

Management of acute exacerbations of asthma

Importance

In the UK there are around 80,000 acute admissions to UK hospital every year with acute exacerbations of asthma. An average practice with 10,000 patients has 570 people with asthma and 12 admissions every year. There are still more than 1,200 deaths from asthma every year, of which 29 are in patients under the age of 14 years. This equates to one asthma death every 6 hours.¹

What is an asthma exacerbation?

Exacerbations are flare-ups of asthma symptoms such as increased breathlessness, cough and wheeze. They vary in severity and are classified as mild, moderate or severe according to symptoms, clinical signs and the presenting peak flow. Although many patients can recognise deteriorating symptoms at an early stage and increase their inhaled corticosteroid according to their action plan,^{2,3} others delay presentation. Delay is a crucial, but preventable risk factor in asthma deaths.⁴

Risk factors for deaths from asthma

There are key factors that predict an increased risk of death.⁵ Although it is not always easy to manage all these factors, practices may consider identifying 'at risk' patients, and ensuring that such patients have easy access to timely care when they request help (Box 1).⁶

Making an accurate diagnosis

It is vital to make a clear and accurate diagnosis by taking (and subsequently documenting) a careful history and thorough examination. Depending on the severity of presentation clinicians will adapt their clinical style to match the urgency. It should be noted that sometimes patients will present with undiagnosed asthma for the first time as an acute problem – and conversely people

BOX 1: Risk factors for death from asthma adapted from British Asthma Guidelines.⁵

Disease-related factors

- Previous near fatal episode of asthma (i.e. previous ventilation or intensive care admission)
- Previous hospital admission for asthma, especially within the last year
- Repeated attendance for emergency care, especially within the last year
- Requiring three or more asthma medications
- High use of β_2 -agonists
- "Brittle asthma"

Behavioural and psychosocial factors

- Non-compliance with treatment or monitoring
- Failure to attend appointments or previous self-discharge from hospital
- Psychiatric illness or learning difficulties
- Misuse of alcohol or drugs
- Current or recent major tranquilliser use
- Income or employment problems, social isolation
- Severe domestic, marital or legal stress, child abuse

with asthma may present with breathlessness due to other causes.

Challenges of telephone triage

Although telephone consultations are increasingly used to triage requests for emergency care there is little evidence on how best to assess asthma by phone. It is essential to establish that there are no significant risk factors, that the patient is able to describe accurately their condition, and ideally is able to provide objective evidence of severity (e.g. a peak flow reading). If there is any concern or doubt the patient should be encouraged to attend for face to face assessment. If a face-to-face consultation is not arranged, both the clinician and the patient should agree with the decision, and indications for further contact clarified and recorded in the clinical record of the consultation.

History

It is always important to establish whether it is likely the patient has asthma, how long symptoms have lasted and how the patient is affected. This is

even more important if advice is provided over the phone. A suggested approach to assessing acute asthma is summarised in Box 2.

BOX 2 – A logical approach to assessing acute asthma

Clarify diagnosis and consider other diagnoses

- Does this patient really have asthma and is this similar to their previous acute exacerbations?
- Are there risk factors for other conditions? (consider infection / pulmonary embolus / pneumothorax / heart failure etc)?

Consider previous history

- What happened in previous episodes? Any previous admissions?
- What treatments have worked in the past?
- Is there any relevant past medical history, medications or allergies?

Establish current level of treatment.

- What treatments are prescribed and how are they taken? (Remember many patients do not take medications as prescribed?)
- What action have they taken in response to the increased symptoms?

How severe is the problem?

- What has triggered this episode?
- What is the duration and severity of acute symptoms? (including impact on sleep and effect of usual medications.)

Examination

A general assessment (anaemia, cyanosis, difficulty in normal speech, level of physical activity) are primarily observed as the patient enters the room and speaks to the clinician. It is important to measure temperature, respiratory rate, pulse rate and examine the chest (looking for a prolonged expiratory wheeze, though remembering that a silent chest can be a sign of a very severe exacerbation).

Clinicians managing acute asthma should have access to a peak flow meter and pulse oximetry. It is important to document the peak flow rate, and how this compares with previous best (or predicted if the best is not

known) as well as oxygen saturation.

Further investigations are not usually necessary, though a chest X ray may be needed to exclude pneumothorax, pneumonia or other intra-thoracic pathology.

