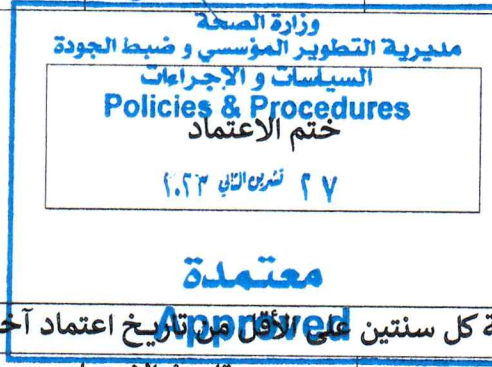




وزارة الصحة
سياسات واجراءات

MOH	POL	HOS	RT	06	رمز السياسة:	اسم السياسة: Nebulizer Therapy POLRSP
عدد الصفحات: 8 صفحة						الطبعة: الأولى

الوحدة التنظيمية: مديرية التطوير المؤسسي وضبط الجودة		
الجهة المعنية بتنفيذ السياسة: شعبة المعالجة التنفسية		
الاعداد:	التوقيع:	تاريخ الاعداد: ٢٠٢٣ / ١١ / ١١
لجنة تطوير واستحداث وحدات المعالجة التنفسية في مستشفيات وزارة الصحة	التوقيع:	
	التوقيع:	
	التوقيع:	
	التوقيع:	
	التوقيع:	
المراجعة: قسم إدارة الجودة / شعبة سلامة المرضى	التوقيع:	تاريخ المراجعة: ٢٠٢٣ / ١١ / ١١
التدقيق من ناحية ضبط الجودة: مدير مديرية التطوير المؤسسي وضبط الجودة	التوقيع:	تاريخ تدقيق ضبط الجودة: ٢٠٢٣ / ١١ / ١١
الاعتماد: عطوفة الأمين العام للشؤون الإدارية والفنية	التوقيع:	تاريخ الاعتماد: ٢٠٢٣ / ١١ / ١١



تتم مراجعة السياسة كل سنتين على الأقل من تاريخ اعتماد آخر طبعة:		
مبررات مراجعة السياسة	تاريخ الاعتماد	رقم الطبعة

ختم النسخة الاصلية

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1- Policy:

The delivery of therapeutic aerosols is an important component of treatment for many respiratory disorders. The advantages of aerosolized therapy include delivery of medication directly to the site of action, potentially faster onset of action, and reduced systemic availability to minimize adverse effects of the medication.

2- Purpose:

To ensure the safe and effective delivery of inhaled medications for the treatment and relief of symptoms caused by respiratory disease.

3- Policy:

1. Nebulizer therapy should be ordered by physician. The order must include frequency and dose of medication.
2. Any change or discontinue of nebulizer therapy should be ordered by the physician.
3. Nebulizer should not be ordered for treatment of hyperkalemia unless requested by the critical care attending.
4. Nebulizer should be signed on medication sheet once administrated or signed via BCMA (Bar Code Medication Administration) at bedside.
5. All Nebulizers should be done within two hours before/after the appointed time.
6. Antibiotics nebulizer should be administrated one hour before or after the appointed time.
7. Antibiotics nebulizer should be administrated using Aerogon nebulizer.
8. The initial dose of nebulizer should be given once ordered then upon its frequency.
9. Inhaler (MDI and DPI) for non-ventilated patients should be administrated by the assigned nurse.
10. The oxygen therapy should be resumed by the respiratory therapist after nebulizer administration.
11. The maximum possible frequency for nebulizer therapy is every four hours for floor patients.
12. The drug should not be mixed with another nebulized solution unless it compatible with each other.

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13. Mixing of nebulizer solutions should only be used immediately, and should be discarded if precipitation, turbidity or color changes occur. Three-way mixes are not recommended.
14. When mixing nebulized medications, freshly opened, single use formulations should be used.
15. If the nebulized drug requires dilution, the diluent should be 0.9% sodium chloride (Water for injection should not be used as it may cause bronchoconstriction if nebulized).
16. RT should monitor patient's respiratory rate and pulse during and after treatment when possible, and notify physician of any significant changes or presence of side effects.

