key points

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Asthma affects 1.1 million children in the UK, and up to 50% experience asthma exacerbations each year. Preschool children under the age of five years have the highest rate of acute wheezing episodes of all age groups with asthma, nearly four times higher than those aged five to 17 years. Wheezing in preschool children responding to short-acting beta$_2$-agonists (SABAs) should be considered a form of asthma.

Asthma is characterised by airway inflammation and hyper-responsiveness to a variety of triggers. Acute asthma attacks are the result of bronchoconstriction and airway oedema. A previous asthma attack is the most important risk factor for future episodes. Modifiable risk factors include poor symptom control, suboptimal treatment regimens, over-reliance on SABAs and poor adherence to preventer therapy.

Viral respiratory tract infections, especially rhinovirus type 4, are powerful triggers of asthma and wheeze in susceptible children. Other triggers include exposure to indoor allergens such as house dust mites, moulds and pet fur, and outdoor aeroallergens such as pollens. Exposure to cigarette and vape smoke are powerful and avoidable triggers and should be enquired about, with appropriate advice offered to parents. Exposure to air pollution can also lead to asthma attacks requiring hospitalisation.

Attempting a peak expiratory flow measurement can be very useful in children aged five years and over when the child presents with an exacerbation. It helps grade the severity of the attack and supports making a correct diagnosis especially when performed before and after salbutamol.

Inhaled SABAs such as salbutamol are the first-line treatment for acute asthma in children. For patients experiencing a mild attack, 200-400 μg (2-4 puffs) may be sufficient and can be increased to 10 puffs if needed. During a severe attack intensive salbutamol nebulisation, every 20 minutes within the first hour is usually effective. It is important to remember that 10 puffs of salbutamol are the equivalent of a nebuliser dose. Ipratropium bromide produces a slower bronchodilator response than a SABA, but the combination of the two produces a synergistic effect. It should be given early to treat children with a poor response to a SABA. Although the treatment is useful to ameliorate the attack the child is still likely to need transfer to hospital via ambulance. Early systemic corticosteroids, prednisolone or dexamethasone, are advised for school-age children with a moderate or severe asthma attack.

Following an asthma attack all children should receive asthma education as well as an updated personalised asthma action plan. Patients and/or their parents must be able to demonstrate appropriate use of inhalers. A GP review should be carried out within two working days of an asthma attack.