Suctioning

Key Terms

Endotracheal tube	negative pressure	Tube occlusion

INTRODUCTION:

Suctioning is the removal of sputum via placement of a sterile suction catheter into a Endotracheal tube using a negative pressure through a wall mounted suction apparatus in a sterile non-touch technique.

INDICATION:

- Patient unable to manage secretions by coughing
- Patient desaturates
- To clear the respiratory tract
- Visible or audible secretion in the endotracheal tube
- Coarse or completely absent respiration sounds on stethoscope
- Increased respiratory work
- Tube occlusion

EQUIPMENT:

- Appropriate size suction catheter
- Hand care
- Wall mounted suction apparatus
- Vaccu suck
- Mask
- Normal Saline for cleaning the tube
- 10 ml flush (Closed suction)

S.NO	NURSING ACTION	RATIONALE
1.	Assessthe signs and symptoms of airway obstruction that require suctioning	Physical signs and symptoms results from polling of secretion.
2.	Assess clients understanding of procedure	Reveals need for clients instruction and also encourages cooperation
3.	Position the patient that is comfortable for the patient (usually semifowlers)	Reduces stimulation of gag reflux, promotes client comfort, secretion drainage and prevents aspiration
4.	Monitor the patient saturation	Provides baseline saturation to determine clients response to suctioning
5.	Perform hand hygiene	Reduces transmission of microorganism
6.	Apply face mask	Reduces transmission of microorganism
7.	c To calculate correct catheter size • Multiply by 2 with the size of the Endotracheal tube then Subtract 2	Catheter size should be less than half the tracheal diameter The lowest possible pressure should be used to reduce complications
8.	Consider pre-oxygenation of patient prior to procedure. **Pre-oxygenation procedure:** Increase the inspired oxygen concentration by 50% to the patient 2 min minutes prior to procedure.	To reduce the risk of arrhythmia and hypoxia
9.	Connect suction catheter to suction unit	Check that the suction apparatus is

	and check function of suction system. • Turn on the suction apparatus. • Attach suitably sized suction catheter end to suction tubing. • Ensure that catheter is not removed from packaging. • Check that connection is secure. Close the suction port with the thumb and observe pressure on gauge. • Adjust pressure flow to achieve a vacuum pressure between 150 to 200 mmof hg for open suctioning • > 200 mm of hg for closed suction	functioning and that the vacuum pressure is set between 150 to 200 mm of hg. Elevated pressure setting increase risk of trauma to mucosa and can induce hypoxia.
10.	Don sterile hand care on dominant hand. Avoid touching anything except the catheter with it.	To avoid contamination and reduce risk of cross-infection.
11.	**<u>OPEN SUCTIONING</u>** Remove suction catheter from covering ensuring that the dominant hand with sterile glove only touches the suction catheter. Avoid touching anything else but the suction catheter.	To avoid contamination and reduce risk of cross-infection.

12.	Hold end of suction catheter with dominant sterile hand and use other hand to hold the suction catheter connection site with thumb accessible to suction port.	To enable easy access to passing the suction catheter.
13.	With suction port uncovered with thumb, introduce the end suction catheter gently down ET tube to a depth of one third of ET length	To prevent trauma and mucosal damage by the suction catheter contact on mucosa on insertion.
14.	Apply suction and withdraw the suction catheter slowly maintaining continuous suction. Avoid rotation of catheter or intermittent suctioning.	To ensure the most effective clearance of secretions.
15.	When the suction catheter is completely removed from the ET tube, release the thumb from suction port. Wrap the suction catheter around dominant hand, enclose in glove and discard.	To reduce cross infection.
16.	**<u>CLOSED SUCTIONING</u>** • Connect the vaccu suck to the closed suction catheter. • Open the suction catheter adapter	Closed suction is an effective way to prevent infection.

	and allow the suction catheter into the ET tube slowly till the last marking on the catheter against the protected cover • Apply pressure over the thumb control valve and remove the suction catheter out. • Attach normal saline flush 10ml to the side port of the closed suction system and flush the catheter by applying pressure on the valve	
17.	Do not suction for more than 10-15 Seconds	To avoid patient developing hypoxaemia due to removal of oxygen flow by suction.
18.		To detect complications of hypoxaemia and cardiac arrhythmias.

Watch out

Whilst withdrawing suction catheter observe patient for signs of complications. Signs include:-

- Reduced level of consciousness
- Pale and clamminess
- Peripheral cyanosis
- Excess coughing

Withdraw suction catheter immediately and clinically assess patient.

19.	If the secretion is significant, it is acceptable to repeat the procedure after injecting normal saline and bagging for some to loosen the secretions.	To remove the mucous plug
20.	Re-apply the patient's oxygen supply Immediately	To reduce risk of further hypoxaemia.
21.	Rinse suction tubing using normal saline.	To prevent blockage of suction tubing and prevent cross-infection.
22.	Change suction tubing once a three days or when heavily soiled.	To reduce risk of infection.
23.	Clinically assess patient for need for further suctioning.	To determine need for further suctioning.
24.	Use yankauer suction for suctioning the oral cavity	To remove the secretion
25.	Repeat above with new suction catheter & gloves until airway clear. ***NB: Allow sufficient time for recovery between each suction episode (particularly if the patient is in respiratory distress or if there are indication of a***	To enable time for patient to recover from trauma of procedure and to prevent exhaustion and distress for patient. To minimize potential complications.

	reduction of peripheral oxygenation during procedure).	
26.	Remember to wash hands after the procedure.	To avoid cross infection

Watch out

- NOT use the same catheter for oral and nasal suctioning.
- Disconnect the ventilator; remember to connect the ventilator tubing to the reservoir to prevent contamination.

DOCUMENTATION:

- Observe and document volume, consistency and color of the secretion
- SPO2 before and after suctioning
- Patients general condition
- Any complication during the procedure

PATIENT FAMILY EDUCATION:

- Encourage the patient to cooperate during the procedure
- Explain the client hoe this procedure will help clear airway and relieve breathing problems
- Explain the importance of coughing during the procedure

TROUBLESHOOTING COMPLICATIONS

COMPLICATION	ACTION	RATIONALE
Respiratory distress	• Withdraw suction catheter. • Monitor vital signs. • Consider supplementary oxygen. • Seek medical advice if respiratory distress continues.	To avoid hypoxaemia.
Reduction in level of consciousness	• Withdraw suction catheter immediate. • Assess airway. • Administer 100% oxygen. • Call for help.	
Blood stained sputum	• Report to medical staff. • Ensure correct sized suction catheter used. • Avoid insertion of catheter until resistance felt estimate approximate level of insertion of suction catheter. • Ensure suction pressures used are 13.5-20Kpa. • Ensure once suction catheter is inserted into ET it is kept moving when suction applied.	To avoid trauma to the bifurcation of the trachea. To prevent invagination of the mucosa through the catheter end and hole.
Tenacious Sputum – minimal amount on suction	• Consider use of humidification • Adjust suction pressure to • maximum of 20kpa • Take a sample of sputum for • culture and sensitivity • Inform medical staff	
Suspected occlusion or resistance in inner cannula	• Immediately withdraw suction catheter. • Remove inner cannula and inspect.	To prevent blockage of tube and subsequent respiratory arrest.

	• Replace with new inner cannula. • Seek medical advice. • If patient exhibits signs of respiratory distress perform procedure for suspected blocked ET tube.	