4- Scope:

This policy is applicable to respiratory therapy unit.

5- Responsibilities:

It is the responsibility of respiratory therapist to administer nebulizer therapy for inpatients except emergency department and outpatients clinics.

6- Definition:

1. Delivery of solid or liquid aerosol particles to the respiratory tract for therapeutic purposes.
2. Common types of aerosol generators are used for inhaled drug delivery:
 - 2.1 Small-volume Nebulizer (SVN).
 - 2.2 Pressurized Metered-dose Inhaler (MDI).
 - 2.3 Dry-Powder Inhaler (DPI).
 - 2.4 Soft Mist Inhaler (SMI).
 - 2.5 Large Volume Nebulizer (LVN).
3. FEV1: Forced expiratory volume in one second.
4. FVC: Forced vital capacity.

7- Indications:

7.1 Medication administration:

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- 7.1.1 Bronchodilators: $\beta 2$ agonists e.g. salbutamol, anticholinergic e.g. ipratropium bromide and combination therapy e.g. Combivent (salbutamol and ipratropium bromide).
- 7.1.2 Anti-inflammatory agents (corticosteroids). E.g. Budesonide.
- 7.1.3 Antibiotics: e.g. Colistin and gentamicin.
- 7.1.4 Anti-fibrinolytic agent: inhaled tranexamic acid.
- 7.1.5 Anesthesia: e.g. Lidocaine to control pain and gagging during endoscopic procedures)
- 7.1.6 Upper airway inflammation /edema (i.e., epinephrine) to relieve inflammation due to laryngotracheobronchitis, subglottic edema or post-extubation edema.
- 7.1.7 Bronchial hygiene.
- 7.1.7.1 Mucolytics (e.g. hypertonic saline and acetylcysteine).
- 7.1.7.2 Sputum induction involves short-term application of high-density hypertonic saline (3% to 10%) aerosols to the airway to assist in mobilizing pulmonary secretions for evacuation and recovery.
- 7.1.8 Patient FEV1/FVC measurement is inadequate.
- 7.2 Aerosol Medication Compatibility

Medication mixing should be performed according to the following guide:

	Salbutamol	budesonide	Combivent	Colistin	Hypertonic saline 3%	Epinephrine	Acetylcysteine	Tranexamic acid
Albuterol	-	Yes	-	Yes	Yes	No	No	No
Budesonide	Yes	-	Yes	Yes	Yes	No	Yes	No
Combivent	Yes	Yes	-	No	No	No	Yes	No
Colistin	No	No	No	No	No	No	No	No
Hypertonic saline 3%	No	Yes	No	No	-	No	No	No
Epinephrine	No		No	No	No	-	No	No
Acetylcysteine	No	Yes	Yes	No	No	No	No	No

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م. د. محمد كرم

Abdullah



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Tranxemic Acid	No	No	No	No	No	No	No	No	-
Atropin	No	No	No	No	No	No	No	No	No

8. Contraindications:

8.1 Contraindications related to the substances being delivered may exist.

8.2 Known hypersensitivity to the substance being delivered.

9. Complications:

9.1 Adverse reaction to the medication being administered.

9.1.1 Adrenergic agents: headache, insomnia, tachycardia, tremor and nervousness;

9.1.2 Anticholinergic: local topical effects.

9.1.3 Antibiotics, hypertonic saline, inhaled corticosteroids and bronchodilators: airway reactivity.

9.1.4 Corticosteroids: systemic/local effects.

9.1.5 Mucolytic and hypertonic saline: bad taste.

9.2 Increase the risk of infection when aerosol generators are contaminated.

9.3 Airway reactivity.

9.4 Eye irritation.

9.5 Pulmonary and systemic effects.

9.6 Increase in drug concentration at the end of treatment when jet nebulizers are used.

9.7 Caregiver exposure to aerosol drugs. Which increase the risk of infection due to the inhalation of pathogens during aerosol therapy.

