



HEALTH HOLDING

HAFER ALBATIN HEALTH
CLUSTER
MATERNITY AND
CHILDREN HOSPITAL

Department:	Pediatrics		
Document:	Multidisciplinary Policy and Procedure		
Title:	Suctioning in Pediatric Patient		
Applies To:	All Pediatric Staffs and Respiratory Therapists		
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1. PURPOSE:

- 1.1 To facilitate respiratory ventilation by removal of respiratory secretion that cannot be spontaneously expectorated.
- 1.2 To maintain patency of artificial airway, decrease the risk of aspiration, promote optimal pulmonary gas exchange and prevent nosocomial pneumonia.
- 1.3 To collect specimen for diagnostic purpose.
- 1.4 To provide comfort and relief from respiratory distress.
- 1.5 To prevent infection that may result from accumulated secretions.

2. DEFINITIONS:

- 2.1 **Suctioning** – is the aspiration of secretion, often through a rubber or polyethylene catheter connected to a suction machine attached to a negative pressure vacuum set up on wall outlets or portable suction device. It involves the removal of secretions from the trachea or bronchi by means of a catheter through the mouth, nose, tracheal, stoma and tracheostomy or endotracheal tube. The aim is to reduce the work of breathing and to reduce the risk of atelectasis, thereby maintaining or improving gas exchange.

3. POLICY:

- 3.1 Suctioning is carried out by a competent staff with an adequate knowledge of the procedure and skills in rendering quality nursing care or respiratory therapist (RT) to remove secretions from the trachea or bronchi to maintain a patent airway.
- 3.2 Sterile technique should be maintained on all patients with endotracheal or tracheostomy tube throughout the suctioning procedure.
- 3.3 Maintain clean suctioning technique for oral and nasal suctioning.
- 3.4 Suctioning should be performed when clinically indicated and after chest physiotherapy.
- 3.5 The appropriate level of negative pressure is the lowest pressure that will effectively clear secretion.
- 3.6 Patient must be closely observed during and after the procedure for complications associated with suctioning.
- 3.7 The patient should be attached on a pulse oximeter to assess oxygenation during and following the procedure.

4. PROCEDURE:

- 4.1 Identify patient correctly using two identifiers (4 names for the Saudi and complete name for the Non – Saudi and Medical Record Number).
- 4.2 Explain the procedure to the patient/parents to lessen the anxiety and ensure cooperation as well.
- 4.3 Assess the patient's need for suctioning by observing and auscultating for:
 - 4.3.1 Increase work of breathing.
 - 4.3.1.1 Increase respiratory rate.
 - 4.3.1.2 Alteration in respiratory pattern.
 - 4.3.1.3 Retractions.

- 4.3.1.4 Nasal flaring.
- 4.3.1.5 Chin tug.
- 4.3.1.6 Grunting (non – intubated patients).
- 4.3.1.7 Coarse breath sound, crackle, noisy breathing and changes in air entry and coughing.
- 4.3.2 Alteration in gas exchange.
 - 4.3.2.1 Decrease in the SaO₂ (oxygen saturation).
 - 4.3.2.2 Pale and/or mottled appearance.
 - 4.3.2.3 Cyanosis.
 - 4.3.2.4 Decreased PaO₂ (oxygen levels in arterial blood) and/or increase PaCO₂ (Carbon dioxide levels in arterial blood) on the blood gas.
- 4.3.3 Increased heart rate.
- 4.3.4 Restlessness or agitation.
- 4.3.5 Altered level of consciousness.
- 4.3.6 Visible secretions in airway.
- 4.3.7 Increased peak pressures during volume – controlled ventilation or decreased tidal volume pressure – controlled ventilation.
 - 4.3.8 Changes in monitored flow or pressure graphics on ventilator.
 - 4.3.9 Examination of the chest x – ray.
 - 4.3.10 Alteration of ventilator parameters.
 - 4.3.11 Inability to effectively clear secretions independently.
- 4.4 Connect to cardio – respiratory monitor to observe for signs of hypoxemia initially resulting in tachycardia and increase blood pressure progressing to cardiac ectopy, bradycardia, hypotension and cyanosis. Vagal stimulation which may result in bradycardia.
- 4.5 Suctioning should be done on an empty stomach, or at least an hour after feeding. If patient is on continuous feeds ensure the feed is turned off prior to suction.
- 4.6 Ensure adequate sedation is running for an intubated patient, PRN sedation might be necessary prior to stimulation.
- 4.7 Perform hand hygiene and maintain standard precaution.
- 4.8 Assemble equipment and check suction and oxygen source are functioning properly.
 - 4.8.1 Ensure emergency airway management equipment is immediately available.
 - 4.8.2 Check for the expiration date on sterile package, and inspect for tears to ensure sterility.
 - 4.8.3 Prepare suction catheters of an appropriate (less than half the diameter of the artificial airway) size usually two (2) times the diameter of the endotracheal or tracheostomy tube (in millimeter) equals the appropriate French sized catheter. An appropriate type of suction catheter should be a graduated catheter with two lateral side holes smaller than the end hole.

