PURPOSE
To ensure the safe and effective use of endotracheal tubes equipped with a continuous suction evacuation lumen. The use of continuous subglottic suctioning has been clinically demonstrated to reduce the patient’s risk of developing ventilator associated pneumonia (VAP).

POLICY
1. All adult patients intubated within the Calgary Health Region Intensive Care Units (ICU), Emergency Departments (ED), and during code blue situations will have an endotracheal tube equipped with a continuous suction evacuation lumen (Evac tube) placed (sizing dependant – see #5 in the points of emphasis). Additionally, these tubes will be used selectively on those surgical patients where there is any potential for an ICU admission.

2. The Evac tube suction line will be connected to a continuous suction source of at least 20 mmHg but not > 30 mmHg as soon as possible after verifying ETT position and after securing the tube. According to the manufacturer, suction pressure greater than 30 mm Hg over time may result in tissue damage and hemorrhage.

3. The Evac tube must not be connected to a split suction line as the suction pressure cannot be adequately regulated to a level < 30 mmHg.

4. If for some unforeseen reason a continuous suction source is not available, manual aspiration must occur and be documented Q2H and PRN (see troubleshooting procedure for manual aspiration procedure).

5. ETT cuff pressure must be maintained at a minimum of 25 cm H2O with the use of all cuffed tracheal tubes. Regular Q4H monitoring of ETT cuff pressure is necessary to ensure an adequate seal. An inadequately inflated cuff increases the possibility of secretions leaking into the trachea and bronchi (see cuff pressure monitoring policy CLIN-048).

6. Assessment and troubleshooting of the Evac tube will be the primary responsibility of the RRT. Responsibility for the maintenance of the appropriate suction level is shared function between disciplines.
7. The function of the Evac ETT must be assessed with each ventilator monitoring and on a prn basis.

8. As a routine preventative measure, suction lumen patency must be verified Q4H and prn by injecting a 5 mL bolus of air into the suction line of the Evac tube to prevent blockage from occurring (see troubleshooting procedure).

9. If routine patency assessments and/or troubleshooting measures are unable to reestablish a functioning suction line, leave the suction line connected to a continuous suction source in the event that it does become functional in the future. Regular Q4H patency assessments must still occur to verify status of the suction line.

10. Documentation should include the suction level, patency of the evacuation lumen, and any interventions performed to restore the function of the system.

11. The cap on the end of the suction line of the Evac tube prevents contaminants from leaking out of the lumen and prevents contaminants from entering the lumen when suctioning is not in use. Capping must occur in the following situations:
   a. during patient transport (i.e. CT, X-ray, etc.)
   b. prior to extubation
   c. during mobilization
   d. if continuous suction is not available

12. The patient’s head of bed (HOB) position must be placed at >30° unless contraindicated.

13. During prone ventilation, continuous suction should not be used since there is a potential for dependent tissues to contact the suction port. In this situation, carefully applied manual suction via the syringe method should occur Q2H and prn.

POINTS OF EMPHASIS

1. The inside diameter (ID) of the Evac tube is the equivalent size and shape as a standard ETT, therefore there should be no additional concerns with regards to suctioning and other procedures through the ETT such as bronchoscopy.

2. The outside diameter (OD) of the Evac tube is on average 0.8 mm greater in diameter than a standard ETT. This is a result of the suction line incorporated into the design. One should consider choosing an Evac tube one half size smaller than “usual” if there is anticipation that the added OD will be a concern.
3. When performing fiberoptic intubation with the use of a Tudor-Williams (TW) airway, the largest Evac ETT that can safely fit through a 10 cm airway is a #7.0 ETT. If a tube larger then a #7.0 is required:
   a. Use the TW or any other oropharyngeal airway as a bite block and pass the bronchoscope to the side of the airway, not through the lumen, or,
   b. Use an Olympus bite block.

