

**HACKETTSTOWN REGIONAL MEDICAL CENTER
CARDIOPULMONARY
ENDOTRACHEAL SUCTIONING OF MECHANICALLY VENTILATED PATIENT
(ALL AGES)**

Effective Date: March 2010

Policy No: 3B.022

Cross Referenced:

Origin: Cardiopulmonary

Reviewed Date: 3/2010

Authority: Cardiopulmonary Manager

Revised Date: 12/2012

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SCOPE

All members of the Cardiopulmonary Department

PURPOSE

To provide endotracheal suctioning of mechanically ventilated adults, children and infants with artificial airways, as ordered by patient's physician.

DEFINITION

Endotracheal suctioning is a component of bronchial hygiene therapy and mechanical ventilation and involves the mechanical aspiration of pulmonary secretions from a patient with an artificial airway in place.

Equipment:

- Necessary:
 - Vacuum source
 - Calibrated, adjustable regulator
 - Collection bottle and connecting tubing
 - Sterile disposable gloves
 - Sterile suction catheter of appropriate caliber (Diameter of the suction catheter should not exceed more than one half of the internal diameter of the artificial airway. For selective main-stem suctioning, a curved-tip catheter may be helpful.
 - Sterile water and cup
 - Sterile normal saline, if instillation is desirable
 - Goggles, mask and other equipment for Standard Precautions
 - Oxygen source with a calibrated metering device
 - Manual resuscitation bag equipment with an oxygen enrichment device
 - Stethoscope
- Optional:
 - EKG monitor
 - Pulse oximeter
 - Sterile sputum trap for culture specimen
 - Closed suction system
 - Oxygen insufflation device

Personnel:

- Personnel responsible for performing endotracheal suctioning should demonstrate the following:
 - Knowledge of proper use and assembly of all equipment used
 - Ability to recognize abnormal breath sounds by auscultation
 - Knowledge and understanding of the patient's history, disease process and goals of treatment
 - Knowledge and understanding of the basic physiology and pathophysiology of the

Approved by: See signed Authority & Approval form
month / year Committee Name

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- cardiopulmonary systems
- Knowledge and understanding of ventilation, mechanical ventilators and their alarm systems
 - Knowledge and understanding of all artificial airways
 - Ability to monitor vital signs, assess the patient's condition, and appropriately respond to complications or adverse reactions to the procedure
 - Ability to modify techniques and equipment in response to complications or adverse reactions
 - Knowledge of basic EKG interpretation
 - Ability to assess the need for and provide cardiopulmonary resuscitation
 - Ability to evaluate and document the effectiveness and patient response to the procedure
 - Knowledge and understanding of the CDC guidelines for standard precautions
 - Knowledge of signs and symptoms of decreased cardiac output, oxygenation and perfusion
 - Ability to teach patient and his/her family the procedure for home and extended care
(The patient and his/her family who are responsible for endotracheal suctioning outside the hospital should be able to return demonstration accurately on the following:
Knowledge, skill and understanding of the assembly, use, maintenance and cleaning of all equipment used; ability to assess the need for and patient response to the procedure; ability to assess the need for and provide cardiopulmonary resuscitation.

PROCEDURE

- Patient Preparation:
 - In preparation for the suctioning event, the patient should receive **hyper-oxygenation** by the delivery of 100% oxygen for more than 30 seconds prior to the suctioning event. This may be accomplished by any of the following:
 - By adjusting the FiO₂ setting on the mechanical ventilator
 - By use of a temporary oxygen-enrichment program available on many microprocessor ventilators
 - By manually ventilating the patient with an increased FiO₂
(At least one study suggests that suctioning methods that use the ventilator for oxygenation and hyperinflation may be superior to use of the manual resuscitator).
 - Practitioners should ensure that adequate PEEP levels are maintained while using this technique for patients requiring > 5 cm H₂O.
 - In preparation for suctioning, the patient may be **hyper-inflated** by the delivery of "sigh" breaths prior to suctioning. This can be accomplished by:
 - Increasing the ventilator-set tidal volume to exceed the set tidal volume
 - Manually triggering preset sigh breaths on mechanical ventilators that are equipped with a sigh feature

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-Manual ventilation with a resuscitation bag

(A closed-suction system may be used to facilitate continuous mechanical ventilation and oxygenation during suctioning event.)

- A patient may receive normal saline by instillation through the artificial airway to dilute and mobilize pulmonary secretions. The value of instilling other solutions appears to be based on anecdotal reports.
- Suctioning Procedure:
 - Qualified personnel should assess the need for endotracheal suctioning as a routine part of a patient/ventilator check.
 - The placement of a suction catheter through the airway into the trachea and the application of negative pressure as the catheter is being withdrawn. Sterile technique should be employed. Each pass of the suction catheter into the artificial airway is considered a suctioning event. The duration of each suctioning event should be approximately 10-15 seconds. Suction pressure should be set as low as possible while effectively clearing secretions.
 - The following patient parameters should be monitored prior to, during and after the procedure: breath sounds, oxygen saturation, respiratory rate, heart rate, blood pressure, if indicated and available, EKG, if indicated and available, skin color, peak and plateau pressure on ventilator, intracranial pressure, if indicated and available. The physician will be notified of any adverse reactions.
 - Sputum should also be monitored according to the follow characteristics: color, volume, consistency and odor. The physician will be notified of any changes in these from baseline.
- Care of patient following suctioning:
 - The patient should be hyper- oxygenated by delivery of 100% oxygen for \geq one minute by the same technique(s) used to pre-oxygenate the patient.
 - The patient may be hyper-ventilated by increased the respiratory rate and/or tidal volume by the same technique(s) used prior to suctioning.
 - The patient should be monitored for adverse reactions.

Indications: Endotracheal suctioning should be performed whenever clinically indicated with special consideration for the potential complications associated with the procedure. Endotracheal suctioning may be required at some minimum frequency in order to maintain the patency of the artificial airway used.

Contraindications: Endotracheal suctioning is a necessary procedure for patients with artificial airways. Most contraindications are relative to the patient's risk of developing adverse reactions or worsening clinical condition as a result of the procedure. When indicated, there is no absolute contraindication to endotracheal suctioning because the risk of patient death due to respiratory

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arrest brought about by airway obstruction outweighs all other
contraindications.

Health care providers should remain sensitive to possible hazards and complications and take all necessary precautions to ensure patient safety. Remember, secretions in peripheral airways are not directly removed by endotracheal suctioning.

Nosocomial Infection Prevention:

- CDC Guidelines for standard precautions should be strictly followed at all times.
- All equipment and supplies should be disinfected per Infection Control Policy and Procedure or discarded.