

**OLIVE VIEW-UCLA MEDICAL CENTER
RESPIRATORY CARE SERVICES – NICU
POLICY & PROCEDURE**

**NUMBER: 1686
VERSION: 1**

SUBJECT/TITLE: AIRWAY MANAGEMENT: SUCTIONING NICU PATIENTS

POLICY: Obtaining airway clearance by suctioning secretions is imperative to maintain optimal oxygenation and saturation levels. Sputum samples may also be analyzed for viral and bacterial infections. The task is shared by Respiratory Care and nursing.

PURPOSE: To maintain a patent airway and to obtain sputum samples for laboratory analysis.

DEPARTMENTS: RESPIRATORY CARE SERVICES

DEFINITIONS:

PROCEDURE: Patients are subject to nasopharyngeal, oropharyngeal and endotracheal tube suctioning. Prior to suctioning, the following equipment should be prepared for the procedure:

1. Vacuum suction and container with 6 foot tubing - the vacuum suction should be set between 60-80 mmHg
2. Sterile Suction Catheter kits - size 6 Fr [for premature or SGA (small for gestational age)] or 8 Fr for full term neonates
3. Inline suction catheters(size 6 or 8 Fr) – used for endotracheal tube suctioning (if available)
4. Multipurpose suction device – primarily for oral suctioning
5. Sterile normal saline (if necessary)
6. Bulb syringe
7. Specimen container (if necessary) – sputum trap
8. Anesthesia bag with mask – set flow at 6-10 lpm with an FIO₂ that meets the optimal saturation parameter for the patient’s gestational age (The premise is to hyper oxygenate, however, caution should be used with premature infants).

All suctioning except oral suctioning is a sterile procedure. Please adhere to the following prior to inserting the suction catheter into the ETT or nares:

1. Open the suction catheter kit and mucus trap leaving the items in the sterile opened package.
2. Take up the distal end of the 6-foot suction tubing and tuck it under your left arm and hold it there.

3. Don both of your sterile gloves.
4. The right hand is kept and considered sterile throughout the procedure.
5. Pick up the mucus trap with your right hand and attach it to the suction tubing under your left arm (tuck the left hand under to grasp and hold the suction tubing). Holding the tubing with your left hand attach the mucus trap to the suction tubing with your right hand.
6. Hold the mucus trap with your left hand.
7. Pick up the suction catheter with your right hand leaving the wrapper on the suction catheter.
8. Attach the suction catheter to the tubing or mucous trap (if sputum sample is required).
9. Hold the thumb suction initiator (and the mucus trap with the left hand), and the suction catheter with your right hand.
10. If you are not required to collect a specimen, omit steps 5 and 6 and attach the suction catheter directly to the suction tubing.

Oral Suctioning

Oral suctioning is not required to be sterile. For oral suctioning, a suction catheter, a multipurpose suctioning device or bulb syringe can be used. The bulb syringe does not require vacuum suction.

1. Suction catheter- this is typically used for oral suction after nasotracheal suctioning. Make sure you have adequate vacuum suction (60-80 mmHg). Insert the size 6-8 Fr catheter into the mouth and gently suction the inside of the mouth using a sweeping motion. Flush the catheter occasionally if it becomes sluggish or occluded.
2. Multipurpose suctioning device- this device is typically used for the orally intubated patient. Make sure you have adequate vacuum suction (60-80 mmHg). Attach the device to the suction tubing. Gently insert it into the mouth to remove oral secretions. The large diameter facilitates the removal of more viscous secretions. It can also be used to suction the nares. Maintain by cleaning after each use and discard once it can no longer be cleared with normal saline or sterile water. Replace daily.
3. Bulb syringe- It is used to clear oral and nasal secretions by gently aspirating after squeezing the bulb once inserted into the mouth or nose.

Note: Use caution in using these devices as not to stimulate the gag reflex or vagal response.

