

Four ways to improve the use of respiratory drugs in rest homes

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Summary

Rest home residents can have special problems when using inhaled medication.

As people get older they become less aware of bronchoconstriction. They may erroneously blame shortness of breath, from any cause, on their age. But if it is of respiratory origin they may be enduring unnecessary discomfort and restriction of life from not using potentially helpful medication.

Increasing age may also bring weakness, arthropathy, visual and hearing loss and cognitive disability so that their inhaler technique may be less than adequate with a consequential reduction in the effectiveness of their medication.

Some residents will be dependent on staff to give them medication. But registered nursing staff cover is not as full as most general practitioners imagine. Medication may be administered by less well-trained staff, whose knowledge and skills are variable.

The team of general practitioner, rest home staff, patients and a good management policy can solve these problems.

There are four things that can be done to address these problems and improve the use of inhaled asthma/COPD drugs by rest home residents. One would expect these recommendations to generalise to non-rest home elderly patients, and particularly to those in geriatric hospital care. They are:

1. The routine use with metered dose inhalers (MDI) of a large volume spacer, especially for inhaled corticosteroids.
2. The use of the longer acting bronchodilators.
3. Minimising the dose of inhaled corticosteroids by back titration.
4. Writing detailed instruction for the carers – what to do when breathing deteriorates, which drugs are to be given, when to give them, and when to call for doctor assistance.

This paper is limited to the use of the inhaled drugs as used in asthma and chronic obstructive pulmonary disease (COPD), and defined in the BNF section 3.1-3.3.1.¹

Key words

Asthma, pulmonary disease chronic obstructive, aged.

1. The routine use with metered dose inhalers (MDI) of a large volume spacer, especially for inhaled corticosteroids

Discussion

Many older people have difficulty getting the best out of their inhaler due to a less effective technique. This is particularly so for those who need rest home care where one-third of the residents may not be getting the best

from their inhaler. The most common problem is poor co-ordination or medication escaping from their mouth.² A large volume spacer eliminates these problems. It seems logical to introduce a spacer early, when learning a new skill may be easier than when mental function and co-ordination has deteriorated due to ageing or an episode of ill health.

Large volume spacers are more effective in delivering drug down

into the small airways where it is the most effective. Inside the spacer the particle speed slows and gives time for the droplets to evaporate to a smaller size. The smaller the drug particle is the better it gets into the small airways where they act. It is estimated that this doubles the amount of drug reaching its target.^{3,4} That means that one puff may do instead of two, which is simpler, and reduces wastage.

Spacers also reduce oral deposition of drug and that is particularly important with inhaled corticosteroids. The potential oral deposition can be seen on the inside of the spacer if it has not been washed for a while. (Washing and drip-drying should be done weekly.) Older people are particularly prone to oral thrush. Therefore it becomes even more important to avoid oral deposition of inhaled corticosteroids, which may aggravate or precipitate it. It is still relevant to rinse the mouth out afterwards.

These measures should also reduce the risk of developing voice hoarseness from inhaled corticosteroids.

One must also be aware that although the use of a spacer can reduce oral systemic absorption of corticosteroids, there may be an increase in systemic levels by pulmonary absorption of corticosteroids that have a long half-life, such as fluticasone (Flixotide®). This is discussed below.

Spacers do need regular checking. They need to be washed and drip-dried about once a week. Drying it by wiping puts a drug attracting static electricity charge on the inside of the spacer. The valve especially needs to be checked as it can get stuck, or the whole thing may become cracked. The BNF goes to the extreme of recommending replacement every six to 12 months.¹ Patients and rest home staff may forget to check the spacer. The responsibility for the effective delivery of drugs ultimately rests with the doctor. It becomes our responsibility to ensure that everything is properly working.

Older patients may have weak or arthritic fingers making it difficult

to fire the MDI. An Haleraid® may solve this problem.

Poor vision can result in difficulty identifying the correct inhaler. Tying something on the inhaler such as a piece of wool or labelling with large letters using a felt tip pen are two suggestions that may help. This is where an asthma educator may imaginatively solve problems.