Severity of asthma attack

Life threatening asthma is identified by any ONE of the following:

- Peak flow of less than 33% of best (or predicted)
- Oxygen saturation \leq 92% or less
- Cyanosis
- Exhaustion or poor respiratory effort
- Silent chest
- Bradycardia or other cardiac arrhythmia
- Altered consciousness or confusion

Acute severe asthma is identified by:

- Too breathless to complete sentences in one breath
- Peak expiratory flow rate 33-50% of best (or predicted)
- Respiratory rate \geq 25/minute (\geq 30 in children, \geq 50 in infants)
- Heart rate \geq 110/minute (\geq 120 in children, \geq 130 in infants)

Moderate asthma is defined as an increase in asthma symptoms with peak flow rate of 50-75% of best (or predicted) and no features of acute severe asthma.

Management⁵

Emergency admission for life threatening asthma

In the presence of any life-threatening features urgent action and hospital admission is required. Initiate oxygen-driven nebulisation of a β_2 -agonist and administer oral steroids whilst arranging an urgent (999) ambulance and additional clinical help to support. Family or friends may wish to save a few minutes by driving a patient to hospital, but in general it is better to wait for the ambulance with trained staff, oxygen and pharmacological options.

Community management of acute asthma

The treatment principles for acute asthma of any severity are similar – and assessing and recording response to treatment is very important.

- Oxygen should be given to all hypoxic patients to maintain SpO₂ level of 94-98%. High flow oxygen may safely be used as patients with asthma are not at risk of hypercapnia. Nebulised β_2 -agonist bronchodilators should be driven by oxygen.
- Apart from life-threatening asthma (when nebulisation is recommended)

multiple doses of a short acting β_2 -agonist should be given by pressured meter dose inhaler and a spacer device. If response is poor in patients with severe or life-threatening asthma, nebulisation with a combination of a β_2 -agonist and ipratropium bromide can improve bronchodilation. β_2 -agonists can be repeated whilst waiting for an ambulance and admission.

- Systemic steroids take 4-6 hours to take effect, whether administered orally or parenterally, and the earlier they are commenced the better the outcome. The recommended dose for adults is 40-50mg prednisolone daily (30-40mg for children, 20mg for infants) for 5 days or until recovery. The prednisolone dose may be taken once daily rather than in divided doses to facilitate compliance. [Note: oral steroids are not effective in viral associated wheeze in pre-school children, though it is still advisable to give oral steroids to a child with moderate/severe wheeze if the asthma/viral wheeze diagnosis is not clear]

Criteria for hospital admission are:

- Any features of life threatening asthma
- Any patients with a severe attack who do not respond to initial treatment
- Previous history of near fatal asthma
- Diagnostic doubt
- Poor social circumstances
- Poor response to treatment, evening presentations and patient or family concerns are other important factors –if doubt, consider asking for a more expert opinion or arrange admission.

Review

Patients can be allowed home if they show a good response to treatment, however this assumes they have good social support and understand the circumstances when they should re contact health services.

If the patient is managed at home it is recommended that they are reviewed within 48 hours and as appropriate until it is considered safe to stop oral steroids.

Follow up and self-management advice

A patient who has required a course of oral steroids or needed admission should be reviewed to optimise treatment and if possible prevent further admissions. There is excellent evidence of the benefits of pro-

viding self management education supported by asthma action plans in this group of patients,^{5,8} and this should be seen as a cornerstone of the discussion.⁹

Summary

There are still an unacceptably high numbers of avoidable asthma deaths in the UK and many potentially avoidable admissions. Good quality clinical care with careful clinical assessment and monitoring of control is important in management as is the structured follow up after an acute exacerbation. All practices, Out of Hours services, Walk-in centres and Emergency Care centres should have appropriate equipment to manage acute asthma, including access to oxygen-driven nebulisation, compatible bronchodilator delivery systems and pulse oximetry.

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Date of Preparation: October 2011 **Date of Revision:** June 2014 **Author:** Dr Steve Holmes, Shepton Mallet **Conflict of interest:** Member of the British Asthma Steering Group (BTS / SIGN); Received speaker fees, travel grants and project sponsorship funding working relating to AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Napp, Novartis, Merck Sharp Dome though none relating to this content of this work. **Editor:** Dr Hilary Pinnock, Whitstable, Kent

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