Managing mild to moderate asthma in adults

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How should patients be assessed?
What are the treatment options?
How can outcomes be improved?

THE UK HAS ONE OF THE HIGHEST PREVALENCE RATES FOR ASTHMA IN THE WORLD WITH AROUND 1 in 12 (4.3 million) adults affected. Depending on the exact definition used the vast majority of asthma is considered to be mild to moderate (i.e. symptoms and exacerbation frequency controlled without the need for high-dose asthma therapy) and is therefore managed predominantly in primary care.

However, it is widely acknowledged that asthma is an umbrella term covering a multitude of phenotypes, within which symptoms, airway inflammation and bronchial hyperreactivity vary over time. As such no single test performed at one specific time point can definitively confirm or refute the diagnosis.

Asthma guidelines may contain complex diagnostic pathways (see figure 1, p14), suggesting multiple investigations, some of which remain uncommon in primary care (e.g. exhaled nitric oxide) and even when followed may not result in a clear diagnosis being made for a significant proportion of individuals. This coupled with the fact that a number of other conditions (including non-respiratory causes) may also present with wheeze, cough, chest tightness and episodic breathlessness means there are simultaneous concerns about both the over- and under-diagnosis of asthma. However, what is clear from the UK-based National Review of Asthma Deaths (NRAD) report Why asthma still kills is that most patients who died were actually considered to have mild to moderate asthma, with 57% of fatal cases not under specialist care at the time of their death.

MANAGEMENT
Pharmacological treatment

The Why asthma still kills report highlighted that in cases of fatal asthma there was widespread underuse of inhaled corticosteroids (ICS) — 80% of patients did not receive monthly treatment — and an overreliance on short-acting beta-agonists (SABA).

In the most extreme case, one patient...
**SYMPOSIUM RESPIRATORY MEDICINE**

**MILD TO MODERATE ASTHMA IN ADULTS**

**Box 1**

The Royal College of Physicians three questions to identify individuals with good, recent symptomatic control of asthma

In the past month:
- Have you had difficulty sleeping because of your asthma symptoms (including cough)?
- Have you had usual asthma symptoms during the day (cough, wheeze, chest tightness, or breathlessness)?
- Has your asthma interfered with your usual activities (e.g. housework, work/school, etc.)?

NB No to all three questions indicates good control

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‘Significant over-reliance on reliever medication and underuse of inhaled corticosteroids is a key reason for poor outcomes in mild to moderate asthma’

who died had received 113 reliever inhalers in the previous 12 months.4 It is easy to understand why those with mild to moderate disease might forgo regular maintenance therapy and instead rely solely on as required reliever treatment. However, this may mask deteriorating symptoms while allowing the accumulation of critical airway inflammation, risking a life-threatening deterioration which may be sudden. In the National Review of Asthma Deaths, 45% of those who suffered a fatal asthma attack died without seeking medical assistance or before emergency medical care could be provided.4 The joint BTS/SIGN guideline therefore no longer considers SABA inhalers an appropriate monotherapy apart from in those few individuals with very occasional short-lived wheeze5 (and there is debate about whether such cases should be classed as asthma at all).

Asthma is an inflammatory airways disease and should therefore always be treated with a steroid-containing inhaler. All other treatments (including SABA) should be considered additional to inhaled corticosteroids.

Confusingly, national guidelines diverge on the recommended initial add-on therapy to regular low-dose ICS. BTS/SIGN suggests adding in a long-acting beta-agonist (LABA) in the form of a combination inhaler,6 which may help to avoid non adherence with steroids and is modestly superior in reducing oral corticosteroid-treated exacerbations when compared with the NICE recommendation of an oral leukotriene receptor antagonist. However, the latter may be more cost effective in those patients in whom it works.2

Both guidelines suggest considering a maintenance and reliever therapy (MART) regimen before [NICE], or after [BTS/SIGN] progressively escalating the dose of the ICS component of treatment.2,5

A MART regimen allows a single ICS/LABA combination inhaler to be used both regularly as a preventer and in between as required as a quick acting reliever. Individuals using a MART regimen receive escalating inhaled steroid therapy automatically when their symptoms increase and this form of management has been shown to reduce unplanned hospital admissions while actually decreasing total steroid burden overall.7 Only certain ICS/LABA devices and strengths are licensed to be used in this way and in those that are the total number of daily doses may vary by product.