Patients with a hearing problem can have difficulty with the Turbuhaler® if they cannot hear it 'click'. Rest home residents otherwise manage the Turbuhaler® very well,² but they are much more expensive than MDIs.⁵

2. The use of the longer acting bronchodilators

Discussion

The use of long acting bronchodilators such as eformoterol (Oxis®, Foradil®) or salmeterol (Serevent®) on a regular morning and night basis can be expected to reduce the number and/or severity of wheezy attacks which, for the reasons discussed below, may not be adequately treated. It has also been reported that the addition of a long acting bronchodilator can allow a reduction of the inhaled corticosteroid requirement by about 20%.⁶ Utilising long acting bronchodilators is especially advocated for rest home residents because of four special problems.

1. Older patients are less likely to recognise when they are wheezy.⁷
2. When they do perceive being short of breath from a lung prob-

lem, they may not know what to do. In one study 38% did not know what to do.²

3. When they do perceive being short of breath from a lung prob-

lem, they commonly put up with it, or sit down, or take some other passive action. They do not like to bother the staff or to be a nuisance for anyone. This maybe applicable to 30% of residents.²

4. When they recognise a need for a bronchodilator, a third will not use an MDI effectively without a spacer and carrying a large volume spacer about is not usually practical.

3. Minimising the dose of inhaled corticosteroids by back titration

Discussion

After adding a long action bronchodilator, one is now in the best position to reduce the dose of inhaled corticosteroid. As referenced above this reduction may be up to 20%. We general practitioners are not good at doing this. The knee jerk dose of two puffs twice a day needs a rethink.

The reduction should be done slowly, such as a one puff reduction per month. Peak expiratory flow meters ought to be an important aid because the elderly may not always recognise bronchospasm, as discussed in the section above. But general practitioners do not seem to use them in this context.⁸ Other clinical evaluation and staff observation is going to be important.

One might argue that because of the problems listed above in section 2, over-medication with inhaled steroids may not be such a bad idea. But a bad idea it is, because the elderly are already prone to thin skin, osteoporosis, and cataract without the additional contribution of corticosteroids.

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The purpose of lowering the dose of corticosteroids is to reduce systemic adverse effects and prevent wastage. The use of a spacer provides an interesting twist in that although they may lower the oral absorption by less deposition in the mouth, the systemic absorption may be increased through enhanced lung absorption. Budesonide (Pulmicort®), for example, has nearly 90% first pass liver metabolism, so oral absorption has only a little relevance. At the lungs there is no metabolism, but as the systemic terminal half-life of <2.5 hours the systemic effect is not large.⁴ Beclomethasone (Becotide®, Bec-lazone®, Respocort®) has some lung metabolism and about 70% first pass liver metabolism.⁴

Fluticasone has an almost complete first pass metabolism in the liver and so oral absorption from mouth deposition is not a problem. But as there is no metabolism of this drug in the lungs and it has long terminal half-life of >14 hours, then there may be undesirable systemic side effects from the absorption through the lungs.^{4,9} This long systemic half-life of fluticasone may explain its association with adrenal suppression¹⁰ and skin atrophy,¹¹

which has the subject of warnings from the New Zealand Department of Health. Thin skin is of course already a concern, particularly with elderly women. Back titration of the dose is always important but particularly so for patients on fluticasone and a spacer makes this more achievable.

4. Writing detailed instruction for the carers – what to do when a patient's breathing deteriorates, what drugs are to be given, and when to give them

Discussion

General practitioners over-estimate the frequency of 24-hour registered nurse cover in rest homes. In a study of Christchurch rest homes only 20% had a registered nurse on the premises 24-hours a day, less than general practitioners expected.² This means that much of the first line responses and care of rest home residents may come from carers who may have relatively little training.* One cannot assume that they, or even

some registered nurses, will always know which is the correct inhaler to use, when to use it, and when to call for a doctor's help. In the same study there was almost universal agreement among the senior nursing staff that any sort of written instructions, not necessary a formal action plan, was most desirable.² It is not their job to be a doctor.

It is also important for staff to have guidance for residents who normally look after themselves. If a rest home resident becomes sick they can easily slip into confusion and become dependent on staff for assistance. Carers want to do the best for the people they look after and

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often hold them in some affection. It is not fair on the staff to expect them to act in uncertainty or beyond their knowledge. The carers and the residents require explicit

written instructions to guide them on the use of inhaled medications. These should include specific mention of the actions to take when a patient's breathing deteriorates.

* One of the findings of the research⁸ on which this paper is largely based, was that rest home staff were keen to have more training and this has now been made available.

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