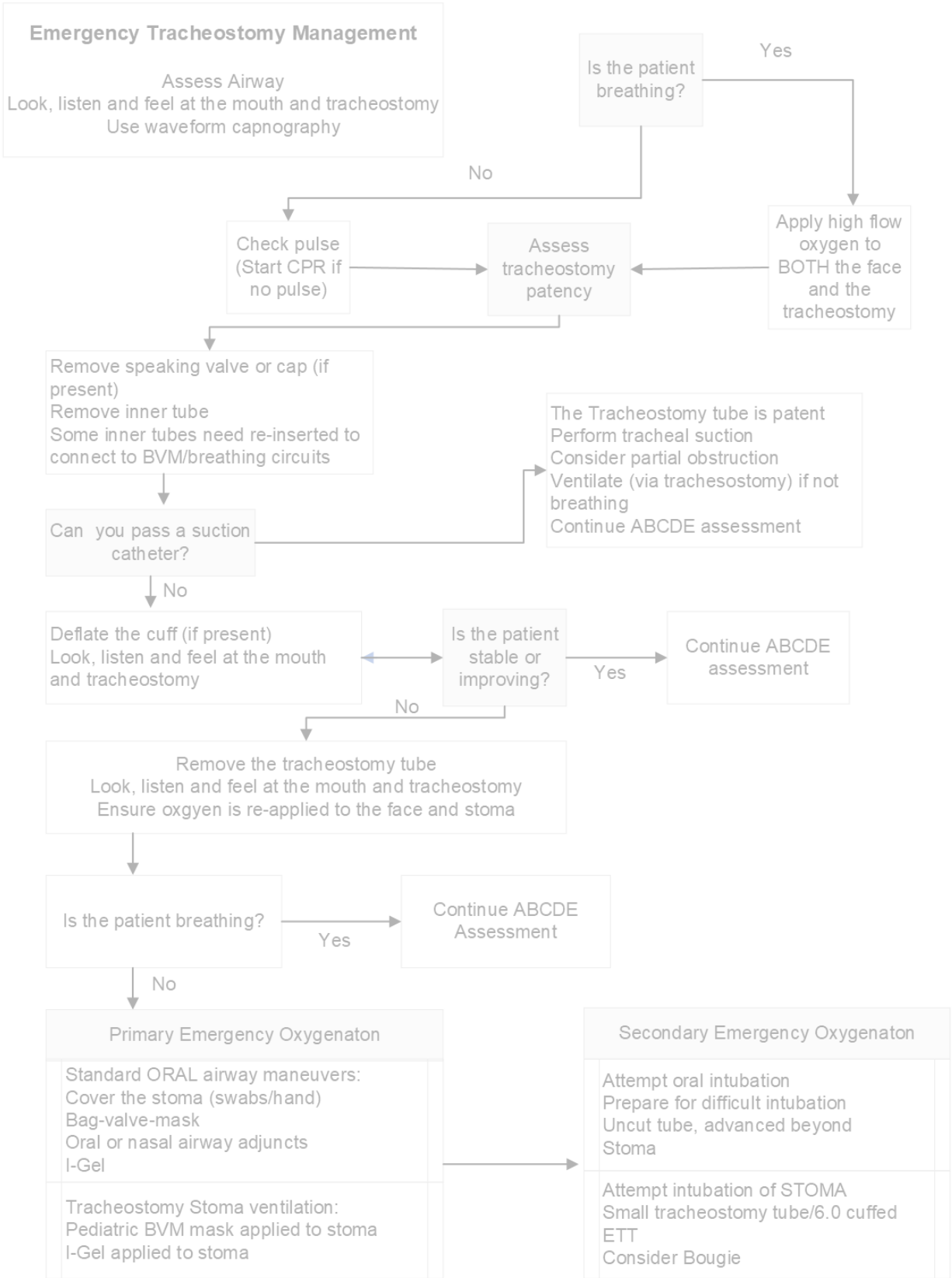
Tracheal Suctioning Procedure:

