### PROCEDURE (TASK): AEROSOL DRUG ADMINISTRATION

#### PEDIATRIC/NEONATAL IN LINE

#### I. KEY PERFORMANCE ELEMENTS

<table>
<thead>
<tr>
<th>Procedural Element (Step):</th>
<th>Description of Satisfactory Performance:</th>
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<tbody>
<tr>
<td>5. Preassesses patient (objective and subjective) to establish baseline values.</td>
<td>To include: - assesses vital signs; - auscultates patient's thorax; - measures SaO₂/TcPO₂ when applicable</td>
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<tr>
<td>6. Connects aerosol generator to appropriate gas source.</td>
<td>Selects/insures F₁O₂ equivalent to that being received.</td>
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<td>15. Checks patient's vital signs, observes response.</td>
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</table>
16. Modifies technique to deal with adverse patient response. Decreases aerosol density if severe cough or increase in wheeze, bronchospasm develop. Discontinues therapy if dyspnea, tachycardia, or desaturation develop. Notifies appropriate personnel of untoward patient response.

18. Encourages patient cough (if applicable) Coaches patient to achieve appropriate cough without deleterious effects:
- provides incisional support (post-op patients);
- insures deep inspiration;
- solicits maximum effort;
- repeats/modifies as necessary using adjuncts/techniques appropriate to patient.

FOLLOW-UP


II. REQUISITE PERFORMANCE VARIABLES:
The student is expected to demonstrate proficiency in aerosol drug administration

- with the following drug aerosol generators:
  self-propelled metered cartridges
  hand-bulb powered jet nebulizers
  gas powered (compressed air/oxygen) medication nebulizers
- utilizing the following aerosol drug categories:
  bronchodilators
  mucolytics
  antibiotics
- employing either multiple or unit dose medication systems

III. ADDITIONAL EVALUATION CRITERIA: None
IV. **ORAL REVIEW QUESTIONS**

1. What are the clinical indications for the procedure performed?

2. What potentially beneficial and detrimental physiological effects can result from performance of this procedure?

3. What are the common contraindications for this procedure?

4. What objective and subjective means can be used to assess achievement of the desired therapeutic outcomes of this procedure (relate patient pathophysiology to intended goals)?

5. What possible alternatives are there to the therapy instituted? What are their advantages/disadvantages?

6. What is the principle of operation and functional characteristics of the equipment utilized for this procedure?

7. For the pharmacological agent administered:
   - What is its normal dosage (volume/weight)?
   - What is its action?
   - What are its side effects/hazards?
   - What contraindications apply to its usage?
   - How can its desired action be assessed?

V. **SCENARIO QUESTIONS**

1. You are delivering 5mg (0.1ml of 5%) metaproteronol via a small volume nebulizer (SVN) to a 33Lb (15Kg) pediatric patient. Before the treatment began the patient's heart rate was 84/min. The heart rate is now 112 beats/min. What may have caused the increased heart rate, what should be your immediate reaction, and what recommendation would you make to the physician regarding the therapy.

2. You have an order for medicated aerosol with 0.5ml of 0.5% albuterol per small volume nebulizer for a 44 lb (20Kg) 5 year-old patient on the pediatric floor. During the pre-treatment assessment of the patient you notice that the patient has a prolonged inspiratory phase and inspiratory stridor. What changes in orders might you recommend to the physician? State the rationale for these changes.

3. A physician wishes to deliver a bronchoactive drug to one of his pediatric patients. He asks you to recommend the modality by which the drug would best be delivered. What assessments would you make and what results would you expect if SVN therapy was indicated?

