Tracheostomy Suctioning (open): Clean Technique Procedure

Site Applicability

All VCH sites

Practice Level

Basic skills for the following professions within their scope of practice:

- RRT, PT
- RN

Advanced skills with additional education or training for the following professions:

- OT, SLP
- LPN (**Note:** LPNs only suction at VGH, UBCH and GPC/GFS sites)

Policy Statement

- Suction only if patient / client / resident is unable to mobilize and expectorate own secretions, or if requested by the patient / client / resident when indicated.
- Clean technique is the minimum requirement for routine tracheal suctioning.
- Personal Protective Equipment (PPE) will be used for ALL suction procedures. Suctioning is an Aerosol Generating Medical Procedure (AGMP).
- Informed consent should be obtained prior to beginning procedure.
- Procedure may vary at sites where patients/clients/residents are able to direct care (e.g. residential and community care facilities).

Need to Know

- There are minor changes in this CPD update. Unit Educators should determine what amount of education is required for their teams.
- Sterile technique is not indicated for routine tracheal suctioning; however should always be considered in immunocompromised patients, or when trying to obtain a sputum sample.
- Wall or portable suction pressure will be set at 80 to 120 mmHg prior to suctioning. Occlude the suction tubing to set suction pressure in a closed circuit.
- 5 mL normal saline dosette vials can be used for instilling tracheostomy tube if indicated.
- Duration of suctioning should not exceed 15 seconds unless requested by client.
- If tracheostomy is corked / plugged, the inner cannula must be inserted prior to beginning suction.
- When choosing a suction catheter size, refer to the chart below:

Tracheostomy Tube size	Maximum Suction Catheter size
4	12 Fr
6	12 Fr
8	12 Fr or 14 Fr
10	14 Fr

- The clinician should observe the patients /clients / resident's facial cues during suctioning.
- Allow the patient /client / resident to breathe (or give breaths with resuscitator bag or ventilator) between suction passes, as needed.

NOTE: For ventilator-dependent patient /client / resident with a tracheostomy tube, take the adapter off before catheter insertion. Do not open the porthole to insert suction catheter. When disconnecting the ventilator, direct open end of ventilator tubing away from patient and health care worker to avoid spray from tubing.

Indications for Suction:

- To maintain a patent airway and remove saliva, pulmonary secretions, blood, vomitus, or foreign material from the trachea as evidenced by:
  - visible secretions in airway
  - coarse inspiratory / expiratory crackles on auscultation or audible gurgling heard
- Feeling of secretions in the chest during palpation
- Suspected aspiration of gastric or upper airway secretions
- Increasing respiratory distress or agitation
- Decrease in oxygenation status
- Radiographic evidence of retained secretions resulting in atelectasis or consolidation
- To stimulate a cough to assess reflexes in patients with altered levels of consciousness
- To obtain a sputum sample for lab analysis

Precautions for Suctioning:

- Tracheal suctioning should be used with caution if the patient has any one of the following:
  - a bleeding disorder (i.e. haemophilia)
  - is receiving anticoagulation therapy
  - a low platelet level
  - increased intracranial pressure – discuss with physician
  - severe hypoxemia or susceptible to cardiac arrhythmia – discuss with physician and consider pre-oxygenation
  - a recent lung transplant (in order to avoid damaging the anastomosis) – discuss with physician and consider pre-oxygenation
- The suction procedure does not change if any of the above precautions exist.

Potential Complications of Suctioning:

Hypoxemia:

- Most common complication associated with suctioning. When negative pressure is applied via suctioning, air and oxygen are removed along with secretions.
- A continuous pulse oximeter is recommended during tracheal suctioning and pausing to re-oxygenate between suction attempts will help ensure vital sign stability.
- Limiting the length of time (15 seconds) that negative pressure is applied will also help to prevent hypoxemia.

Cardiac Arrhythmias:

- Tachycardia as a result of suctioning may occur secondary to hypoxemia. Stimulation of the trachea with a suction catheter could result in vagal stimulation, leading to bradycardia or hypotension.
- If signs of arrhythmias or hypotension occur, the suction catheter should be immediately withdrawn and oxygen given as needed. Monitor vital signs as necessary. Consult with medical team prior to additional suction attempts.

Mucosal Trauma:

- Lubricate the tip of the catheter if needed and limit excessive force when advancing the catheter as this will help to prevent mucosal trauma.
- Damage may also be caused by catheters adhering to the tracheal wall during suctioning. Limiting the negative pressures to 80 to 120 mmHg will decrease potential damage to the mucosa.

Infection Risk:

- To the client: suction catheters are disposable and should not be re-used. In immunocompromised patients, consider using a sterile technique.
- To the staff: staff who provide suctioning can be exposed to patient secretions. The use of proper PPE is required.

