Metered Dose Inhaler Treatment

Purpose

To standardize the delivery of aerosolized medication to the lungs using a Metered Dose Inhaler (MDI) and the appropriate spacing device to enhance deposition

Scope

Respiratory Care Services will provide therapy for the aerosolization of pharmacological agents to maintain airway patency and provide clearance of retained secretions.

Audience

- May be administered by a Licensed Respiratory Care Practitioner with minimal supervision of the Team Leader with understanding of age specific requirements.
- Training must be equivalent with the minimal Therapist entry level in the Respiratory Care Service.

Physician's Order

The written physician's order must include:

- Type of solution/medication.
- Amount/dose to be delivered in micrograms or puffs.
- Frequency/duration.
- Mode of administration

Guidelines for mode of administration:

- On a coherent patient without facial injuries, the preferred method is with a spacer and mouthpiece.
- For patients with facial injuries, children and infants, use a spacer with mask.
- For patients with laryngectomy or tracheostomy, use a spacer with necessary adapters.

Indications

- Demonstrated reversibility of airway obstruction with bronchodilator medications secondary to bronchospasm.
- The patient is able to understand and cooperate with the correct use of a Metered Dose Inhaler and spacer.
- Patients that currently use or will be using Metered Dose Inhalers as part of their home care regime.

Goals

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

Contra-indications

- Adverse side effects of medications.
- Patients in extreme distress with increased work of breathing and inspiratory flow too low to inhale from the MDI.

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Equipment

- Metered Dose Inhaler, to be kept in the patient's medication drawer at the nurse's station.
- Appropriate spacer device, to be kept at the patient's bedside.
- Plastic bag to store spacer device at bedside.

Procedure

Step	Action
1	Verify physician's order sheet and patient's I.D.
2	Wash hands thoroughly.
3	Explain purpose of therapy and procedure to the patient.
4	Shake canister vigorously prior to use.
5	Connect MDI canister to appropriate spacer device.
6	Position patient in semi-Fowler's sitting position as tolerated.
7	Monitor patient's respiratory rate and pulse and auscultate patient's chest prior to beginning treatment.
8	Methods of Administration: Via Mouthpiece: • Instruct the patient to breathe out fully, then immediately place the mouthpiece of the spacer device over the tongue and well into the mouth. Close the lips tightly around the mouthpiece. As the patient inhales deeply, have them press the top of the canister firmly between the fingers and thumb to discharge the drug. • Instruct the patient to continue inhaling to carry the aerosol deep into the lungs and hold the breath as long as is comfortable. • Release the pressure on the canister and remove the spacer from the mouth and breathe out gently. • If multiple puffs are ordered, wait at least 1 minute after each puff and then repeat procedure, shaking the inhaler each time. Via Spacer with Mask: • Apply to appropriately sized spacer with mask to the patient's face. • Observe the thin membrane window on the mask, movement is seen with a good seal. • Follow procedure for use with a mouthpiece.

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Procedure Continued

Step	Action
8 Continued	Via tracheostomy or endotracheal Tube: • Attach the MDI spacer directly to tracheostomy or endotracheal tube using the necessary adapters. • To assist patient with taking a deep breath, attach a resuscitation bag to the spacer using necessary adapters. • Shake canister vigorously prior to use. • Insert canister into the spacer device. • As a breath is being given using the resuscitation bag, depress the canister to administer the mediation. • If multiple puffs are ordered, wait at least 1 minute after each puff and then repeat procedure, shaking the inhaler each time.
9	Stay with the patient for duration of treatment.
10	Monitor patient's RR and pulse during and after treatment; notify physician of any significant changes.
11	Encourage any spontaneous cough during treatment and ask patient for voluntary cough following treatment. Note patient's effort and sputum production.
12	Auscultate the patient's chest.
13	Place spacer device in plastic bag to be kept at the patient's bedside.
14	Document in Epic as outlined in RCS Policies # 7.1.1 and # 7.1.2.

Discontin-uation

Patients will be evaluated after every treatment. If the patient is not able to perform independently, therapists will continue therapy, reinstructing and reinforcing training until patient is able to perform correctly. A respiratory therapist will continue giving treatments for patients with tracheotomies or using a mask.

Undesirable Side Effects

- Bronchospasm from the aerosol droplets and certain medications.
- Adverse side effects of medications.

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Assessment of Outcomes

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 on the RCS flow sheet and in the patient progress notes.

Patient Teaching

Step	Action
1	Explain to the patient why he/she is receiving Metered Dose Inhaler treatment. Relate it to the disease or injury state.
2	Show the proper body alignment for maximal breathing efficiency.
3	Perform proper cough instruction or cough assistance.
4	Explain how to breathe through the mouth or tracheostomy and to breathe slowly and deeply - a slight inspiratory pause is ideal.
5	Show how to breathe diaphragmatically to assure that the maximum distribution and deposition of aerosol will occur in the basilar areas of the lung.
6	Alert patient to possible onset of strong cough.
7	As a result of the educational aspects of this therapy, the patient should be able to verbalize and demonstrate understanding of this therapy.

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Infection Control

To decrease risk of Candidiasis, the patient will be instructed to rinse mouth after treatment.
Follow procedures outlined in Healthcare Epidemiology Policies and Procedures #2.24; Respiratory Care Services.
http://www.utmb.edu/policy/hcepidem/search/02-24.pdf

References

AARC Clinical Practice Guidelines: Delivery of Aerosols to the Upper Airway, Respiratory Care, 1994; 39(8): 803-807

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