Catheter Size (French Gauge)	ETT/Tracheostomy (mm ID)	Weight (Kg)	Age
5 – 6	3.0	2	Newborn
5 – 7	3.5	3.5	Newborn
5 – 7	3.5	6	3 Months
6 – 7	4.0	10	1 Year
6 – 8	4.5	12	2 Year
6 – 8	4.5	14	3 Years
7 – 8	5.0	16	4 Years
7 – 8	5.5	20	6 Years
8 – 12	6.0	24	8 Years
8 – 12	6.5	30	10 Years
	7.0	Greater 30	12 Years

- 4.9 Provide privacy.
- 4.10 Explain to the patient/parents that suctioning will relieve breathing difficulty and that the procedure is painless but may stimulate cough, gag or sneeze reflex.
- 4.11 Adjust bed to comfortable working position and lower side rails closer to you.

- 4.12 Place patient in semi – fowler's position if conscious or if not contraindicated. An unconscious patient is placed in the lateral position facing you as this will allow the tongue to fall forward so that it will not obstruct the catheter insertion and will facilitate drainage of secretions from the pharynx and prevents the possibility of aspiration.
- 4.13 Identify the method of suctioning (open and close tracheal suctioning).
- 4.14 Place absorbent pads or waterproof pad across patient's chest.
- 4.15 Turn on the suction machine and set the desired pressure on the suction gauge according to the patient's age. Check the pressure by occluding the end of the suction tubing before attaching it to the suction catheter, and prior to each suctioning event.
 - 4.15.1 Pressure gauge must be regulated at:
 - 4.15.1.1 Children 80 – 100mmHg
- 4.16 Ensure that the suction tubing (Yankeur) is attached correctly to the suction container and that oxygen is readily available.
- 4.17 Open tracheal suctioning procedure set:
 - 4.17.1 Open the sterile suction package. Connect the appropriate suction catheter; keep the distal end of the suction catheter sterile.
 - 4.17.2 Wear a non – sterile glove on the non – dominant hand and then sterile gloves on the other hand, attach the catheter to suction unit. Open lubricant if performing nasopharyngeal suctioning. The sterile gloved hand maintains the sterility of the suction catheter and the unsterile glove prevents the transmission of the microorganisms to the nurse.
 - 4.17.3 Make an appropriate measurement of the depth of the insertion of the catheter. Connect the catheter directly to the suction tubing making sure the catheter is kept in the gloved hand to maintain sterility.
 - 4.17.4 Disconnect the patient from the ventilator ensuring ventilator connections are kept clean.
 - 4.17.5 Hyper oxygenate patient with 100% oxygen through the ventilator by adjusting the FIO₂ setting or manual resuscitation bag with reservoir for 30 – 60 second (3 – 5 breaths). Hyper oxygenate an oxygen reserve in the alveoli, reducing the risk of hypoxemia and bradycardia.
 - 4.17.6 Do not apply suction (with your finger off the suction vent) when introducing the catheter to prevent the risk of damage to the mucosa and risk of hypoxia.
 - 4.17.7 Apply intermittent suction while slowly withdrawing the catheter, rotating catheter between the finger and thumb, continuous suction may be warranted with thick and copius secretions.
 - 4.17.7.1 Limit suction time not more than 10 seconds. Stop suctioning if heart rate decreased to 60 beats/minute or if any cardiac ectopy is observed.
 - 4.17.7.2 Hyperventilate patient with 100% oxygen in between suctioning and before reconnecting patient to ventilator when suctioning completed via manual resuscitation bag with reservoir. The oxygen removed by suctioning must be replenished before suctioning is attempted again before reconnecting patient to ventilator when suctioning completed.
 - 4.17.7.3 Rinse catheter in between suctioning with 0.9% Normal Saline. Continue doing suction until the airway is clean of accumulated secretion but no more than suctioning is made per episode. Repeated suctioning of patient in a short time interval predisposed to hypoxemia as well as being tiring and traumatic to the patient.
 - 4.17.7.4 Reconnect patient to ventilator when suctioning completed.
- 4.18 Closed Tracheal Suctioning (In – line) Technique
 - 4.18.1 Put on clean gloves.
 - 4.18.2 Pre – oxygenate patient for 1 minute using the 100% oxygen key on the ventilator.
 - 4.18.3 Attached the suction catheter to the patient's ventilation port with your non – dominant hand, and hold the device securely.
 - 4.18.4 Determine correct color or number for suction depth.
 - 4.18.5 Unlock in – line suction. Instill if required via instillation/irrigation port.
 - 4.18.6 Stabilize the catheter and endotracheal or tracheostomy tube with non – dominant hand.