Increased Intracranial Pressure:

- Increased intracranial pressure can occur in susceptible patients, secondary to coughing or hypertension. Patients may require sedation prior to suctioning to prevent potential increases in intracranial pressure. Discuss with physician.

Aspiration:

- If vomiting occurs while suctioning, withdraw the suction catheter, turn the patient on their side and suction the mouth immediately. Monitor vital signs and administer oxygen as needed. Consult with medical team prior to additional suction attempts.

Pre-Oxygenation Considerations:

If any of the above potential complications exist, the patient / client / resident should be considered for pre-oxygenation:

For ventilator dependent patient / client / resident:

1. Connect oxygen source to manual ventilation unit (MVU) bag and set oxygen flow to 10 to 15 l/min.
2. Disconnect ventilator from tracheostomy tube.
3. Connect MVU to tracheostomy tube adapter of inner cannula.
4. Hyper-oxygenate patient with MVU using 100% oxygen until oxygen saturation is greater than 92%.

   Rationale: *suctioning depletes oxygen and may cause hypoxia.*
5. Disconnect MVU and place nearby for use after suctioning.

For non-vented patient /client / resident:

1. Hyper-oxygenate lungs by administering oxygen using a tracheostomy mask / manual ventilation unit (MVU) until oxygen saturation is greater than 92% (refer to Oxygen Therapy CPD O-120).

   Rationale: *suctioning depletes oxygen and may cause hypoxia.*

Instillation of Saline:

Although not required routinely, the instillation of normal saline can be used in practice to facilitate secretion clearance. When the clinician assesses that the secretions are thick, sticky and difficult to mobilize, instillation of saline may have benefit.

For ventilator dependent clients:

- If secretions are thick and hard to clear, instill 2.5 to 5.0 ml of saline into the tracheostomy and reconnect the ventilator or manually bag client for 4 to 5 breaths. Cough and suction the client. Refer to CPD: Assisted Cough Techniques. Change gloves between coughing and suctioning of client to prevent cross contamination.

For non ventilator dependent clients:

- If secretions are thick and hard to clear, instill 2.5 to 5.0 ml of saline into the tracheostomy. The client can then be coughed and suctioned.

Equipment & Supplies

- Personal Protective Equipment (PPE) for aerosol generating medical procedures (AGMP)
- Tracheostomy suctioning kit (see site specific practices)
- Bottle of sterile normal saline
- Suction catheter (a second catheter is recommended to be available at bedside in case of contamination)
- Suction tubing
- Water soluble lubricant (optional)
- Portable suction machine or wall suction
- Disposal container (garbage) for used equipment
- Clean container for sterile saline
- Saline dosettes (if necessary, for instillation)
- Manual resuscitator bag with trach adapter (as required)
- Oxygen source (as required)
- Suction Regulator / Suction drainage bottle
- Yankauer suction for oral secretion
- Pulse Oximeter

Procedure

Suctioning – Clean Technique:

1. Wash hands.
2. Don PPE following VCH Infection Control Manual recommendations as defined by the site specific risk assessment.
3. Assemble the equipment and materials on a clean work surface.
4. Apply oximeter and monitor client as per unit guidelines until suctioning is completed.
   NOTE: If $Sp0_2$ is below 92% - see Pre-oxygenation Considerations section above.
5. Fill clean container with sterile saline, if indicated.
6. Turn on machine / wall suction and set / check suction pressure.
7. Open suction catheter package and maintain clean technique by handling only the connection end of the catheter.
   Rationale: *This keeps the suction catheter tip clean.*
8. Attach suction catheter to the suction tubing and don fresh glove on dominant hand.
9. Have saline dosettes ready for instillation if indicated.
10. With non-dominant hand, grasp catheter connection.

11. With dominant hand, hold the suction catheter 10 to 15 cm from tip.
12. Lubricate the tip of the catheter if needed.
13. **Without applying suction**, insert catheter gently and quickly into the tracheostomy until resistance is felt.

    Rationale: *Suction application during insertion may damage tracheal mucosa. A cough is not always a good indicator of suction catheter depth, as a cough may be stimulated with irritation / movement of the tracheostomy tube.*

14. Apply thumb over control vent of the catheter and apply continuous suction as the catheter is withdrawn from the tracheostomy.
15. Suction for no more than 15 seconds.