9.8 Workplace exposure to aerosol may increase the risk of asthma like symptoms and cause occupational asthma.

10. Patient Preparation:

10.1 Identify patient and assess need for inhaled medication.

10.2 Describe the procedure to be performed, what the patient expected to do and how frequently it will be performed.

10.3 Clear the airway as needed.

10.4 Position the patient appropriately.

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11.Procedure:

There are different types of nebulizer equipment, which must be selected according to the needs of the patient and the inhaled medication being used.

- 11.1 All types of devices can be used to deliver medication to spontaneously breathing patients who can inhale orally.
- 11.2 Inhaled aerosols from nebulizers can be administered using a mouthpiece or a facemask, although the mouthpiece interface is generally preferred.
- 11.3 Inhaled aerosols from nebulizer can be administrated using a tracheostomy mask for trachestomized patient.
- 11.4 Consider the applicability of using metered dose inhalers when possible, especially for highly infectious diseases e.g. COVID-19.
- 11.5 During used of SVN Attach oxygen with a flow of 6 to 8 L/min. Instruct patient to breathe through the mouth with a slow inspiratory flow and an occasional deep breath. With a 3-5 second inspiratory hold, if tolerated.
- 11.6 SVN can be used to deliver nebulizer during NIV by using devices adapted for inline administration (T- nebulizer).
- 11.7 Aerosol delivery during NIV with single limb circuits increases when placing the device closer to the mask and distal to the circuit leak.
- 11.8 Inhaled medications can be delivered to patients receiving mechanical ventilation using either a pMDI or aerogen nebulizer. A DPI is inefficient for delivery of a dry powder during mechanical ventilation because ventilator circuit humidification impairs aerosol formation.
- 11.9 Miniheart nebulizer used for patients with acute exacerbations of asthma, nebulized bronchodilators can be administered continuously, rather than intermittently at scheduled intervals.
- 11.10 Aerogen nebulizer is used to deliver antibiotic nebulizer, anti-fibrinolytic agent for all types of patients.
- 11.11 Aerogen nebulizer is used to deliver nebulizer for patients on mechanical ventilator.

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- 11.12 The lower deposition of nebulizer with high flow nasal cannula (HFNC) might also be overcome by increasing the dose or decreasing the HFNC flow rate.
- 11.13 Aerosol delivery during invasive mechanical ventilation done by placing the aerogen nebulizer on the dry side of the humidifier for active humidified circuits.
- 11.14 Discard the remaining fluid after each use of SVN.
- 11.15 Assess response to therapy and monitor the patient for adverse response.
- 11.16 Instruct the patient to rinse the mouth with water following each administration of inhaled steroids.
- 11.17 Multi dose drug containers have been associated with contaminated nebulizers and are a potential source of nosocomial infection.
- 11.18 Consider applying filter on the expiratory valve for ventilated patients, especially when the patient on nebulizer therapy, assess its applicability for humidified circuit, and exchange when needed.
- 11.19 Consider applying filter on the expiratory part of the nebulizer kit when antibiotic is administrated.

12- Infection control:

Adhere to the infection prevention and control practices, and use the appropriate personal protective equipment during nebulizer administration.

13- Forms and Document:

None

14- References:

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7. Arzu Ari PhD RRT PT CPFT FAARC and Ruben D Restrepo MD RRT FAARCAARC 2012. Patient Education and Adherence to Aerosol Therapy.
8. Arzu Ari PhD RRT PT CPFT FAARC RESPIRATORY CARE • JUNE 2015 VOL 60 NO 6.
9. A Guide to Aerosol Delivery Devices for Respiratory Therapists 4th Edition 2017 by the American Association King Hussein cancer center polices, Noninvasive Positive Pressure Ventilation (NPPV), 2021.
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