



Therapeutic brief

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Table 1: Inhaled medicines and delivery devices used in COPD insert

www.dva.gov.au/health/veteransmates

Simplifying inhaler devices for Chronic Obstructive Pulmonary Disease

Inhaled respiratory medicines are the mainstay of the pharmacological management of Chronic Obstructive Pulmonary Disease (COPD). While they do not slow the rate of decline in lung function (only stopping smoking does), if used appropriately they can improve quality of life and decrease exacerbations.¹ To maximise their benefit, good compliance and correct inhaler technique are necessary. Simplifying medication regimens (especially minimising use of multiple devices) and patient education may help achieve these aims.

This Therapeutic Brief aims to assist doctors and pharmacists in simplifying inhaled medicine regimens for their veterans with stable COPD by:

- optimising inhaler use through education and regular review of technique;
- minimising the total number and types of inhaler devices used;
- re-assessing the need for home nebuliser use;
- selecting the most appropriate inhaled medicines and assessing their effectiveness.

These steps may assist veteran patients in gaining maximal therapeutic benefit from their inhaled respiratory medicines, and should be considered in conjunction with other interventions outlined in the COPD-X plan, such as smoking cessation, influenza and pneumococcal vaccination, and pulmonary rehabilitation.²

Key points

For inhaler devices;

- Select the most appropriate inhaler device and minimise the number of devices used.
- Show patients how to use their inhaler device(s), and ask them to demonstrate their technique to you.
- Re-check inhaler technique each time a prescription is written or dispensed until you are sure the patient has mastered the technique. Consider re-checking every 2 to 3 months thereafter.
- Consider a Metered Dose Inhaler (MDI) and spacer in place of a nebuliser.

For inhaled medicines;

- Plan a therapeutic trial of each new inhaled medicine, and assess its clinical effectiveness 2 to 3 months after initiation.
- If it is not effective, consider stepping down or ceasing, with ongoing review. A different inhaled medicine could then be trialled.²
- Consider use of inhaled corticosteroids in those patients who have severe disease (FEV₁ < 50%) and frequent exacerbations (> 2/year), or who have a documented symptomatic response during a 2 to 3 month trial.^{1,2}



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Box 1: Key findings from Veterans' MATES Module 6, "Inhaled respiratory medicines: optimising use in COPD."³

- Two thirds of general practitioners estimated that one or more of their listed veteran patients required review of their inhaled medicines.³
- Pharmacists can play a key role in educating and reinforcing patients' inhaler technique. Over ninety percent of pharmacy respondents indicated they had good awareness of most inhaler devices.³
- Encourage your veterans to speak to their pharmacist about inhaler technique. Feedback suggests veterans may not be aware their pharmacist can assist.³
- An MDI and spacer is just as effective as a nebuliser for the delivery of bronchodilators.^{1,4-6} Despite this, twenty percent of veterans in the cohort were dispensed nebulised therapy.³



Educate patients on inhaler use

Educating patients using the relevant package insert plus physical demonstration has been shown to significantly improve patient technique when using a hand-held inhaler device.^{7,8} Elderly patients may be more vulnerable to problems using inhaler devices due to poor eyesight, poor hand strength and co-ordination difficulties. However, most patients, whatever their age, should be able to acquire and maintain adequate technique when given appropriate instruction and reinforcement (with the exception of those with significant cognitive impairment).^{1,9} Supervision of device use is recommended for patients with cognitive impairment.

Inhaler technique may begin to decline two months after patient education, highlighting the need for regular review.^{6,10} This is especially important in elderly patients with physical problems.

To optimise patient education:

- be familiar with the various types of devices available and how to use them. Placebo devices are often available from the pharmaceutical supplier;
- demonstrate the technique to the patient, wherever possible;
- encourage patients to demonstrate use of their inhaler;
- re-check inhaler technique each time a prescription is written or dispensed until you are sure that the patient has mastered the technique. Consider re-checking this every 2 to 3 months thereafter;

- a Home Medicines Review (HMR) is an effective means of educating patients in the use of their inhaler devices and should be considered for all patients. A yearly medication review also presents an opportunity to critically assess inhaler technique;
- add a spacer if the patient still has difficulty with hand-breath co-ordination, despite adequate training.