Nasopharyngeal Suctioning

1. Select and assemble the appropriate equipment based on patient size. If a sputum sample is required for laboratory analysis, a specially

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- designed specimen container should be attached at this time
2. The patient should be placed in a supine position
 3. Hyper oxygenate with blow by O₂ using anesthesia bag with mask to obtain optimal saturation levels
 4. Insert sterile suction catheter slowly into nares and advance as far as it will go. Once you meet an obstruction, pull back 1-2 cm
Note: If the patient coughs during advancement of the catheter past the oropharynx, initiate suctioning
 5. Apply intermittent suction while rotating the catheter between the fingers.
 6. The negative pressure should not be applied for more the 5-10 seconds.
Note: The suctioning should be stopped if any arrhythmias or severe tachycardia occurs
 7. Re-oxygenate with blow by O₂ using anesthesia bag with mask to obtain optimal saturation levels and pre-suction vital signs
 8. Repeat steps as necessary
 9. If a sputum sample is obtained, secure the container, label appropriately, bag and send to the laboratory.

ETT (endotracheal tube) Suctioning: Indications and Complications

Indications:

1. the presence of secretions
2. to obtain a sputum sample for laboratory analysis
3. to rule out tube obstruction

Complications:

1. lobar collapse, pneumothorax, bradycardia and hypoxemia.(Pre-oxygenation is proposed as an intervention to minimize the risk of complications, including hypoxemia, bradycardia, tachycardia, atelectasis, pneumonia, fluctuations in blood pressure and intracranial pressure, localized trauma to the airway, sepsis and tube dislodgement. Pre-oxygenation increases inspired oxygen immediately prior to the suction procedure to increase arterial oxygen saturation. Pre-oxygenation may cause hyperoxia, which is associated with oxygen free radical damage. There is emerging data to suggest that oxygen free radical damage is associated with major morbidity i.e. periventricular leukomalacia, retinopathy of prematurely, chronic lung disease with the potential for long-term effects)

Endotracheal Tube (ETT) Suctioning

1. Select and assemble the appropriate equipment based on endotracheal

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- tube size. If a sputum sample is required for laboratory analysis, a specially designed specimen container should be attached at this time
2. The patient should be placed in a supine position
 3. Hyperoxygenate using an anesthesia bag to provide positive pressure with increased FIO₂ or increase the FIO₂ on the positive pressure ventilator to achieve optimal saturations
 4. Advance the catheter until you can see the patient cough, or when the catheter reaches the matching numerical marking on both the ETT and catheter
Note: For catheters without numerical notations, advance until you meet an obstruction or the patient coughs and then pull back 1 cm prior to applying suction
 5. Apply intermittent suction while rotating the catheter between the fingers. Recall that suctioning should be stopped immediately if any arrhythmias or severe tachycardia occurs
Note: If you withdraw your catheter and do not aspirate secretions despite continued rhonchi, instill 0.5 -1 ml of normal saline to assist in mobilizing the secretions during the next attempt
 6. Reoxygenate with increased FIO₂ or positive pressure ventilation (PPV) using anesthesia bag with increased FIO₂ to obtain optimal saturation levels and pre-suction vital signs
 7. Repeat steps 4, 5 and 6 until secretions are clear
 8. Once patient's vital signs return to pre-suction values slowly wean the FIO₂ to initial value
 9. If a sputum sample is obtained, secure the container, label appropriately, bag and send to the laboratory

ETT suctioning: Two-Man Technique

1. Set the suction pressure in the wall unit to 60-80 mmHg
2. Attach the liner than the 6-foot tubing to the suction unit
3. Open the packaging for the suction catheter and leave the items in the sterile opened package
4. Take up the distal end of the 6-foot suction tubing and place it in an easily accessible area
5. Don both your sterile gloves
6. The right hand is kept sterile throughout the procedure
7. Pick up the sterile mucous trap with your right hand and attach it to the suction tubing. Hold the tubing and with your left hand and attach the mucous trap to the suction tubing
8. Hold the mucous trap with your left hand
9. Pick up the suction catheter with your right hand leaving the wrapper