Care must be taken in those sub groups where there is poor correlation between symptoms and airway inflammation – individuals who regularly use their inhalers for episodes of dysfunctional breathing or anxiety may, on a MART regimen, be inadvertently exposing themselves to high-doses of ICS, something that increases the risk of pneumonia.9

Use of separate LABA inhalers, which are unlicensed for asthma, is considered unsafe and has been linked to an increased risk of asthma-related death.10 10 The majority of mild to moderate asthma would be expected to respond prior to the need for high-dose ICS-containing products ± a fourth agent (e.g. long-acting muscarinic receptor antagonist or theophylline), the need for which heralds more difficult or severe asthma and onward referral should be considered. Consideration must also be given to de-escalation of treatment where possible. It is important to discuss with individuals who have been well controlled for at least three months about reducing treatment. Withdrawal oral ± inhaled adjunts to ICS therapy where possible; aim to reduce any steroid-containing product by no more than 25-50% at a time until the lowest ICS-containing maintenance regimen achievable is found.11

‘Consideration must also be given to de-escalation of treatment where possible’

NICE guidance still suggests that there is a group of patients that might be treated with SABA alone and while it is clear that this is intended to be suitable for only a very small minority of individuals2 this has proved a controversial decision in light of the NRAD report,4 particularly as a large-scale Scandinavian study has shown that early implementation of preventer therapy in primary care reduces mortality.12 Data is beginning to emerge to suggest that reliever inhalers may not be required at all in some forms of mild asthma.13

Both major UK guidelines draw attention to the need to check inhaler technique and reinforce good concordance with treatment.2,5

‘Pregnant women should be informed that uncontrolled asthma is by far the greatest risk to their developing fetus’

Importantly, treatment should be continued during pregnancy as large-scale studies have failed to show any increase in congenital malformations associated with asthma therapy. Pregnant asthma patients, a third of whom will experience worsening symptoms during pregnancy, should be informed that uncontrolled asthma is by far the greatest risk to their developing fetus.5

Other medication
Consider whether coprescribed medications may be impacting on asthma
control particularly beta-blockers (even cardioselective ones) and NSAIDs. Cough induced by ACE inhibitors may be mistaken for worsening asthma symptoms. Sensitivity to aspirin is also common, particularly in patients with comorbid nasal polyps, with some series suggesting this impacts on > 20% of cases. If ongoing antplatelet therapy is still indicated, clopidogrel may be a suitable alternative, particularly as its anti-leukotriene effects have been shown to attenuate airway hyperresponsiveness in animal models.

Non-pharmacological treatment

While triggers should be identified, forms of aeroallergen avoidance, particularly those aimed at decreasing exposure to house dust mite, have not been shown to be an effective method of improving asthma control and should not be routinely recommended.

Significant weight loss in obese asthma patients may be beneficial, as with any respiratory condition patients often become fearful of getting breathless and restrict their physical activity leading to weight gain and deconditioning which further exacerbate their symptoms.

Up to one in five asthma patients smoke. Smoking is associated with poorer control and higher use of oral corticosteroids and was another poorer control and higher use of oral corticosteroids17 and was another

SELF-MANAGEMENT

Helping patients to understand the need for ongoing use of ICS-containing maintenance therapy, even after symptoms abate is of the utmost importance. Patients are often shocked when told that their blue inhaler does not treat asthma.

‘Patients are often shocked when told that their blue inhaler does not treat asthma’

Non concordance with treatment is widespread. Even among patients attending tertiary level asthma services more than a third were found to collect less than half of their medications.21 Education on self-management delivered in a primary care setting can be effective in improving asthma control and preventing unplanned use of healthcare services particularly when supported by a written personalised asthma action plan (PAAP). Such plans are fundamental to improving self-management. They should include details of a patient’s maintenance regimen and what specific actions to take in response to deteriorating asthma control, such as temporarily increasing the ICS component of treatment or using oral steroids. PAAPs may be triggered by either increasing symptoms or decreasing peak flow readings compared with an individual’s predicted or, if known, actual best. An example of an action plan using a traffic light system is available to download free of charge from the Asthma UK website. (see figure 1, p15).

Exacerbation frequency, lung function (spirometry or peak expiratory flow rates) and possibly exhaled nitric oxide readings may help to identify individuals with good recent symptomatic control (see box 1, p12).

Exacerbation frequency, lung function (spirometry or peak expiratory flow rates) and possibly exhaled nitric oxide readings may help to identify individuals with good recent symptomatic control (see box 1, p12).