- 4.18.7 Advance the catheter within the enclosed sleeve with your dominant hand, and progressively push the catheter in while pulling the plastic sleeve back between your thumb and index finger without suction.
- 4.18.8 Depress the control valve to apply suction. Maintain suction withdrawing the suction catheter fully, while stabilizing endotracheal or tracheostomy tube to prevent dislodgement.
- 4.18.9 Ensure catheter tip fully retracted at end of suctioning to prevent obstruction of endotracheal or tracheostomy tube. The closed in line catheter is usually not rotated due to the protective catheter sheath. Black mark on the catheter indicates full withdrawal. Duration of suctioning will not exceed 5 seconds as continuous suction recommended.
- 4.18.10 Check viewing port for secretions and assess patient. If further suctioning is required, repeat procedure and allow the patient to rest and re – oxygenate between suction passes.
- 4.18.11 Rinse the inner lumen of the suction catheter by applying suction while squeezing the vial or pushing the syringe of Normal Saline via the irrigation port. To rinse the catheter adequately, use 5 to 10ml of Normal Saline.
- 4.18.12 Close suction control valve.
- 4.18.13 Cap the irrigation port. Discard any unused Normal Saline. Disconnect suctioning from in – line suction catheter and re – cap in – line catheter end.
- 4.19 Perform Nasopharyngeal and Oropharyngeal suctioning:
 - 4.19.1 Estimate the distance from the earlobe to the nostril, and place the thumb and forefinger of glove hand at the point on the catheter.
 - 4.19.2 Gently insert the catheter with the suction off by leaving the vent open.
 - 4.19.3 Slip the catheter gently along the floor of an unobstructed nostril toward the trachea to suction the nasopharynx or, insert the catheter along the side of the mouth toward the trachea to suction the oropharynx.
 - 4.19.3.1 Never apply suction as the catheter is introduced.
 - 4.19.4 Apply suction by occluding the suction port by your thumb and gently rotate the catheter as it is being withdrawn.
 - 4.19.4.1 Do not allow the suctioning to continue for more than 10 – 15 seconds at a time.
 - 4.19.4.2 The nares should be alternated when repeated suctioning is required.
 - 4.19.4.3 Do not force catheter through the nares.
- 4.20 Rinse vacuum connecting tube with Normal Saline.
- 4.21 Remove the suction catheter wrapped around the hand and the glove ensuring the catheter is contained inside the glove. This is then disposed once using in the appropriate waste bin.
 - 4.21.1 Discard suction catheter immediately if it comes into contact with any surfaces, and should not be used to suction the nose or mouth before introduction into the ETT.
 - 4.21.2 Discard all single – used items to appropriate receptacle.
- 4.22 Store oral suction devices, and yankeur tubing in a non – sealed plastic bag at the bedside when not in use.
- 4.23 Turn off suction machine from the suction regulatory source.
- 4.24 Remove personal protective equipment and discard to appropriate receptacles.
- 4.25 Perform hand hygiene and dry hands thoroughly.
- 4.26 Ensure patient's comfort after the procedure.
- 4.27 Re – assess patient for the following:
 - 4.27.1 Vital signs.
 - 4.27.2 Oximetry reading.
 - 4.27.3 Amount, color, odor and consistency of secretions.
 - 4.27.4 Breath sounds.
- 4.28 Note change in vital signs or patient's intolerance to the procedure.
- 4.29 Immediately inform physician for any abnormalities noted.
- 4.30 Assess need for further suctioning at least every 2 hours or more frequently if secretion is copious.
- 4.31 Change the suction machine tubing and suction canister liner, 0.9% Normal Saline for suction catheter flushing and close suction catheter every 24 hours.
- 4.32 Discard the suction collection bottle liner every 24 hours or when 3/4 full.

