POLICY STATEMENTS

A Physician’s Order is required for the administration of inhaled or aerosolized medications via facemask, Endotracheal Tube (ETT) or tracheostomy.

Aerosol treatments may be administered by Registered Nurses (RN), Registered Respiratory Therapists (RRT) and/or Physiotherapists in PICU.

GUIDING PRINCIPLES AND VALUES

Inhaled medications can improve alveolar gas exchange and optimize the patient’s respiratory status minimizing the need for advanced respiratory support.

PROTOCOLS

The RRT assigned to PICU will be responsible for set-up and maintenance of aerosol equipment.

Prior to initiation of aerosol therapy a respiratory assessment will be performed by the RRT, RN or Physiotherapist.

If a patient is on a ventilator, metered dose inhalers (MDI) should be used unless continuous treatment is required or medication not available as an MDI. If continuous aerosol treatment is required it will be done with a Vibrating Mesh Nebulizer (VMN).

If a patient is on high flow nasal cannula (HFNC) then aerosols will be given with a VMN.
EQUIPMENT

- Medication as ordered by Physician.
- Aerosol Nebulizer or MDI with Spacer for non-intubated patients.
- Dual Spray Mini Spacer for intubated patients.
- Aerogen Vibrating Mesh Nebulizer (VMN) and appropriate accessories for continuous aerosols in a ventilator or High Flow Nasal Cannula (HFNC) circuit.

PROCEDURE

Complete the following steps 1 to 3 prior to each of the procedures that follow:

1. If condition allows, place patient in semi Fowler’s position.
2. Note patient’s vital signs and auscultate chest pre and post treatment.
3. Document chest auscultation and vitals on the patient’s chart and the medication on the Medication Administration Record (MAR).

Aerosol via Face Mask

4. Fill nebulizer with prescribed medication and diluent or pre-mixed nebule as per Physician’s Order.
5. Attach oxygen (O₂) tubing to nebulizer and to nipple on O₂ flowmeter.
6. Attach nebulizer to face mask and place on patient’s face.
7. Turn O₂ flowmeter on to 5-8 liters per minute to ensure adequate nebulization demonstrated by a mist formation.

Metered Dose Inhaler (MDI) with Spacer

4. Choose appropriate spacer for patient (i.e. Mouthpiece or appropriate size mask).
5. Remove cap from MDI and shake for 30 seconds.
6. Place MDI with tail up with its mouthpiece inserted into the rubber opening of the Spacer.
7. Have patient place mouthpiece of space in mouth. If using mask, place face mask on patient’s face and ensure a tight seal.
8. Press down on MDI to release a “puff” of medication and instruct patient to take in 6 slow deep breaths through their mouth. Observe movement of the thin membrane on top of mask or spacer that will fluctuate with breathing if there is a good seal. Note: If the Spacer whistles then the breath is too fast so instruct patient to take slower breaths.
9. If more than 1 puff is ordered, wait 30 seconds, shake and repeat steps.

Metered Dose Inhaler with Ventilated Patient

4. Insert dual spray mini spacer with port facing up, between ventilator and patient’s endotracheal tube (ETT) or tracheostomy (trach).
5. Shake MDI for 30 seconds and insert into uncapped port.
6. Press down on MDI at the beginning of an inspiration and observe if medication goes towards ETT or trach. If medication doesn’t go towards patient and enters exhalation limb immediately, then don’t count that as a puff and repeat the puff.
7. If a patient requires more than 1 puff then wait 30 seconds, shake and repeat.
8. If desired you may cap the port of the mini spacer and leave inline for multiple treatments.

**Intermittent Inline Aerosol with a Ventilated or HFNC Patient**

4. Place VMN inline in appropriate location according to Appendix A.
5. Open the plug on the nebulizer and add the medication to the nebulizer direct from an ampule or from a syringe **without a needle** as needles will damage the nebulizer. **The maximum capacity of the nebulizer is 6 mL.**
6. Close the plug and start the 30 minute nebulization by pressing the on/off power button once. The green 30 minutes indicator light will illuminate. The nebulizer and light will turn off after 30 minutes.
7. The nebulizer and Tee may be left inline and medication can be added during ventilation or flow without causing a leak.

**Continuous Inline Aerosol with a Ventilated or HFNC Patient**

4. Place vibrating mesh nebulizer inline in appropriate location as per Appendix A.
5. Assemble the continuous nebulization medication syringe and tubing specific to the VMN.

6. Prime the tubing (approximately 3.5 mL) with the syringe medication and connect it to the VMN in the circuit.
7. Insert the medication syringe into the syringe pump (use BD Plastipak setting) and program drug library using “salbutamol inhalation” which will default to an infusion rate of 12 mL per hour.
8. Periodically check the medication level in the nebulizer to ensure the fill rate does not exceed the output rate of the nebulizer.
9. To start the continuous medication cycle press and hold the On/Off power button for 3 seconds. Verify that the green “continuous nebulization” indicator light illuminates.
10. Observe the nebulizer for correct operation. During continuous operation the medication is nebulized drop by drop. Nebulization should be visible with regular intermittent pauses. The medication level in the chamber should not rise during use.

REFERENCES


RELATED DOCUMENTS

Appendices

Appendix A – Position of Vibrating Mesh Nebulizer (BMN) in Various Applications

Policies

20.05 Administration of Medications

Forms

IWK-10.11 Medication administration Record(s) (cMAR)
Appendix A

Position of Vibrating Mesh Nebulizer (VBN) in Various Applications

VMN in small ventilator circuit

VMN in large ventilator circuit (pre humidifier)
VMN in large HFNC circuit (pre humidifier)

VMN in neonatal HFNC
VMN in Optiflow Junior HFNC
District Health Authority/IWK Policies Being Replaced

(Please List)

Version History

(To Be Completed by the Policy Office)

<table>
<thead>
<tr>
<th>Major Revisions (e.g. Standard 4 year review)</th>
<th>Minor Revisions (e.g. spelling correction, wording changes, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>December, 2016</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>