Chest X-ray changes, restrictive spirometry, Crepitations, inspiratory or monomorphic wheeze, clubbing, persistent breathlessness, copious sputum production, Rapidly progressive course; significant extra-pulmonary/systemic symptoms

Investigations: Chest X-ray changes, restrictive spirometry, marked or persistent eosinophilia

Coexisting conditions complicating asthma control: Overlapping COPD; vocal cord dysfunction; bronchiectasis; nasal polypsis. Pregnancy if associated with deteriorating control or significant problems during previous gestational periods

Possibility of hypersensitivity to inhaled material

Including cases of suspected: Hypersensitivity pneumonitis; occupational asthma; work-aggravated asthma; reactive airways dysfunction syndrome (that follows a single high-volume exposure to an irritant)

Treatment and exacerbations

Need for high-dose ICS to control symptoms: Refer patients at any stage of treatment in the following circumstances:

More than two courses of systemic corticosteroids/year required

Presentation to emergency care providers more than once in the past 12 months

Following any asthma-related hospital admission

Patients who have suffered even a single life-threatening asthma attack at any point in the past should be under specialist supervision.
Figure 1
NICE recommendations for interpreting test results for adults with symptoms suggestive of asthma

Interpretation of test results for adults aged 17 and over with symptoms suggestive of asthma

- Does spirometry show an obstruction? (Yes/No)
  - Yes: Are FeNO levels 40 ppb or more? (Yes/No)
    - Yes: Are there variability in peak flow readings? (Yes/No)
      - Yes: Are FeNO levels between 25 and 39 ppb? (Yes/No)
        - Yes: Is there airway hyperreactivity? (Yes/No)
          - Yes: Diagnose with asthma
          - No: Consider alternative diagnoses or referral for a second opinion
        - No: Diagnose with asthma
      - No: Is there airway hyperreactivity? (Yes/No)
        - Yes: Consider alternative diagnoses or referral for a second opinion
        - No: Diagnose with asthma
    - No: Is there variability in peak flow readings? (Yes/No)
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          - Yes: Diagnose with asthma
          - No: Consider alternative diagnoses or referral for a second opinion
        - No: Diagnose with asthma
      - No: Is there airway hyperreactivity? (Yes/No)
        - Yes: Consider alternative diagnoses or referral for a second opinion
        - No: Diagnose with asthma
  - No: Is there reversibility of airflow obstruction? (Yes/No)
    - Yes: Are FeNO levels 40 ppb or more? (Yes/No)
      - Yes: Are there variability in peak flow readings? (Yes/No)
        - Yes: Are FeNO levels between 25 and 39 ppb? (Yes/No)
          - Yes: Is there airway hyperreactivity? (Yes/No)
            - Yes: Diagnose with asthma
            - No: Consider alternative diagnoses or referral for a second opinion
          - No: Diagnose with asthma
        - No: Is there airway hyperreactivity? (Yes/No)
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          - No: Diagnose with asthma
        - No: Is there airway hyperreactivity? (Yes/No)
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          - No: Diagnose with asthma
    - No: Are FeNO levels 40 ppb or more? (Yes/No)
      - Yes: Are there variability in peak flow readings? (Yes/No)
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          - No: Diagnose with asthma
        - No: Is there airway hyperreactivity? (Yes/No)
          - Yes: Consider alternative diagnoses or referral for a second opinion
          - No: Diagnose with asthma
Asthma UK adult asthma action plan using the traffic light system. The template can be downloaded free from the Asthma UK website: www.asthma.org.uk

1. **Every day asthma care:**
   - **My asthma is being managed well:**
     - With this daily routine I should expect/aim to have no symptoms.
     - If I have not had any symptoms or needed my reliever inhaler for at least 12 weeks, I can ask my GP or asthma nurse to review my medicines in case they can reduce the dose.
     - My personal best peak flow is ____________

2. **My daily asthma routine:**
   - **My preventer inhaler** (insert name/colour):
     - I need to take my preventer inhaler every day even when I feel well.
     - I take ____________ puffs in the morning.
     - ____________ puffs at night.
   - **My reliever inhaler** (insert name/colour):
     - I take my reliever inhaler only if I need to.
     - I take ____________ puffs of my reliever inhaler if any of these things happen:
       - I’m wheezing
       - My chest feels tight
       - I’m finding it hard to breathe
       - I’m coughing

3. **When I feel worse:**
   - **My asthma is getting worse if I’m experiencing any of these:**
     - My symptoms are coming back (wheeze, tightness in my chest, feeling breathless, cough).
     - I am waking up at night.
     - My symptoms are interfering with my usual day-to-day activities (eg at work, exercising).
     - I am using my reliever inhaler three times a week or more.
     - My peak flow drops to below: ____________

4. **In an asthma attack:**
   - **I’m having an asthma attack if I’m experiencing any of these:**
     - My reliever inhaler is not helping or I need it more than every four hours.
     - I find it difficult to walk or talk.
     - I find it difficult to breathe.
     - I’m wheezing a lot or I have a very tight chest or I’m coughing a lot.
     - My peak flow is below: ____________

5. **What to do in an asthma attack**
   - **Sit up straight** — try to keep calm.
   - **Take one puff of your reliever inhaler (usually blue)** every 30 - 60 seconds, up to a maximum of 10 puffs.
   - **If you feel worse** at any point OR you don’t feel better after 10 puffs call 999 for an ambulance.
   - **Repeat step 2 after** 15 minutes while you’re waiting for an ambulance.