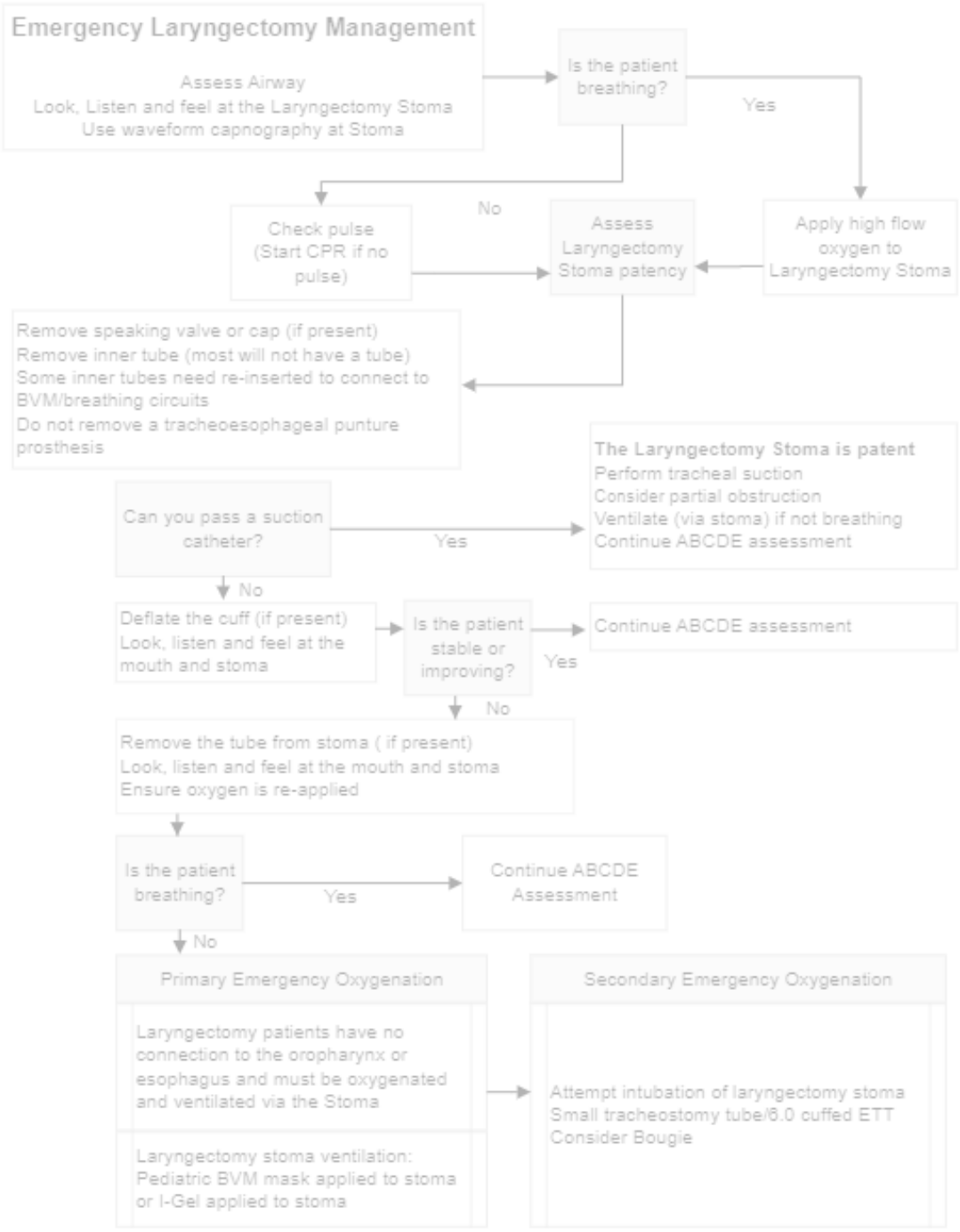
1. Inform pt of intended action.
2. Maintain appropriate PPE throughout procedure.
3. Assemble needed suction equipment and power on suction device.
4. Instill small volume of sterile normal saline into the tracheostomy tube (if needed) for thick or dry secretions. Excessive use of saline is not recommended. Use saline only if the mucus is very thick, hard to cough up or difficult to suction. Recommended amount per instillation is approximately 1-2 mL.
5. Gently insert catheter into the tracheal tube/ostomy without applying suction, passing to the previously estimated needed depth.
6. Put thumb over opening in catheter to create suction and use a circular motion (twirl catheter between thumb and index finger) while withdrawing the catheter so that the mucus is removed well from all areas. Avoid suctioning longer than 10 seconds because of oxygen loss. Suction normal saline from a container if needed to clear catheter.
7. For tracheostomy tubes with cuffs, it may be necessary to deflate the cuff periodically for suctioning to prevent pooling of secretions above tracheal cuff.
8. Let patient rest and breathe, then repeat suction if needed until clear (trying to allow about 30 seconds between suctioning).
9. Oxygenate/ventilate as needed.



