Audit protocol for advice on asthma device technique

Introduction

Most patients or carers are able to reproduce demonstrated inhalation device technique within five to ten minutes. However many patients may not retain all of the information given during the demonstration - one study reported only 48% of patients had proper inhaler technique when assessed for their symptom control [1] .

The community pharmacist, as the key supplier of prescribed medicines, represents the final opportunity for a member of the primary healthcare team to be able to advise patients before a device is used.

The practice nurse often manages surgery asthma clinics to which doctors regularly refer patients with problems in the control of their asthma. Some experts have examined technique failure:

"Our findings confirm those of others; that 75% of the subjects did not perform an acceptable MDI manoeuvre as defined by standard criteria. " [2]

"It may be argued that inhalation technique is of minor importance in bronchodilator therapy as the loss of bronchodilation can be compensated for by further inhalations. Studies demonstrate however that patients are not aware of inadequate inhalation technique. Patients who consider the MD/ effective and were satisfied with the therapy showed a 50% loss of FEV1 increase when using their spontaneous inhalation technique. This suboptimal utilisation of the potential pharmacological effect may be more important in steroid inhalation therapy. " [3] This could be a contributory factor in reduced symptom control.

If more patients are able to use their device correctly patients may show an overall improvement in asthma control because of their increased understanding of device use. In patients using their MDIs correctly, similar total lung depositions were achieved with and without the large volume spacer [4] . Hence, the need to use a spacer may be eliminated for some patients.

To reduce the use of multiple actuations into a large volume spacer prior to inspiration, patients need to be informed of the drug loss. The decreased amount of drug available for inhalation has been recorded for two large volume spacers:

- Budesonide from Astra's large volume spacer

  "*When using a Nebuhaler with budesonide metered dose inhalers, more respirable drug will be obtained if the aerosol is inhaled immediately after actuation, and multiple actuations into the spacer device are avoided. "* [5]
- Beclomethasone dipropionate from Allen & Hanbury's large volume spacer

  "Subsequent actuations result in a rapid rise in pressure within the spacer which causes turbulent deposition of particles from earlier actuations onto the spacer walls. In addition, the higher concentration of particles with multiple actuations may make collisions and agglomeration more likely, thus increasing particle size. " [6]

Aims

- To ensure that patients have a good knowledge of inhalation device technique.
- To evaluate what role the practice nurse or pharmacist can play in this.

Criteria and standards

Criteria

All patients who are prescribed an inhalation device for the management of their asthma should be able to use their device correctly.

Standards

I	60%	Wash the device according to the manufacturer's instructions
II	90%	Do not regularly "test" the device
III	75%	Rinse their mouth after using an Inhalation device for an inhaled steroid
IV	90 %	Able to demonstrate how to use the device correctly

Data collection

All patients will be invited to take part who attend the asthma clinic or present a repeat prescription for an inhalation device during the specified audit time.

Newly diagnosed patients and those who have been given a new device will be excluded: this group of patients should be given detailed advice by their GP or asthma nurse and the information reinforced by the pharmacist. The prescription is to be dispensed to the patient for the first time and it would thus be inappropriate to check technique.

Method

Patients will be asked to demonstrate their technique to the practice nurse or pharmacist using a placebo device. If a patient is not able to demonstrate a perfect technique, additional information will be given to the patient by the nurse or pharmacist.

NB: There are no disposable mouthpieces available for spacer devices because there is no available "placebo".

To overcome this problem please ask the patient to bring his or her own spacer on their next visit to enable the inclusion of this important category of patient in the audit.

The nurse or pharmacist will then complete the relevant checklist.

Outline

1. Collect first set of audit data

Results should be collated and each participant provided with an own individual report and an aggregated report.

2. **Analyse results**

The areas of the technique that were most frequently performed incorrectly during the assessment will be identified.

3. **Make intervention**

A policy for improving the results will be developed: for example, is it necessary to check inhalation device technique at each clinic visit or each time a prescription is dispensed?

4. **Re-audit data after six months**

The collection of data should be repeated after a suitable time period to allow for the effect of any intervention actioned by the nurse or pharmacist to be realised. A re-audit after six months is recommended.

5. Evaluate any changes in the data collected on re-audit

A report may be published but individual nurse or pharmacist results should be anonymised.

Background information

Below is an explanation of some of the points itemised on the sample.

Use of a spacer increases the proportion of dose deposited in the lungs; removes the need to co-ordinate actuation with breathing and reduces drug deposition in the oropharynx for patients using MDIs correctly (similar lung depositions were achieved with and without the large volume spacer)?

