

Metered Dose Inhaler (MDI) with Spacer

Provincial Therapeutic
Interchange for Respiratory
Medication Nebules

RHSCN™ and HPSP
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Background

- Nebulized therapy is an aerosol generating procedure.
- Aerosol generating procedures have been associated with spread of respiratory infection to healthcare workers and patients.
- Except in certain circumstances, nebulized therapy is inefficient; it can take up to 20 minutes to deliver, and less medicine is delivered to the small airways.
- Nebulized therapy can be poorly tolerated by patients.
- Medical air is often used to drive nebulized therapy; misconnects with oxygen (and vice-versa) are possible.

Rationale

To reduce the risk of:

- spread of infection
- adverse effects to patients
- medical air/oxygen misconnect
- drug exposure to staff

...any order for nebulized ipratropium (e.g. Atrovent®), salbutamol (e.g. Ventolin®), ipratropium/salbutamol (e.g. Combivent®), or budesonide (e.g. Pulmicort®) will **automatically** be interchanged to an MDI with spacer whenever possible.

Rationale – cont'd

- Use of MDI with spacer is best practice
 - Efficient
 - Effective
- Aligns with patients' ongoing home-based treatment; better preparation for discharge

What supports this practice?

- Evidence shows better and safer deposition achieved by MDI with spacer combined.
- Alberta's Childhood Asthma Pathway (ACAP) recommends MDI with spacer for mild and moderate presentations.
- Over the past several years, several regional Alberta sites have successfully used MDI with spacer in place of nebulizer.

Process

- **Orders:** Salbutamol (e.g. Ventolin®), budesonide (e.g. Pulmicort®), ipratropium (e.g. Atrovent®) and ipratropium/salbutamol (e.g. Combivent®) will automatically be dispensed as MDI with spacer.
- **Assessment:** Level 1 or low-level complexity, meaning that no patient-specific information is required and minimal pharmacist assessment is required.
- **Exceptions:** Nebules are restricted to these scenarios:
 - Severe asthma or status asthmaticus; **OR**
 - Patients who cannot be treated with MDI and spacer; **AND**
 - Orders adherent to one of these reasons **MUST** indicate 'Do Not Sub' and **MUST** indicate one of these above-listed reasons

NICU and neonate patients are excluded from this therapeutic interchange.

Process – cont'd

- **Preparation:** Health care professionals require an authorized prescriber's order and will access the appropriate new spacer* from their stores.
- **Administer:** Health care professionals will combine the MDI with the spacer and work with the patient to administer medication as directed.
- **Reassessment:** After the dose is administered, health care professionals will assess the patient's dose response.
- **Additional Doses:** To be administered based on patient's dose response and authorized prescriber's orders.

* For those over 4 years old, the mouthpiece spacer (T0110650500010; ~\$14) is preferred in most cases and costs ~\$20 less than mask-type spacers.

Process – cont'd

- **Storage:** Between doses, the **patient labeled** MDI & spacer can be stored in a patient labeled bag and kept in the patient's room or as per unit policy.
- **Discharge:** Spacers may be sent home with patients if continued therapy is prescribed. **NOTE:** Sending MDIs home is **not** encouraged. Spacers do **not** need a pharmacy-issued label.
- **Disposal:** If not required at discharge, both spacers and MDIs are disposed of (i.e. they are both single patient use).

When patients are admitted to other acute care settings from Emergency Departments or other triage settings, staff should ensure all MDIs and spacers are transferred with the patient.

Level 1 Complexity

- Level 1 (or low-level) complexity is a pharmacy categorization; it helps facilitate therapy with MDI & spacer when appropriate
- Unless an order specifies 'Do Not Sub' and also indicates one of the 2 exceptions, the therapeutic interchange for MDI & spacer will take effect

Stat or Off-Hours Orders

- If the order is written for nebulas, administer respiratory medication therapy as MDI & spacer unless:
 - Severe asthma or status asthmaticus; **OR**
 - Patient cannot be treated with MDI and spacer; **AND**
 - Orders indicate 'Do Not Sub' and also indicate one of these above-listed reasons
- Interchange dosages are available from your local pharmacist

Technique

METERED DOSE INHALER (MDI)

INHALER / "PUFFER" WITH SPACER & MOUTHPIECE



1

OPEN



2

SHAKE



3

INSERT, BREATHE OUT



4

PRESS DOWN



5

SLOW DEEP BREATH IN & HOLD



6

REMINDER



7

RINSE & SPIT

Using an MDI without a spacer is not recommended.

Important - Disposable Spacers



Disposable spacers (ie. cardboard or paperboard) are best suited for temporary use, such as diagnostic testing or EMS transports and are always single patient use.

Technique Training

- Alberta's translated standardized technique instruction handouts:

<https://cumming.ucalgary.ca/research/icancontrolasthma/resources/devices> (Arabic, Chinese, English, Farsi, French, Hindi, Korean, Punjabi, Spanish, Tagalog, Urdu, Vietnamese)

- Short demonstration videos:

<https://www.lung.ca/lung-health/get-help/how-use-your-inhaler> (Canada)

<https://www.nationalasthma.org.au/health-professionals/how-to-videos> (Australia)

MDI Facts

- Patients with dementia, neuromuscular disease, acute COPD or asthma, decreased level of consciousness or cognitive impairment can use MDIs:
 - Spacers are available in a variety of sizes & formats
 - Even if the patient cannot follow directions or take a deep breath in, they can breathe normally (tidally) for 6 breaths to get their dosage
- MDIs don't delay medication delivery time:
 - Patients can be assisted and finish therapy in 2 minutes, compared with up to 20 minutes for nebulized therapy
- Though they cannot taste or feel the medication, patients prefer therapy with MDI & spacer:
 - There are fewer systemic side effects
 - There is improved deposition of the medication

Questions?

If your question is not addressed here, please contact your local Pharmacy Department.



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