Spacer devices may be used with a Metered Dose Inhaler (MDI) when patients have difficulty with hand-breath coordination and can be considered as an alternative to a nebuliser.¹¹ Other benefits gained by using a spacer include improved drug delivery and reduced systemic absorption. **Currently available MDIs can be used with all of the small volume spacers, but not all will fit the large volume spacers and sometimes an adapter is required.**¹¹

Most patients should be able to use an MDI with a spacer, after appropriate education. The most common problems with its use in elderly patients include difficulty connecting the MDI to the spacer, difficulty activating the device, and unnecessary repetitive firing into the spacer.¹² It is therefore important to check spacer technique when reviewing inhaler technique.



Minimise the number and types of inhaler devices

Almost 50% of veterans dispensed three or more different respiratory medicines were using three or more types of devices.³ As concurrent use of several different types of inhaler device can increase error rates,¹³ the number of different types of inhaler devices used for an individual patient should be minimised wherever possible. When selecting the most appropriate device and reducing the total number of devices used;

- take into account the patients preference as well as their ability to use the device
- ensure that, wherever possible, any new inhaled medicine is delivered by the same type of device already being used by the patient (this will not be possible in all cases, for example tiotropium (Spiriva) can only be administered by a HandiHaler® device)
- where appropriate consider the use of combination products if it simplifies device usage. Seretide (salmeterol/fluticasone) is available as a restricted benefit on the Schedule of Pharmaceutical Benefits for symptomatic treatment of Chronic Obstructive Pulmonary Disease (COPD)
- consider substituting one or more types of inhalers to achieve consistency. This may be done without necessarily changing the inhaled medicine itself. However it may be necessary to adjust the number of inhalations so that the equivalent dose is given. Table 1 provides a list of currently available inhaled medicines for COPD, and corresponding devices for delivery.

Wherever possible minimise the number of different types of inhaler devices used for an individual patient⁶

Consider replacing nebuliser with MDI and spacer

Twenty percent of veterans in the cohort were dispensed nebulised therapy.³ However, current evidence suggests that in stable COPD, use of an MDI with a spacer or a Dry Powder Inhaler (DPI) can be just as effective as nebulised therapy.^{1,4-6}

An MDI used with a spacer can be as effective as a nebuliser for delivery of bronchodilators during exacerbations, when administered at the appropriate dose.^{1,4-6}

In most patients with stable COPD, administration of a bronchodilator using an MDI with a spacer or a DPI can be just as effective as nebulised therapy.

Current guidelines recommend that nebulisers be reserved for patients with acute exacerbations of COPD who do not adequately respond to an MDI plus spacer, or in stable patients who cannot effectively use a MDI plus spacer despite adequate education.^{1,14,15}

Select the most appropriate inhaled medicines

Prescription of multiple inhaled medicines for COPD appears common within the veteran population, with 40% of 16,783 veterans prescribed tiotropium (Spiriva) also prescribed two or more other inhaled medicines.³

To simplify inhaled medicine regimens, consider the following;

- plan a therapeutic trial after starting a new inhaled medicine, to determine its effectiveness and whether or not it should be continued. This can be done by assessing the patient's response to the inhaled medicine (administered in the appropriate dose), 2 to 3 months after initiation. Continue the medication being tested if there is a significant improvement in relevant parameters (Box 2 - page 4).
- if there is no improvement (despite having checked inhaler technique and excluded other causes of shortness of breath), the medicine being tested could be ruled out for ongoing treatment.² Ensure follow-up after stepping down or ceasing the medication. Consider a trial of a different inhaled medicine⁶, again with careful follow-up and review.
- consider use of inhaled corticosteroids in those patients who have severe disease ($FEV_1 < 50\%$) and frequent exacerbations ($> 2/\text{year}$), or who have a documented symptomatic response during a 2 to 3 month trial.^{1,2} As there has been a suggestion of increased pneumonia rates in patients receiving inhaled corticosteroids increased vigilance and patient education about prompt treatment of infections would seem prudent.¹⁶

Plan a therapeutic trial of each new inhaled medicine and review its clinical effectiveness within 2 to 3 months of initiation.

