Metered Dose Inhaler (MDI) Treatment via Ventilator

**Purpose**
To standardize delivery of respiratory care medications to patients requiring mechanical ventilation.

**Accountability**
May be administered by a Licensed Respiratory Care Practitioner with understanding of age specific requirements.

**Physician's Order**
The written physician’s order must include:
- Type of medication.
- Amount/dose to be delivered in micrograms or puffs.
- Frequency/duration.

**Indications**
Demonstrated reversibility of airway obstruction with bronchodilator medications secondary to bronchospasm.

**Goals**
- Improved drug efficacy.
- Improved dosing accuracy.
- Easier, more rapid administration.
- Improved ventilator safety.
- Reduced nosocomial risk.
- Reduced cost.

**Contraindications**
- Documented cardiac sensitivity to Beta agonist bronchodilators.

**Equipment**
The Metered Dose Inhaler of medication is to be kept in patient's assigned medication drawer and labeled with patient’s information.

Metered dose delivery system to include the following:
- Ventilator - specific MDI spacer, placed in-line with the patient ventilator circuit on the inspiratory side of the patient wye.

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Verify Physicians order: type and dosage (number of puffs) of medication, frequency and any other specifics to the therapy to be performed.</td>
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### Procedure Continued

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<tr>
<td>2</td>
<td>Review the patient's chart, nursing, and Respiratory Care Services documentation in Epic to obtain pertinent information regarding the patient's disease state, present condition and previous response to bronchodilator.</td>
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</tbody>
</table>
| 3    | Wash hand thoroughly.  
  - Don gloves and any other protective devices as required by Hospital Epidemiology Department.  
  - Identify patient using two identifiers. |
| 4    | Check expiration date of medication canister, return to pharmacy and have replaced if expired. |
| 5    | Patient Assessment  
  - Heart rate  
  - Respiratory rate  
  - Skin color  
  - Breath sounds  
  - Chest excursion  
  - Mental status  
  - Airway status  
  - Airway resistance |
| 6    | Auscultate patient's chest and perform endotracheal suctioning if necessary. Lungs should be as clear as possible prior to treatment to enhance delivery and absorption of medication. |
| 7    | Explain procedure to the patient, as appropriate. |
| 8    | The patient should be in a Fowler's position or with the head of bed elevated. |
| 9    | Shake canister vigorously prior to use. |
| 10   | Connect MDI canister to airway adapter and place in ventilator circuit. |
| 11   | Deliver a puff of medication from the MDI canister during inspiratory phase of ventilation. |
| 12   | Pause for a minimum of 30 seconds to one minute before
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<tr>
<td>13</td>
<td>Repeat step 11 and 12 as prescribed by the physician.</td>
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<td>14</td>
<td>Remove MDI from spacer adapter and leave spacer inline with circuit.</td>
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<td>15</td>
<td>Repeat patient assessment.</td>
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<tr>
<td>16</td>
<td>Patient should not be lavaged and suctioned following treatment unless it is indicted (allowing for absorption of medication).</td>
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</tbody>
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### Undesirable Side Effects
- Tachycardia
- Palpitation
- Headache
- Nausea

### Assessment of Outcome
The effectiveness of Metered Dose Inhaler treatment will be judged on how well it accomplishes the stated clinical goals. Observation of the following should be noted in Epic per RCS Policy # 7.1.1:

Includes, but is not limited to:
- Sputum - color, amount, consistency.
- Auscultation - comparison of pre- and post-treatment breath sounds; breath sounds improved.
- Arterial blood gas measurement and/or pulse oximetry.
- Adverse reactions and response to therapy.
- Change in heart rate.
- Pre and post compliance and airway resistance measurements.

### Infection Control
Follow procedures outlined in Healthcare Epidemiology Policies and Procedures #2.24; Respiratory Care Services.

References


<table>
<thead>
<tr>
<th>Metered Dose Inhaler Treatment Via Ventilator</th>
<th>Formulated: 01/92</th>
<th>Effective: 2/03/95</th>
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<td>Revised: 12/03/14</td>
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