EQUIPMENT

Objectives

1. Ability to define need for airway humidification.
2. Verbalize the different inhaled medication modalities.
3. Ability to properly administer inhaled medications.
4. Verbalize the process of cleaning and/or disinfecting equipment.
5. Ability to identify Vendor’s role.

A. Ventilator Humidification: maintains gas temperature at body temperature which minimizes circuit condensation which then decreases likeliness of bacteria colonization. Also, aides with secretion mobilization and prevents mucus plugging.

1. Heat and Moisture Exchanger (HME)
   • Function: during exhalation moisture and heat from patient are absorbed in the honeycomb structure of the exchanger. The heat and moisture are then transferred back to the patient during inhalation.
   • Location: placed between patient and circuit wye.
   • Facts:
     a. Most are bacterial-viral filtered (less likely to colonize bacteria) therefore decreases patient risk for infection.
     b. Low cost to maintain (disposable)
     c. Must remove or convert when administering inhaled medications

2. Heated Circuit
   • Function: wires within circuit heat gas via heater. Probes are plugged into circuit to measure temperature within circuit.
   • Location: inspiratory limb is connected to humidification container.

B. Inhaled Medication Delivery Modalities

1. Meter Dose Inhaler (MDI, puffer, inhaler)
   • Parts include:
     a. Chamber
     b. Canister
   • Equipment required to administer via ventilator:
     a. Right angle adapter within inspiratory limb
   • Delivery-actuate MDI with inhalation breath

2. Hand Held Nebulizer (HHN): Small Volume Nebulizer (SVM)
   • Parts include:
     a. Liquid medication solution
     b. Nebulizer medication cup
     c. Oxygen tubing
     d. Compressor
   • Equipment required to administer via ventilator:
     a. HHN appropriate adapter placed approximately 18 inches from airway within inspiratory limb
   • Delivery-ensure secure connection between nebulizer and inspiratory limb adapter, all air entrainments must be closed. Remember to rinse nebulizer with sterile water after every use and air dry.
C. Cleaning Equipment
1. Cleaning is performed to remove foreign particles from equipment. Cleaning needs to be performed prior to disinfecting. All respiratory equipment (nebulizers, oxygen tubing, nasal cannula and any other non-disposable equipment) should be cleaned every 48 hours.
2. Cleaning Supplies
   • Dish soap (Ivory® or Dawn®)
   • Clean dishcloth and/or brushes
   • Enzyme cleaner, when specified by manufacturer
3. Cleaning Procedure
   • Wash hands
   • Run hot tap water approximately 2 minutes to rinse impurities
   • Add dish soap or enzymatic cleaner as recommended
   • Completely take apart and soak equipment in soap/solution
   • Once solution cooled, use brush and/or dishcloth to remove foreign particles from equipment
   • Rinse with hot tap water

Disassemble equipment to ensure thorough cleaning/disinfecting.

G. Disinfecting Equipment
1. Disinfecting is performed after cleaning procedure. Disinfecting destroys harmful bacteria that can cause infections. Disinfecting procedure is also recommended every 48 hours especially when the patient has a cold or infection. Disinfecting will help prevent recontamination.
2. Disinfecting Supplies
   • White Vinegar, one part
   • Tap Water, two parts
   • Storage Container/Deep bowl with lid (5 gallon plastic container)
   • Clean towel (without lint or fuzz)
3. Disinfecting Procedure
   • Place equipment in white vinegar and water solution and cover with lid
   • Soak equipment a minimum 30minutes, however, no longer than 2 hours
   • With clean hands, remove equipment and rinse thoroughly under hot tap water
   • Air dry equipment on a clean towel (without lint or fuzz)
   • Hang tubing vertically to allow for proper drainage.

H. Vendor’s Role
1. Guidelines for equipment use
2. Maintenance for equipment
3. Assist troubleshooting equipment, not patient
4. Know where phone numbers are located and which equipment vendor is associated