4 Box 2: Assessing response to inhaled medicines

➤ Patient response can be assessed by careful questioning on the patient's perception of benefit, and dyspnoea scales such as the Medical Research Council (MRC) grading of functional limitation due to dyspnoea (below).

➤ Medical Research Council (MRC) grading of functional limitation due to dyspnoea:¹⁷

Grade: Symptom complex:

- 1 "I only get breathless with strenuous exercise."
- 2 "I get short of breath when hurrying on the level or walking up a slight hill."
- 3 "I walk slower than most people of the same age on the level because of breathlessness or have to stop for breath when walking at my own pace on the level."
- 4 "I stop for breath after walking about 100 yards or after a few minutes on the level."
- 5 "I am too breathless to leave the house" or "I am breathless when dressing."

➤ The tested medication should be included as ongoing treatment if FEV₁ and/or FVC increases more than 15% and more than 300 mL after a treatment trial, and/or MRC Dyspnoea Scale score improves.²

What to discuss with your patient:

- To check their inhaler technique with you, their pharmacist or practice nurse regularly
- To seek review of their medicines with you after a hospital admission
- The importance of yearly influenza and 5-yearly pneumococcal vaccinations
- To consider using an inhaler device (and spacer if needed) in place of a nebuliser machine
- The value of a Home Medicines Review if they need more help with their inhaled medicines or devices
- How to use and maintain their inhaler devices
 - Cleaning
 - Storage
 - Monitoring doses remaining
- Stopping smoking is the most important intervention in halting the progression of COPD.

For more information regarding COPD and its treatment go to:

www.copdx.org.au

www.lungnet.org.au

<http://www.webmd.com/lung/copd/gold-criteria-for-copd>

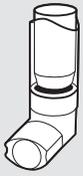
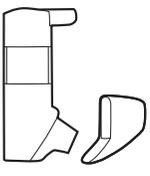
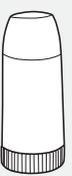
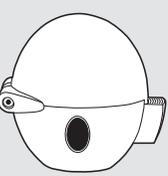
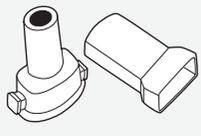
www.pulmonaryrehab.com.au

Module 6 at <https://www.veteransmates.net.au/topic-6>

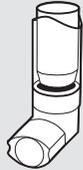
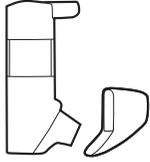
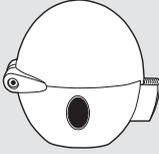
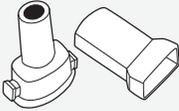
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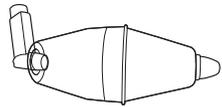
Table 1: Inhaled medicines and delivery devices for use in Chronic Obstructive Pulmonary Disease (COPD)¹

