



The Personalised Approach to Inhaled Medicine

Ensure Your Respiratory Patients are Prepared in Case of Emergency

Introduction

On June 15, 2021, a webinar was held on a personalised approach to inhaled medicine in asthma and COPD. Professor Anna Murphy, a consultant respiratory pharmacist at the University Hospitals of Leicester NHS Trust, discussed the importance of optimising inhaled medication delivery, how to ensure patients are prepared in case of emergency, the role of spacers, and considerations in choosing an inhaler suited to the needs of the individual patient.

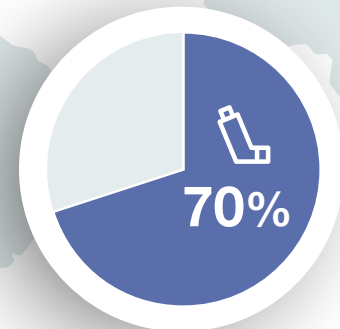


Professor Anna Murphy

Background

In the UK there are more than 20 different types of devices for inhaled therapy, including MDIs, DPIs, nebulizers, and soft mist inhalers. About 70% of prescriptions are for pMDIs. Next most commonly prescribed are DPIs.

Prescribed most often



Poor inhaler technique: a common problem with serious consequences

Although the numbers vary between studies, up to 80% of patients use incorrect inhaler technique. Most of these patients are not aware of the problem, which can result in decreased efficacy and increased risks.



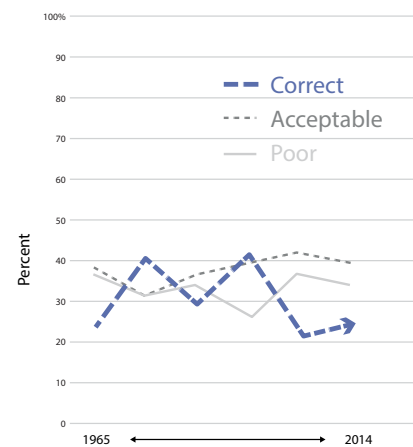
Up to **80%** of people have incorrect inhaler technique, which must be addressed to optimise treatment and minimise environmental impact.¹⁻³

One of the most common errors, across inhaler devices is the failure to tilt the head up.⁴ Other common are errors related to breathing. Patients using DPIs frequently fail to inhale with sufficient force to pull the drug off the lactose carrier within the inhaler. Among those using pMDIs, failure to coordinate actuation of the inhaler with inhalation, failure to inhale at the correct speed and depth (a long, slow intake of breath) or failure to hold their breath following inhalation are all common.⁵

Suboptimal inhaler technique has a long history. A systematic review of 144 studies over 40 years (1975-2014) showed that about one third of patients had poor technique,⁵ another third had acceptable technique, while the remaining third had correct technique. This suggests that the problem of incorrect technique has not improved over the past four decades.

Incorrect use of inhalers leads to poor asthma control, increased risk of exacerbations, and greater risk of systemic side effects. In one study of asthma and COPD patients, suboptimal technique was associated with an increased risk of hospitalisation (47%), emergency visits (62%), use of antimicrobials (50%) or corticosteroids (54%), and loss of productive days (47%).⁶ Conversely, optimising inhaler technique will diminish these excess risks.

Poor Technique Trend



Are healthcare professionals using proper technique? In a study of 150 UK healthcare professionals, 69% used incorrect technique when demonstrating the use of a pMDI.⁷

The role of spacers in optimising medication delivery

Use of a VHC (also known as a spacer) together with a pMDI improves the amount of drug reaching the lungs.⁸ This improved efficiency of drug delivery may result in better control of the disease and may decrease the amount of drug used.

A second benefit of spacer use is a potential for fewer adverse events.¹ A spacer reduces the amount of drug deposited in the oropharyngeal region, where it can be absorbed and produce local and systemic side effects.⁹

Emergency Preparedness

The 2014 UK National Review of Asthma Deaths was an analysis of 195 people who died from asthma. During their final attack, nearly half of these patients died without medical assistance or before emergency care could be provided, and only 23% had a Personal Asthma Action Plan (PAAP).¹⁰

To remedy this situation, the review recommended that patients should have their inhaler technique routinely assessed, that they should be instructed what to do when an asthma attack occurs, and that a PAAP for all patients is essential.

A Primary Care Respiratory Update position statement (also published in the Lancet) proposed that all asthma and COPD patients who have experienced an exacerbation (or are at risk) should receive an “emergency pack” with a pMDI and a spacer with Salbutamol (and Beclomethasone for asthma patients), as well as instructions for the patient.¹¹

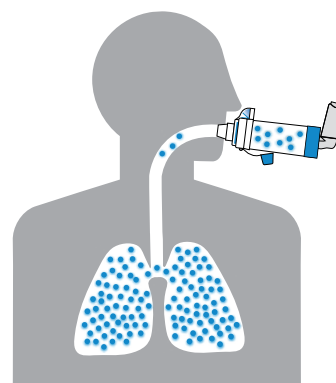
How might such an approach work in practice? In a small study, a group of 106 patients were provided with a “breath-in-a-bag” rescue kit that included a pMDI with Salbutamol, a spacer, and a handheld fan to reduce the sensation of breathlessness as well as patient instructions. Patients were also taught breathing techniques.

Questionnaires completed by these patients revealed a change in self-management behaviour (most notably increased use of the fan when patients felt breathless) and feelings of improved self-efficacy. Furthermore, a reduction in hospital admissions was seen in the three months after the rescue kit was issued.

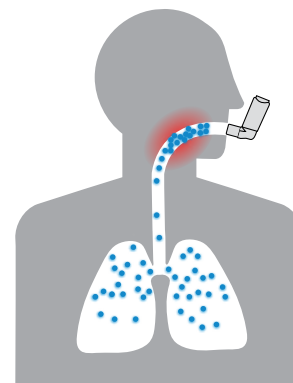
Personalising inhaled medicine: which device is right for my patient?

There are four key considerations in selecting an inhaler.

- 1 Inhalation Style:** is the patient able to breathe in quickly and deeply over one to two seconds (required for a DPI), or to inhale slowly and steadily over four to five seconds (appropriate for an MDI)?
- 2 Dexterity:** is the patient able to coordinate activating the device and inhaling at the same time? (When coordination is an issue, a spacer should be used).
- 3 Type of Device:** what inhaled medications have already been prescribed for the patient? Experts recommend prescribing the same type of device for both maintenance and reliever therapy. This reduces the chances of errors in use and increases the likelihood of achieving better disease control.
- 4 Patient Choice:** and perhaps most important, what does the patient find most convenient? An otherwise suitable inhaler is useless if a patient chooses not to use it.



Inhaler with Spacer



Inhaler Alone

How effective is the MDI/spacer pairing in emergencies? Cochrane studies in both asthma and COPD have shown this combination is as good as or better than a nebulizer in treating mild and moderate asthma attacks and exacerbations of COPD.

COPD: chronic obstructive pulmonary disease;
DPI: dry powder inhaler;
MDI: metered dose inhaler;
pMDI: pressurized metered dose inhaler;
NHS: National Health Service;
PAAP: Personalised asthma action plan;
VHC: valved holding chamber.

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11. Keeley D, Patridge M. Emergency MDI and spacer packs for asthma and COPD [http://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(19\)30046-3/fulltext](http://www.thelancet.com/journals/lanres/article/PIIS2213-2600(19)30046-3/fulltext)

