

Respiratory Care Services John Dempsey Hospital Policy and Procedure Manual

Subject: Aerosolization of Pentamadine

Rationale: Use of Pentamadine to treat pneumocystis pneumonia has been hampered by toxicity from that medication to organs such as the kidney. Aerosolizing the drug and delivering it directly to the alveolar space is effective and has fewer side effects. However, in order to reach the alveoli droplet size and delivery must be precise, and the drug's ability to cause bronchospasm requires caution and careful observation by the therapist delivering the medication.

Equipment:

Air flow meter with nipple adaptor (an oxygen flow meter should be used for patients on continuous nasal oxygen).

Filtered Nebulizer System or Respigard II Nebulizer System (Micronebulizer)

Bronchodilator administered via MDI

One vial of 300 mg Pentamadine (dependent on physician order)

One 10 ml vial sterile water for injection, USP

12 ml syringe with 18 gauge needle

50 psi gas source

Peace Medical Demistifier Unit

Chair

Chair Canopy

- Procedure:**
1. Gather all necessary equipment from the Respiratory Therapy equipment room. The Pentamadine and the bronchodilator MDI can be obtained from the Pharmacy.
 2. Explain the procedure to the patient.
 3. Assemble equipment in the patient's room or, for outpatients, in the treatment room in the Respiratory Therapy department.
 4. Put on your personal protective equipment - your specially fitted mask, gown and gloves.
 5. Put on goggles. Reconstitute Pentamadine.
 6. Have the patient put the mouthpiece in their mouth and adjust gas flow for a good mist (approximately 6 lpm).
 7. Instruct the patient to breathe normally and to inhale and exhale through their mouth.
 8. Nebulize 4 of the 6 ml in the nebulizer. Treatment time varies from 15 - 30 minutes depending upon patient tolerance.
 9. At the end of the treatment discard the nebulizing device and the canopy in Red Bag Waste. Wipe down the chair and the demistifier with alcohol.

Special Notes:

Therapists are to be in attendance during the course of the treatment. If the patient should want to take a break or the patient starts coughing, the therapist is to turn off the gas flow to the nebulizer. There have not been any studies on the effect of aerosolized Pentamidine on normal human lungs. However, high doses of aerosolized Pentamidine in rats showed no ill effects and no histopathologic evidence of airway inflammation or damage. No adverse effects are expected but in order to be on the safe side Pentamidine is not to be aerosolized in an open environment. The Peace medical Demistifier unit is to be used. Clinical experience has shown that the extra time it takes to nebulize the last 2 ml of the total 6 ml of Pentamidine is poorly tolerated by the patient due to fatigue. Treatment should cease after approximately 4 ml has been administered. A recent study has documented that after 21 days of aerosol therapy serum Pentamidine levels are negligible. Therefore the systemic side effects of Pentamidine as seen in parenteral administration have not been found.

Complications:

1. Bronchospasm - Aerosolization of Pentamidine may cause bronchospasm. This has been noted in some patients who have a history of smoking. If this occurs, **STOP and administer bronchodilator, then continue therapy.** The next time therapy is due, pretreat patient with a bronchodilator before administering Pentamidine.
2. Coughing - This has also been noted for the same population of patient's as described above. If this occurs treat as above. In some instances, slowing the gas flowrate to 4 - 5 lpm has helped.
3. Fatigue - Some patient's experience fatigue from concentrating on breathing through the device or due to their disease. **Allow the patient to take a rest during the therapy. During rest breaks the gas flow is to be turned off so that the Pentamidine will not be aerosolized into the atmosphere.**
Burning Sensation - Some patients experience a burning sensation in the back of their throat during the latter part of therapy. Stop therapy and have the patient drink some liquid then resume aerosolization. At the end of therapy, have the patient drink some more liquid. The burning sensation should stop.

Note: Notify the physician if any complications occurred during treatment and note it in the patient's chart.

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