- 4.33 Report any patient's intolerance to procedure (change in vital signs, decrease oxygen saturation, bleeding, laryngospasm and upper airway noise).
- 4.34 Write nursing care plan according to identified patient's problem through nursing process approach. Refer to nursing clinical practice guidelines.
- 4.35 Document in the nurses notes the following:
 - 4.35.1 Procedure performance (including date and time).
 - 4.35.2 Amount, color, odor and consistency of secretions.
 - 4.35.3 Patient's tolerance of procedure.
 - 4.35.4 Vital signs changes, actions taken if problems encountered during the suctioning.
 - 4.35.5 Air entry and adventitious breath sounds.
 - 4.35.6 Specimen(s) obtained and sent.

5. MATERIALS AND EQUIPMENT:

- 5.1 Cardio – Respiratory Monitor
- 5.2 Mask
- 5.3 Apron
- 5.4 Stethoscope
- 5.5 Portable or Wall Suction Machine with Tubing
- 5.6 Suction Canister with Collection Liner
- 5.7 Sterile Container
- 5.8 Sterile Normal Saline Solution
- 5.9 Close Suction Catheter
- 5.10 Water Soluble Lubricants (optional)
- 5.11 Yankeur
- 5.12 Mucus Extractor
- 5.13 Oxygen Source with a Calibrated Metering Device
- 5.14 Manual Resuscitation Bag Equipped with Reservoir
- 5.15 Oral/Mouth Care Supplies

6. RESPONSIBILITIES:

- 6.1 Physician
- 6.2 Nurses
- 6.3 Respiratory Therapist

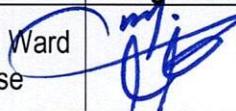
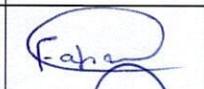
7. APPENDICES:

N/A

8. REFERENCES:

- 8.1 Kingdom of Saudi Arabia, Ministry of Health Baish General Hospital, 2018.

9. APPROVALS:

	Name	Title	Signature	Date
Prepared by:	Ms. May Oweid Alrawaily	Pedia Medical Ward Head Nurse		January 12, 2025
Prepared by:	Dr. Ibrahim Aliyu	Pediatric Quality Coordinator		January 12, 2025
Reviewed by:	Mr. Sabah Turayhib Al Harbi	Director of Nursing		January 13, 2025
Reviewed by:	Mr. Hassan Aldahkil	Head of Respiratory Therapy Department		January 13, 2025
Reviewed by:	Dr. Fahad Obaid Al Shammari	Pedia. Head of the Department		January 13, 2025
Reviewed by:	Mr. Abdulelah Ayed Al Mutairi	QM&PS Director		January 15, 2025
Reviewed by:	Dr. Tamer Mohamed Naguib	Medical Director		January 15, 2025
Approved by:	Mr. Fahad Hazam Al Shammari	Hospital Director		January 26, 2025