4. You've finally graduated from the program and now you are a bonafide practitioner. The next thing you know you have a first-year student tagging along with you. The student asks how to determine the drug dosage for a pediatric patient if you know the patient's age or weight. How would you respond to this question?
**STUDENT:**  

**COURSE:**

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**KALAMAZOO VALLEY COMMUNITY COLLEGE**  
**RESPIRATORY THERAPY PROGRAM**  
**PROFICIENCY EVALUATION**

**PROCEDURE (TASK): AEROSOL DRUG ADMINISTRATION - PEDIATRIC/NEONATAL IN LINE**

- ☐ THERAPEUTIC PROCEDURE
- ☐ NON THERAPEUTIC PROCEDURE

- ☐ CLINICAL
  - ☐ NEW PATIENT
  - ☐ REPEAT PROCEDURE

- ☐ COLLEGE LABORATORY
  - ☐ PEER APPLICATION
  - ☐ MANIKIN/ANALOG

**EQUIPMENT UTILIZED:** In line with Pediatric/Neonatal Ventilator

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**STEPS IN PROCEDURE OR TASK:**

**EQUIPMENT AND PATIENT PREPARATION**

1. Selects, gathers, and assembles appropriate equipment. Assures asepsis.
2. Verifies, interprets, and evaluates physician's order
3. Identifies patient, self, and department
4. Explains procedure and confirms patient understanding

**IMPLEMENTATION AND ASSESSMENT**

5. Preassesses patient to establish baseline values
6. Connects aerosol generator to appropriate gas source
7. Determines and measures dosage of drug/diluent
8. Adds prescribed drug/diluent to nebulizer chamber
9. Initiates gas flow
10. Tests equipment for proper function
11. Properly positions patient
12. Applies modality to patient, insuring maximum safety/comfort
13. Instructs, encourages, and insures proper breathing pattern
14. Adjusts gas flow/aerosol output to maximize therapeutic benefit
15. Checks patient’s vital signs, SaO₂ and observes response
16. Modifies technique to deal with adverse patient response
17. Terminates therapy when complete dosage is administered
18. Encourages cough, collects and examines any sputum
19. Conducts post assessment, compares results to baseline values

**FOLLOW-UP**

20. Maintains and processes equipment
21. Records pertinent data in patient's chart
22. Notifies appropriate personnel

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Proficiency Eval. #10 (Aerosol Drug Administration - Pediatric/Neonatal) - 100
Upon completion the student will be able to answer oral review questions and discuss clinical scenarios related to the following cognitive objectives:

1. Classify any medication given via aerosol, state the correct dose range for the medication in both volume and weight, and state the hazards of the medication.
2. Recognize and take appropriate action in the event of a patient's adverse response to therapy.
3. Describe the proper respiratory pattern for the most effective penetration and deposition of aerosol particles.
4. State the indications for aerosol therapy that apply to the patient being treated in this proficiency or those that apply a patient in a scenario.
5. Describe other methods of delivering medications to the tracheal-bronchial tree, and describe the indications, advantages, and disadvantages of each of these methods.
6. Describe various methods for assessing the patient's cardiopulmonary status before and after a treatment is given.
7. After collecting or being given the necessary information, use a bronchial hygiene assessment protocol or algorithm to determine the best method for delivering medication to a patient or if the medication is indicated.

<table>
<thead>
<tr>
<th>Skill evaluation</th>
<th>Oral Review</th>
<th>Specify Deficiencies:</th>
<th>Evaluator Data</th>
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<tbody>
<tr>
<td>Ability to perform applicable steps in procedure as listed on the front of form without error or omission.</td>
<td>Knowledge of the cognitive objectives listed above.</td>
<td>Specify applicable skill steps that were omitted or done erroneously. Also note any errors in discussing cognitive objectives. Please give enough detail to allow the student to work on specific remediation.</td>
<td>Please sign your name and state your affiliate name.</td>
</tr>
</tbody>
</table>

Date:

Satisfactory

☐ Ready for minimally supervised clinical application

☐ Requires additional clinical practice. Repeat skill evaluation. See deficiencies.

☐ Answers oral review and other theory questions correctly

Unsatisfactory

☐ Require repeat oral review. See deficiencies

Evaluator Data:

Signature

Affiliate

☐ Ready for minimally supervised clinical application

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Unsatisfactory

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Evaluator Data:

Signature

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