Tracheostomy tube tie changes:

- There is a potential risk for tracheostomy tube dislodgment when attending to tie changes, therefore two personnel who are competent in tracheostomy care should undertake tracheostomy tie changes.
- During the tracheostomy tie change one person is to maintain the airway by securing the tracheostomy tube in place and not removing the hand until the new tracheostomy ties are applied. The other person is to change the ties and attend to stoma care.
- If the tie becomes loose, make it is a priority to re-secure the tracheostomy tube before it can become dislodged.


Emergency Tracheostomy Management
Assess Airway
Look, listen and feel at the mouth and tracheostomy
Use waveform capnography
Is the patient breathing?
Yes
No
Check pulse (Start CPR if no pulse)
Assess tracheostomy patency
Apply high flow oxygen to BOTH the face and the tracheostomy
Remove speaking valve or cap (if present)
Remove inner tube
Some inner tubes need re-inserted to connect to BVM/breathing circuits
Can you pass a suction catheter?
The Tracheostomy tube is patent
Perform tracheal suction
Consider partial obstruction
Ventilate (via trachesostomy) if not breathing
Continue ABCDE assessment
No
Deflate the cuff (if present)
Look, listen and feel at the mouth and tracheostomy
Is the patient stable or improving?
Yes
Continue ABCDE assessment
No
Remove the tracheostomy tube
Look, listen and feel at the mouth and tracheostomy
Ensure oxgyen is re-applied to the face and stoma
Is the patient breathing?
Yes
Continue ABCDE Assessment
No
Primary Emergency Oxygenaton
Standard ORAL airway maneuvers:
Cover the stoma (swabs/hand)
Bag-valve-mask
Oral or nasal airway adjuncts
I-Gel
Tracheostomy Stoma ventilation:
Pediatric BVM mask applied to stoma
I-Gel applied to stoma
Secondary Emergency Oxygenaton
Attempt oral intubation
Prepare for difficult intubation
Uncut tube, advanced beyond Stoma
Attempt intubation of STOMA
Small tracheostomy tube/6.0 cuffed ETT
Consider Bougie


Emergency Laryngectomy Management
Assess Airway
Look, Listen and feel at the Laryngectomy Stoma
Use waveform capnography at Stoma
Is the patient breathing?
Yes
No
Check pulse (Start CPR if no pulse)
Assess Laryngectomy Stoma patency
Apply high flow oxygen to Laryngectomy Stoma
Remove speaking valve or cap (if present)
Remove inner tube (most will not have a tube)
Some inner tubes need re-inserted to connect to BVM/breathing circuits
Do not remove a tracheoesophageal punture prosthesis
Can you pass a suction catheter?
Yes
The Laryngectomy Stoma is patent
Perform tracheal suction
Consider partial obstruction
Ventilate (via stoma) if not breathing
Continue ABCDE assessment
No
Deflate the cuff (if present)
Look, listen and feel at the mouth and stoma
Is the patient stable or improving?
Yes
Continue ABCDE assessment
No
Remove the tube from stoma (if present)
Look, listen and feel at the mouth and stoma
Ensure oxygen is re-applied
Is the patient breathing?
Yes
Continue ABCDE Assessment
No
Primary Emergency Oxygenation
Laryngectomy patients have no connection to the oropharynx or esophagus and must be oxygenated and ventilated via the Stoma
Laryngectomy stoma ventilation:
Pediatric BVM mask applied to stoma
or I-Gel applied to stoma
Secondary Emergency Oxygenation
Attempt intubation of laryngectomy stoma
Small tracheostomy tube/6.0 cuffed ETT
Consider Bougie