6. **After an asthma attack:**
   - See your GP within 48 hours to make sure you’re not at risk of another attack. If you get worse see them urgently. Finish any medicines they prescribe you, even if you start to feel better. If you don’t improve after treatment, see your GP urgently.

7. **Other advice from my GP about what to do if my asthma is worse (eg SMART/MART or rescue steroid tablets):**

8. **What to do in an asthma attack if I’m on SMART/MART:**

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The UK has one of the highest prevalence rates for asthma in the world with around 1 in 12 (4.3 million) adults affected. Depending on the exact definition used, the vast majority of asthma is considered to be mild to moderate (i.e. symptoms and exacerbation frequency controlled without the need for high-dose asthma therapy) and managed predominantly in primary care.

**The UK-based National Review of Asthma Deaths**

found that most patients who died were actually considered to have mild to moderate asthma, with 57% of fatal cases not under specialist care at the time of death. In cases of fatal asthma, there was widespread underuse of inhaled corticosteroids (ICS) — 80% of patients did not receive monthly treatment — and an overreliance on short-acting beta-agonists (SABA).

**The joint BTS/SIGN guideline no longer considers** SABA inhalers an appropriate monotherapy apart from in those few individuals with very occasional short-lived wheeze. Asthma is an inflammatory airways disease and should always be treated with a steroid-containing inhaler. All other treatments including SABA should be considered additional to ICS.

**Guidelines diverge on the recommended initial** add-on therapy to regular low-dose ICS; BTS/SIGN suggests adding in a long-acting beta-agonist (LABA) in the form of a combination inhaler, which may help to avoid non-adherence with steroids and is modestly superior in reducing oral corticosteroid-treated exacerbations when compared with the NICE recommendation of an oral leukotriene receptor antagonist. Both guidelines draw attention to the need to check inhaler technique and reinforce good concordance with treatment.

According to the BTS/SIGN guideline individuals with well controlled asthma: should not have bothersome symptoms in the day or night; should require little or no reliever medication; should not suffer exacerbations; and have preserved lung function. Education on self-management, in primary care, can be effective in improving asthma control and prevent unplanned use of healthcare services particularly when supported by a written personalised asthma action plan. As well as understanding what they should be taking for their asthma and when, patients must also be shown how to use their treatments and their inhaler technique reassessed at every contact with a healthcare professional. Reducing exposure to house dust mites, has not been shown to be an effective method of improving asthma control. Significant weight loss in obese asthma patients may be beneficial. Smoking is associated with poorer control and higher use of ICS.

Referral to secondary care should take place when there is diagnostic uncertainty or atypical features, the possibility of hypersensitivity to inhaled material or concerns over treatment or exacerbations. Patients who have suffered even a single life-threatening asthma attack should be under specialist supervision.

**Key points**

**SELECTED BY**

Dr Peter Saul

GP with an interest in respiratory medicine, Wrexham and Associate GP Dean for North Wales, UK

**Good practice points in mild to moderate asthma**

- Interrogate asthma registry datasets to identify individuals not receiving ICS-containing treatment – such patients need their diagnosis or treatment reviewing urgently
- Ensure all patients have been taught to use their inhaler correctly and reassess this whenever possible – where feasible match device types, use combination inhalers and avoid blanket switching to other products
- Ensure all asthma patients have an individualised personal asthma action plan and audit this regularly
- Assess prescription pick-up rates in any patient with deteriorating control, prior to any escalation in regular treatment or referral to secondary care
- Consider how frequently reliever medication should be issued – short-acting beta-agonists do not modify disease course and overreliance on them is associated with fatal asthma

**CONCLUSION**

Mild to moderate asthma is very common and generally its impact and future risk can be managed extremely well with simple interventions. However, this patient group may be prone to an acceptance of suboptimal control and underestimate the potential for sudden deterioration of their condition if management is not adhered to. As with other chronic conditions huge potential gains are achievable with simple interventions that could be achieved using expertise and systems already in place in primary care (see box 2, above).

**Competing interests**

Dr Gareth Jones has received honoraria from Astra-Zeneca, GSK, Pfizer and NAPP. Dr Fatima Khalid has no competing interests.

**References**

1 Asthma UK: Asthma facts and statistics. www.asthma.org.uk/about/media/facts-and-statistics
7 Kuo KH, Kramer C, Mindus SM, Ferrman G. Combination formoterol and budesonide as maintenance and reliever therapy versus combination inhaler maintenance for chronic asthma in adults and children. Cochrane Database Syst Rev. 2013, Issue 12, Art. No.: CD009019
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