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- on the suction catheter
10. Attach the suction catheter to the mucous trap
 11. Hold the suction port and the mucous trap with the left hand and the suction catheter with your right hand
 12. Your suction partner should have the patient's hand bag tested and ready for application. Check the FI02, flow-rate and inflation abilities.
 13. Your partner will disconnect the ventilator and provide PPV to hyperoxygenate the patient in preparation for suctioning, there will be a brief disconnect to instill 0.5-1 ml NS into the ETT and reconnect giving PPV to circulate the NS into the lungs
 14. Your partner will disconnect the anesthesia bag and you will now insert the suction catheter without applying suction until you meet an obstruction. Gently pull back 1 cm and initiate intermittent suction with a twisting motion between your fingers. This should not last more than 5-10 seconds
 15. Repeat as necessary between PPV from your partner to bring patient back to pre-suction condition
 16. Reattach to ventilator once patient is stable
 17. If there is no need for a sputum sample, omit usage of the mucous trap.

Obtaining Sputum Specimens for Laboratory Testing

Sputum specimens will be obtained in the following situations:

- As ordered by a physician
- Ventilator patients will have sputum samples collected routinely every Monday
- To examine and plot infection control issues within the unit

Accuracy of the laboratory reports is directly dependent upon the quality of the specimen submitted. Always use sterile technique.

Specimen Collection for Nasal Washing from Oropharynx or Sputum Sample from Trachea

1. Ask your suction partner to open and insert a few drops of normal saline into the open nares.
2. Without applying suction, insert and direct the catheter into the posterior portion of the nose. With insertion, twist the catheter while applying firm but gentle forward pressure to get past the turbinates
3. When resistance is freed and the catheter has advanced, you are in the oral pharynx. If nasal washing is the only requirement, gradually withdraw the catheter with suction to pull nasal mucus into the specimen trap
4. **Once in the oral pharynx, to advance into the trachea, either:**

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5. Wait for a deep breath
6. Wait for a cough
7. Stimulate a cough or deep breath by providing intermittent suctioning
8. The vocal chords will open during a cough, cry or breath. Once the chords have opened, quickly introduce the catheter into the trachea.
9. You will feel the catheter “tug”
10. You may hear the patient’s cough echo in the suction port
11. Heart rate and saturations may drop
12. Hold trap upright to prevent secretions from going into suction canister
13. Apply suction and withdraw catheter
14. The suction catheter should be in nasopharynx or trachea no longer than 10 seconds
15. Assure patient’s pre-suction vitals signs are stable
16. Once the mucous has been obtained, wrap the catheter around the gloved right hand and disconnect the catheter from the sputum trap. Discard in a proper receptacle
17. Disconnect the sputum trap from the suction connective tubing
18. Connect the sputum trap catheter opening to the suction port to seal the contents
19. The sputum trap is now ready for labeling and transport to the laboratory

Labels

- Assure the label matches the patient name and MRUN number.
- Clearly print all information (date, time of collection, and initial) needed on the label
- Carefully place the barcode label on the specimen(s).
- Place the labeled specimen in a plastic biohazard bag.
- Place a second label (included with the printed barcode label) on the outside of the zip lock bag.
- Have clerk or R.N. send the specimen to the laboratory.

Delivery Room Suctioning

Suctioning newborns in the LDR include:

- Meconium aspiration.
 - a. used only if patient is not vigorous upon delivery
- Oral Suctioning
- Both nares for patency and clearing of secretions.

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Documentation

Patient information is documented on the ventilator flow sheet (if applicable) and the patient charting program in Affinity. Chart the following:

- Auscultation
- Thickness of secretions
- Color of secretions
- Quantity of secretions
- Any adverse reactions

References: 1) Cochrane studies: Preoxygenation for tracheal suctioning in intubated, ventilated newborn infants Pritchard M, Flenady V, Woodgate P. 2) JCAHO, 7 rules of safety.	
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