    Rationale: *This minimizes hypoxia and dysrhythmias secondary to depleted oxygen levels during suction procedures.*

16. Allow client / resident to breathe between suctioning passes by reconnecting client to ventilator, manually ventilating client or allowing client to breathe spontaneously. If needed use Yankeur to clear oral secretions.
17. If indicated, repeat suctioning while maintaining clean technique. If necessary, flush catheter and/or suction tubing to ensure patency of lumen.
18. Turn off suction.
19. Continue to monitor oxygen saturation until expected outcome achieved.
20. Dispose of the catheter by disconnecting it from suction tubing; coiling it around the fingers and removing the glove back over the catheter. Discard the “gloved catheter” and gloves into the appropriate disposal bin.
21. If finished with patient care, remove PPE as per protocol and wash hands.
22. Monitor patient/client/resident for signs of distress and check heart rate. Compare to pre-suctioning data.

    Rationale: *Suctioning may cause tachycardia but hypoxemia and vagal responses may cause serious bradycardia.*

23. Position patient/client/resident for comfort and ensure call bell is within client’s reach.
24. Check suction drainage containers and suction tubing once per shift. Clean and replace if necessary.

Expected Patient/Client/Resident Outcomes

Patient / client / resident should have improved oxygen saturation and no respiratory distress post suctioning. Improved respiratory status can also be confirmed by auscultation, quality of vocalization and improved vital signs.

Patient/Client/Resident Education

Prior to beginning procedure, informed consent should be obtained by educating the patient / client / resident about the nature of the procedure and the risks and benefits that may result.

Site Specific Practices

The site specific practices listed below are outside of the normal routine for cleaning equipment. Unless listed below your site will clean and replace equipment as needed or as per routine safety checks (unit specific).

GF Strong:

Suction Equipment Cleaning:

1. The disposable liner of the suction machine, connector, yankauer, clean container and suction tubing are changed daily and as needed. The new bottle of saline is dated and the old bottle discarded at the beginning of each day as it is used only over 24 hours. Used suction tubing, yankauers, and catheters can be disposed of in regular garbage. Used suction liners are to be disposed of in a designated biomedical container lined with yellow biomedical bags.
2. The outer non-disposable canister is cleaned daily and upon client discharge by housekeeping.
3. The portable suction machine must be cleaned at the end of the day as per unit guideline before it is plugged in to be recharged in the wheelchair room.
4. Portable suction machines are changed once a month and as needed. The GFS RT is responsible for tracking the monthly changes. Nursing can initiate a machine change as needed.
5. Dirty portable suction machines are sent to the second floor utility room. The Patient Care Aide (PCA) will clean them and store them in the wheelchair room on the second floor.

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Wall suction equipment cleaning:

1. The disposable liner of the suction machine, suction tubing, and yankauer are changed daily and as needed. These are all disposed of in the regular garbage.
2. The outer, non-disposable canisters are cleaned daily and upon client discharge by housekeeping.

Portable suction equipment cleaning:

1. After use, the portable suction canister is removed and sent to CSD for cleaning, when soiled.
2. The suction machine and bag are wiped with Oxivir.
3. The suction machine and bag are taken to the clean room and re-assembled using a clean suction canister, ensuring there is a bottle of sterile water, suction tubing, yankauer, gloves, catheters, gauze and saline nebules in the bag.
4. The suction machines are plugged in to charge the internal battery.

Non-wall bedside suction machines (Laerdal and Gomco's):

1. Re-usable suction canisters are rinsed and emptied daily and as needed.
2. Disposable suction liners are disposed of daily and as needed.
3. The tubing and yankauer are changed daily and as needed.
4. Filters and filter tubing is checked and/or changed by the RRT monthly and as needed.
5. Non-wall bedside suction machines are changed as needed.

Documentation

Document procedure as per site specific requirements. Document any adverse events resulting from suction procedure. If appropriate, document amount and quality of secretions removed during suction.

If self directed care is permitted for the patient / client / resident and they are requesting a deviation from this CPD, potential complications/consequences should be explained to the patient prior to following the patient's wishes. This should be documented accordingly.

Related Documents

- VA CPD P-340: Pharyngeal Airways – Insertion, Removal and Tracheal Suctioning

References

Overend, T.J., Anderson, C.M., Brooks, D., Cicutto, L. et al. Updating the evidence base for suctioning adult patients: A systematic review. Can Respiratory Journal. 2009; 16(3): e6-e17.

Pedersen, C.M., Rosendahl-Nielsen, M., Hjermind, J., and I. Egerod. Endotracheal suctioning of the adult intubated patient-what is the evidence? Intensive and Critical Care Nursing. 2009; 25: 21-30.

Day, T., Farnell, S., and J. Wilson-Barnett. Suctioning: a review of current research recommendations. Intensive and Critical Care Nursing. 2002;18:79-89.

Griggs, A. Tracheostomy: suctioning and humidification. Nursing Standard. 1998;13(2): 49-56.

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