4. The use of an Evac tube does not reduce or eliminate the need for other suctioning procedures that are regularly performed i.e. tracheal/bronchial suctioning and especially regular oral care (please refer to VAPP policy # 020 for mouth care and VAPP policies #005 & #016 for suctioning procedures).

5. Occasionally, a properly functioning Evac tube will imitate the sound of a cuff leak. Care must be taken to rule out this suction sound prior to adding additional of air into the cuff. This can be accomplished by momentarily disconnecting the suction line from the Evac tube followed by the assessment for a cuff leak.

6. Evac tubes are available in all sizes from 6.0 - 9.0 mm ID. Standard ETT’s should be used if a size 5.0, 5.5 mm ID cuffed ETT is required.

7. Insertion technique for the Evac ETT is the same as with a standard ETT (aside from the slightly larger OD).

8. A properly functioning continuous evacuation tube will show secretions slowly travelling through the suction port and accumulating in the patient’s suction canister. The amount of secretions that are produced and end up pooling above the ETT cuff will vary between patients and over time. Very thick or tenacious secretions may not move through the suction line regardless of the amount of suction applied. These are important considerations when troubleshooting the Evac tube (see troubleshooting section).

9. For Evac tubes > 6.5, be aware the radiopaque line is interrupted for approximately 1 cm - by the Murphy eye.

PERSONNEL PERMITTED TO PERFORM
Registered Respiratory Therapist (RRT)
Student Respiratory Therapist (under direct supervision)

EQUIPMENT
Mallinckrodt Hi Lo® Evac Endotracheal Tube (appropriate size)
Dedicated suction regulator and suction line
10 mL syringe
PROCEDURE

Initiation
1. Please refer to VAPP policy # 007 for adult endotracheal intubation procedure.

2. After the intubation, verification of ETT position and securing the tube, connect the suction line from the Evac tube to suction canister via suction tubing.

3. Once the suction line is connected, occlude the suction tubing and adjust the regulator for a suction level of 20 mmHg. Suction pressure may be increased to a maximum of 30 mmHg.

4. Verify the patency of the suction line (see troubleshooting section).


Extubation
1. Immediately prior to extubation, all material above the cuff should be suctioned, thereby decreasing the risk of aspiration during the procedure.

2. Disconnect the continuous suction source from the evacuation tube suction line and apply manual suction to the line to ensure patency and to ensure all materials are removed from the subglottic space (see troubleshooting procedure).

3. Please refer to VAPP policy # 009 for standard extubation procedure.

Troubleshooting & Routine Flush/Aspiration Procedure
1. Perform hand hygiene.

2. Don gloves, mask & goggles.

3. Obtain a new 10 mL syringe for each manual aspiration.

4. Remove the wall suction from the suction line at the connector.

5. Inject a 5 mL bolus of air into the suction line of the Evac tube and listen for an audible sound. This indicates that line is patent. Note: The injection of sterile saline is not recommended due to the increased potential for aspiration of secretions around the ETT cuff.

6. If unable to inject air into the line, attempt to withdraw air/secretions using the syringe. This may indicate the potential of a ball-valve type obstruction at the
evacuation port. Alternate manual suction and air boluses until free flow of secretions from the trachea is noted and/or continuous air movement is noted at the mouth.

7. Momentary increases (up to 60 mmHg) in suction pressure may be used to clear thick secretions or to relieve an obstruction from the suction line.

8. Inspect the suction supply tubing (connected to canister) for blockage from thick or dried secretions. If present rinse with sterile water or saline to clear blockage.

9. Pharyngeal and hypopharyngeal suctioning should be performed if you suspect thick, dried secretions above the cuff.

10. Remove gloves and perform hand hygiene.

11. Document the interventions performed to restore the function of the system in the health record.
Continuous Subglottic Evacuation Endotracheal Tube Management

REFERENCE

3. Overlake Hospital Medical Center. Department of Respiratory Care Services Procedures Continuous Subglottic Evacuation Endotracheal Tube Management #215450.

CROSS REFERENCE

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