I Washing the device helps prevent failure of the device caused by clogging of the aperture

II. Testing of an, MDI to check that the aperture is not blocked can waste a large proportion of the available number of doses (and money)

III. Rinsing the mouth reduces the amount of a drug deposited in the oropharynx which is available for systemic absorption

IV 1) Shake device correctly (if appropriate). Patients need to ensure that the aerosol will activate

efficiently: some breath-activated sprays must be shaken otherwise the mechanism does not activate
2) Understand the priming of their device (if appropriate) and be able to successfully manipulate the device
3) Remove the cap from the mouthpiece before use (if appropriate): some patients really do forget!
4) Exhale completely just before inhalation device is activated
5) Correctly position aerosol to mouth so that there is a good seal around the device
6) Breathe in deeply so that the dose is inhaled as far into the lungs as possible [2]
7) Co-ordinate actuation with breathing (if appropriate) so that no cough is triggered [4]
8) Use only one actuation per inhalation: no double sprays. This has been reported anecdotally but it may be the method regularly used if a large volume spacer is fitted to the MDI [6]

NB: Except in status asthmaticus, multiple priming of a large volume spacer is not recommended as much of the dose is lost.

9) Hold their breath -for longer than four seconds [2]
10) Breathe out slowly - so as much of the drug remains in the lung as possible
11) Wait before second actuation - to reduce the amount of the first dose lost as the patient exhales ready to take the next dose, usually one minute for the second puff of the same drug.

Any patient who is experiencing difficulty with a device after the pharmacist has provided additional information or, if necessary, a demonstration will be referred to the GP. This is to ensure that patients will be given further advice or an alternative device as appropriate.

Patient information

Patients must be invited to participate in this audit. The following explanations to patients may be printed on a card which can be shown or read to each patient who presents a repeat prescription for an inhalation device during the specified audit time.

Help us help you

Pharmacists are being encouraged to measure the advice they give to patients. Please will you take part in our study?

We are currently focusing on asthma. This involves the pharmacist:

- asking you a few questions about your inhaler
- watching you use a placebo inhaler of the type which you have been given by your doctor
- recording on a check list how you have used the inhaler
- offering any additional advice that may be needed to improve your technique

If you use a spacer with your inhaler please bring it with you so that we can include you in our study.

No names will be recorded in this study.

Thank you for your time and co-operation.

References

1 *Correlates of asthma morbidity in primary care.* Jones KP, Bain DJG, Middleton M, Mullee MA, *BMJ* 1992; 304: 361-364

2 *The Influence of age, diagnosis, and gender on proper use of metered-dose inhalers.* Goodman DE, et al. *Am J Respir Crit Care Med* 1994; 150: 1256-I 261

3 *Clinical consequences of inadequate inhalation technique in asthma therapy.* Lindgren S et al. *Eur J Respir Dis* 1987; 70: 93-98

4 *Lung deposition patterns of directly labelled salbutamol in normal subjects and in patients with reversible airflow obstruction.* Melchor R. et al. *Thorax* 1993; 48: 506-511 .

5 *The effect of delay, multiple actuations and spacer static charge on the in vitro delivery of budesonide from the nebuhaler.* Barry PW & O'Callaghan C. *Br J Clin Pharmacoll995;* 40: 76-78

6 *Delivery of beclomethasone dipropionate from a spacer device: what dose is available for inhalation?* O'Callaghan C. et al. *Thorax* 1994; 49: 961-964

Sample form to be used in data collection

Advice on asthma device technique

Nurse/Pharmacist ID code

What type of inhalation device does the patient use?

Does the patient/carer* know the following :

* Please **delete as** appropriate

(the definition of carer is parent or guardian or person in charge of drug administration)

Please tick appropriate box:

	Yes	No
Is the device a metered dose inhaler (MDI)?	☐	☐
Does the patient use a spacer ?	☐	☐
(If the answer is Yes request the patient brings the spacer to the pharmacy on their next visit)		
I Is the device ever washed?	☐	☐
II Does the patient regularly "test" the device?	☐	☐
If the device is for an inhaled steroid :		
III Does the patient rinse his/her mouth after using the device ?	☐	☐

IV The points to consider for use:	Yes	No	N/A
1) Shakes device correctly - if appropriate	☐	☐	☐
2) Understands priming of device - if appropriate	☐	☐	☐
3) Removes cap - if appropriate	☐	☐	☐
4) Exhales	☐	☐	☐
5) Aerosol to mouth	☐	☐	☐
6) Breathes in slowly and deeply	☐	☐	☐
7) Co-ordinates actuation with breathing - if appropriate	☐	☐	☐
8) One actuation per inhalation	☐	☐	☐
9) Holds breath	☐	☐	☐
10) Breathes out slowly	☐	☐	☐
11) Waits before second actuation	☐	☐	☐