Inhaler spacer devices to treat asthma in children

More than one million children in the UK have asthma. Those who use spacers with their inhalers have a better chance of getting an effective drug dose.

In this article...
- The prevalence and treatment of asthma
- A discussion of the evidence for using spacers
- Correct technique for using spacers

Author
Paul Watson was a specialist community public health nurse (school nursing) at Norfolk Community Health and Care Trust and is a secondary school maths teacher and coordinator of personal, social, health and economic education at Marshland High School, Wisbech.


Drawing on literature searches and professional experience, this article discusses the treatment of asthma with pressurised metered dose inhalers (pMDIs). It demonstrates the need for pMDIs, and presents the health and cost benefits of using a pMDI through a spacer device. Through the review and evaluation of studies, it demonstrates the importance of correct asthma management and the use of spacers. Although there are many types of spacer, and patients often have less than optimal technique, there is evidence to support the overall benefits of use against non-use.

Inhalation is the preferred route of administration for anti-asthma therapies, providing the drug in a form that can reach the smallest airways. Very small doses of active drugs can be delivered to the desired site of action using pressurised metered dose inhalers (pMDIs). As the dose required is smaller than when given by mouth, the side-effects are reduced (Lavorini et al, 2006; National Institute for Health and Clinical Excellence, 2000). Compared with a 4mg tablet of salbutamol, a single dose of inhaled medication contains 40 times less medication yet delivers the same benefits, when taken correctly (Watt et al, 2003).

Unfortunately, poor inhaler technique frequently leads to reduced drug delivery. In a study of 55 moderate to severely asthmatic children, Watt et al (2003) found only 73% had a technique that would allow any drug delivery.

The scale of the problem
According to Asthma UK (2012a) more than one million children in the UK have asthma. The condition is the most frequent reason for absence from school, accounting for one third of all days missed (Krenitsky-Korn, 2011).

There were 1,131 deaths from asthma in the UK in 2009 (12 of which were in children aged 14 years or under); as many as 90% of deaths from asthma are preventable and an estimated 75% of hospital admissions for asthma are avoidable (Asthma UK, 2012a).

What is asthma?
Asthma is a chronic inflammatory disease of the airways and, in children, is more common in boys than girls (Clinical Knowledge Summaries, 2012). Many children who develop asthma at a very young age “grow out” of the condition. During the teenage years, the symptoms will disappear in approximately three quarters of all children with asthma (CKS, 2012). If symptoms are moderate to severe during childhood, it is more likely that the condition will return later in life (CKS, 2012).

The cause of asthma is still not fully understood and there is no specific cure. Children who have asthma are more likely to have a positive family history of asthma or atopy (sensitivity to allergens) or eczema. It is important to consider whether asthma is a single or multiple (an allergic) disease.

According to the 2007 Report of the House of Commons Standing Committee on Health, the perception of a link between asthma and allergy is wide and increasing. More than 90% of people with asthma have a positive family history of allergy and a third of children with asthma also have allergic rhinitis (Sin et al, 2007). The role of the allergen in asthma is central to the disease process and the management of both disease is important.

Keywords: Spacer devices/Childhood asthma/Inhalers

● This article has been double-blind peer reviewed.

5 key points
1. One dose of inhaled medication contains 40 times less medication than a 4mg tablet of salbutamol, yet delivers the same benefits, when taken properly.
2. At least 50% of pMDI users have less than optimal technique and could benefit from using a spacer.
3. Younger children or those with poor dexterity are often unable to coordinate inhalation with activation of a pMDI and benefit from using a spacer.
4. Spacers should be cleaned regularly to avoid contamination with pathogens such as pseudomonas, klebsiella and staphylococcus.
5. Correct inhaler technique could reduce hospital admissions making considerable savings for the NHS.