| Class | Generic name | Metered Dose Inhalers (MDI) | Autohaler [®] (breath-activated) | Dry powder inhalers (DPI) | | | Nebuliser solutions and nebulisers (reserve home nebuliser use for certain patients)* | |
|-------|--------------|---|---|--|--|--|---|---|
| | |  |  | Accuhaler [®]  | Turbuhaler [®]  | HandiHaler [®]  | Aerolizer [®]  |  |
| SABA | salbutamol** | Ventolin, Airomir, Asmol, Epaq (100 mcg/dose) | Airomir Autohaler [®] (100 mcg/dose) | | | | | Ventolin Solution (5mg/mL) Single dose: Asmol uni-dose, Butamol, Salbutamol sterinebs, Ventolin Nebules, (1mg/mL (2.5 mL) or 2 mg/mL (2.5 mL) |
| | terbutaline | | | | Bricanyl Turbuhaler [®] (500 mcg/dose) | | | Bricanyl Respules Single dose: 2.5 mg/mL (2 mL) |
| LABA | eformoterol | | | | Oxis Turbuhaler [®] (6 or 12 mcg/dose) | | Foradile Aerolizer [®] (12 mcg/ dose) | |
| | salmeterol | Serevent (25 mcg/dose) | | Serevent Accuhaler [®] (50 mcg/dose) | | | | |
| SAAC | ipratropium | Atrovent (20 mcg/dose) | | | | | | Ipravent solution (250 mcg/mL) Single dose: Aeron, Apoven, Atrovent Unit Dose Ipratrin, Ipravent (250 mcg/mL (1 mL) or Single dose: Aeron, Apoven, Atrovent Adult Unit Dose Ipratrin Adult, Ipravent (500 mcg/mL (1 mL) |
| LAAC | tiotropium | | | | | Spiriva HandiHaler [®] (18 mcg/dose) | | |



| Class | Generic name | Metered Dose Inhalers (MDI) | Autohaler® (breath-activated) | Dry powder inhalers (DPI) | | | Nebuliser solutions and nebulisers (reserve home nebuliser use for certain patients)* | |
|-------------------------|-------------------------|---|---|--|--|--|---|---|
| | |  |  | Accuhaler®  | Turbuhaler®  | HandiHaler®  | Aerolizer®  |  |
| Inhaled corticosteroids | beclomethasone | Qvar (50 mcg or 100 mcg/dose) | Qvar Autohaler® (50 mcg or 100 mcg/dose) | | | | | |
| | budesonide | | | | Pulmicort Turbuhaler® (100mcg, 200 mcg or 400 mcg/dose) | | | Single dose: Pulmicort Respules (250 mcg/mL (2mL), or 500 mcg/mL (2 mL) |
| | fluticasone | Flixotide (125 mcg or 250 mcg/dose) | | Flixotide Accuhaler® (250 mcg or 500 mcg/dose) | | | | Single dose: Flixotide Nebules (250 mcg/mL (2mL), or 1 mg/mL (2mL) |
| Combined | salbutamol/ ipratropium | Combivent (100 mcg / 20 mcg/dose) | | | | | | |
| | salmeterol/ fluticasone | Seretide (25 mcg / 50 mcg/dose; 25mcg / 125 mcg/dose; 25 mcg / 250 mcg/dose) | | Seretide Accuhaler® (50 mcg / 100 mcg/dose; 50 mcg / 250 mcg/dose; 50 mcg / 500 mcg/dose) | | | | |
| | eformoterol/ budesonide | | | | Symbicort Turbuhaler® (6 mcg / 100 mcg/dose; 6 mcg / 200 mcg/dose; 12 mcg / 400 mcg/dose) | | | |

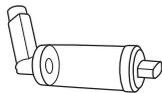
Large Volume Spacer (650-850mL)



Eg Volumatic®, Space chamber®, Fisonaire

Not all MDIs fit all large volume spacers. Adapters for the Volumatic® are available to accommodate some MDIs.⁵

Small Volume Spacer (60-160mL)



Eg Able Spacer®, AeroChamber®, Breath-A-Tech®

All MDIs can be used with small volume spacers as there is a rubber flange where the MDI is inserted.⁵

SABA= short-acting beta-agonist; LABA= long-acting beta-agonist; SAAC= short-acting anticholinergic; LAAC= long-acting anticholinergic

For more information on each of these devices, refer to the Consumer Medicines Information leaflet provided by the manufacturers.

*Current guidelines recommend that nebulisers be reserved for patients with acute exacerbations of COPD who do not adequately respond to an MDI plus spacer, or in stable patients who cannot effectively use a MDI plus spacer despite adequate education.^{2,3,4}

**Spinhalers® and Rotahalers® are not commonly used in the veteran population. They are two distinct single-dose devices which require the patient to insert each dose of medicine into the device.

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