

**Respiratory Care Services  
John Dempsey Hospital  
Policy and Procedure Manual**

**Subject:** Heat and Moisture Exchanger (HME)

**Rationale:** The delivery of humidification of inspired gas to patients during mechanical ventilation support is necessary. When the upper airway is bypassed and an artificial airway present (endotracheal or tracheostomy tube), the loss of heat and moisture to the respiratory tract can result in serious airway damage (hypothermia, inspissation of airway secretions, destruction of airway epithelium, and atelectasis). The use of the heat and moisture exchanger (HME) – also known as a hygroscopic condenser humidifier or artificial nose– has proven beneficial in promoting airway humidification and heat preservation. This is accomplished by the HME’s functional design which permits the HME to passively store heat and moisture from a patient’s exhaled gas and then release it to the inhaled gas. An HME should be chosen which provides a minimum of 30mg H<sub>2</sub>O/L of delivered gas at 30°C.

**Equipment:** Heat and Moisture Exchanger (HME)

**Indications:**

1. An endotracheal or tracheostomy tube is present and humidification of inspired gas during mechanical ventilation is required.

**Contraindications:**

1. Patients with thick, copious, bloody secretions, and/or massive hemoptysis
2. Patients with an expired tidal volume less than 70% of the delivered tidal volume (large bronchopleurocutaneous fistulas or absent endotracheal tube cuffs)
3. Patients with body temperatures less than 32°C
4. Patients with high spontaneous minute volumes (>10L / min)

**Procedure:**

1. The use of an HME will be instituted as a means of delivering humidification of inspired gases to all patients requiring mechanical ventilation via an artificial airway. The HME is properly positioned between the patient’s artificial airway and the wye connector of the disposable adult ventilator circuit.

2. HMEs will be selected for short term use for those patients anticipated to require mechanical ventilation for 48 hours or less.  
In the event a patient requires continuous mechanical ventilation for a period greater than 48 hours, the HME device will be discontinued and a heated humidifier along with a heated patient wire circuit is to be provided.
3. HMEs should be visually inspected and replaced during patient-ventilator system checks if secretions are found to have contaminated the insert or filter.
4. HMEs will not be utilized for patients requiring mechanical ventilation who have thick, copious secretions and/or massive hemoptysis. If secretions become copious or appear increasingly tenacious when using an HME, then a heated humidifier and heated wire circuit should replace the HME.

**Note:**

*The use of an HME rather than a heated humidifier along with a heated patient wire circuit under the above clinical conditions will require an MD order.*

5. An HME must be removed from the patient circuit during the administration of an inline aerosol nebulizer or MDI treatment.

**References:**

1. AARC Clinical Practice Guidelines: Humidification during Mechanical Ventilation, Respiratory Care, 1992; 37:887-890.

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