

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

Subject: Small Volume Nebulizer (SVN) Aerosol Treatments

Rationale: Used to promote aerosol therapy which is the delivery aerosolized particles to the pulmonary system for therapeutic purposes. It is the purpose of aerosol therapy to deliver specific medication/agents (bronchodilators, decongestants, mucus controlling, anti-inflammatory, or anti-infective agents) to a patient that is inspired by the patient and targeted to the respiratory system. Particle size ranges between 1-10 μ m are dispersed with deposition within the airway and lung periphery.

Benefits:

1. Aerosol doses are smaller than those for systemic treatment
2. Rapid onset of drug action
3. Drug is targeted directly to respiratory system
4. Fewer or less severe systemic side effects than oral or parenteral therapy
5. Convenient and painless

Indications:

1. Relief of bronchospasm – bronchoconstriction
2. Promote bronchodilation
2. Airway inflammation
3. Mucosal edema
4. Mobilization of bronchial secretions
5. Hydrate secretions
6. Deliver pharmacologic agents

Contraindications:

1. Unstable cardiac status
2. Cardiac Arrhythmias
3. Hypersensitivity or allergy to drug

Outcome Criteria:

- Improvement on exam of wheezes or air movement
- Improvement of Peak Flow or FEV₁ >15%
- Improved mobilization of sputum during or after treatment

Equipment Needed:

1. Stethoscope
2. Small Volume Nebulizer
3. Medication
4. Small bore connective tubing
5. Aerosol Face Mask (optional) / Trach mask (optional)
6. Air or Oxygen flow meter with appropriate nipple adapter
Note: An air flow meter should be used for those COPD patients on O₂ Drive
7. Plastic Treatment/Equipment Setup Bag

Procedure:

1. Obtain the necessary equipment in the respiratory therapy equipment room or designated respiratory supply cabinet for the unit. Proceed to the patient's nursing unit.
2. Read the patient's order sheet for the doctor's specific instructions. Verify medication dosage, frequency, and duration of therapy, if specified. Review the patient's chart for admission diagnosis, medical history, therapeutic indications and possible contraindications. Verify the patient's name, DOB, and bed location.
3. Proceed to patient's bed, introduce yourself, and explain what you are about to do and that it has been ordered by the patient's doctor. Check the patient's name and DOB verbally and by the patient's wrist band. Be reassuring.
4. Explain the desired outcome goal for the treatment. Explain what the patient must do to receive the treatment and that specific instructions will be provided to promote the desired effect and administration of the nebulizer treatment.
5. Wash your hands. Observe universal precautions.
6. If the patient requires suctioning, suction in accordance with departmental policy and procedures.
7. If a patient is asthmatic, measure and record Peak Flow pre and post treatment.
8. Connect flow meter with nipple adapter to gas source outlet. Attach one end of the small bore connective tubing to the nipple adapter and the other end to the inlet port of the Small Volume Nebulizer (SVN).

Either a mouthpiece or aerosol face mask will be attached to outlet port of SVN. (A trach mask will be used for tracheotomy patients)

9. Position patient so that the nebulizer will be in a vertical position when either the mouthpiece or aerosol face mask is being used by the patient. Patient should be sitting as straight as possible, semi-fowler position preferably.

Note: Medication will not nebulize properly if the nebulizer is tilted too much. In patients who are unable to sit up for the nebulizer treatment, a length of aero tubing between the face mask and the nebulizer will assist in providing the necessary leeway to ensure the proper positioning of the nebulizer.

10. Instruct patient in proper techniques for effective Rx (i.e. breathing pattern, inspiratory depth, and breath holds.
 - For aerosol treatment with mouthpiece, instruct patient to inspire/exhale aerosolized medication (mist) through the mouthpiece with closed lips around mouthpiece to maintain seal.
 - For aerosol treatments with aerosol face masks, instruct patient to inspire/exhale aerosolized medication (mist) through a slightly open mouth.
 - The pattern of their breaths (inhalation/exhalation phase) during the treatment period will be slow, normal depth (normal tidal breath volume - $V_T < .5L/sec$).
 - Periodically the patient will provide slow, deeper breaths (approaching TLC) with a breath hold performed for 4-10 seconds as patient tolerates.
11. Record respiratory clinical assessment of patient before Rx on the patient's Respiratory Care Treatment sheet located on the patient's bedside clipboard (be sure to include breath sounds, heart rate, respiratory rate, cough and secretions assessment, SaO₂ , supplemental O₂/delivery device, and peak flow if applicable).
12. Place the prescribed medication into the SVN, attach either aerosol face mask or mouthpiece with T-piece to the SVN outlet port, properly position device. Turn the flow meter to a recommended flow rate of 6 – 8 lpm.
13. Observe the aerosol mist generated to be sure the nebulization is adequate and, if necessary, adjust the flow rate.

14. Observe the patient for any signs of hyperventilation or adverse reactions to medications. Treatment time generally is less than 10 minutes. Instruct patient and encourage patient to cough so as to raise secretions. Suction, if necessary, in accordance with departmental policy and procedures.

(If adverse medication reaction occurs, immediately stop treatment. Notify nurse and physician)

15. At the end of the treatment, remove the nebulizer from the patient, shut off the flow meter. Disconnect the connective tubing from the flow meter. Disassemble SVN, removing any residual medication remaining. Rinse SVN and mouthpiece/T-Piece(or aerosol mask) with water (shaking out excess moisture). Store the setup at the patient's bedside in the Treatment/Equipment Setup Bag (which is clearly marked with the patient's name, room/bed location, and date equipment dispensed) so it will be ready for the next scheduled treatment.
16. Record respiratory clinical assessment of patient post Rx on the patient's Respiratory Care Treatment sheet located on the patient's bedside clipboard (be sure to include breath sounds, heart rate, respiratory rate, cough and secretions assessment, SaO₂ , supplemental O₂ /delivery device, and peak flow if applicable).

If your assessment indicates that the patient's treatment orders should be changed or that therapy should be discontinued, document your assessment and recommended changes in the progress notes section of the patient's chart. Notify ordering physician of same and request his review of your recommendations.

(Therapy must not be discontinued or modifications made unless a written order is placed in the Physician's Order section of the patient's chart)

17. Review Outcome Criteria.
If the outcome criteria are not met, reassess patient for appropriateness of therapy and present your findings to the ordering physician. If your assessment indicates that therapy is not appropriate for this patient at this time but the physician does not agree, do the therapy as ordered but contact the Medical Director for the review of appropriateness.
18. Properly document respiratory charges for equipment and therapy, record treatment in the MAR.

References:

1. AARC Clinical Practice Guidelines – Selection of Aerosol Delivery Device
2. Respiratory Care 1992; 37:891-897
3. Respiratory Care: A Guide to Clinical Practice, Fourth Edition 1998
4. Rau, Jr. Joseph L. Respiratory Care Pharmacology, Fourth Edition, 1994 , Mosby-Year Book, Inc.
5. Rau, Jr. Joseph L. Quick Reference to Aerosolized Agents in Respiratory Care, Fourth Edition, 1994, Mosby-Year Book, Inc.

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