Asthma Guidelines in Practice: a PCRS consensus

Asthma Guidelines in Practice is a PCRS consensus-based article to provide clarity on aspects of diagnosis, management and monitoring of asthma that are uncertain due to differences between current national guidelines. The article has been written by Luke Daines (GP and Academic Clinical Fellow, University of Edinburgh) in conjunction with GP colleagues Noel Baxter, Kevin Gruffydd Jones, Steve Holmes, Duncan Keeley, nurse colleagues Val Gerrard and Carol Stonham and pharmacist Deborah Leese. It is based on the recently published PCRS briefing paper (see https://www.pcrs-uk.org/resource/btssign-british-asthma-guideline-update-july-2019).

Key points

Having two UK asthma guidelines has led to conflicting advice and is confusing for clinicians. This article aims to bring clarity on a number of issues and has been updated in line with the recently released BTS/SIGN 2019 guideline.

Asthma diagnosis

- Following a structured clinical assessment, weigh up the probability that an individual has asthma: use a monitored trial of treatment if asthma is highly probable; conduct further investigations (spirometry, peak expiratory flow variability) if an individual is at intermediate probability.
- Achieving an accurate diagnosis may take time and may require the comparison of repeated measurements and clinical assessments
- Objective evidence to support an asthma diagnosis should be sought however likely the diagnosis appears to be.
- The basis for asthma diagnosis should be clearly documented in medical records.

Asthma management

- Regular inhaled corticosteroid (ICS) is regarded as the foundation of asthma pharmacological treatment.
- When prescribing ICS for children, the starting dose is usually a 'very low dose' and the highest dose is classed as a 'medium dose'.
- In line with the NICE recommendation, PCRS suggests a trial of leukotriene receptor antagonists (LTRA) as the first line add-on therapy to ICS with careful review.
- Maintenance and Reliever Therapy (MART) may be considered in adults who have a history of asthma attacks despite medium dose ICS or ICS/LABA (long-acting beta-agonist).

Asthma monitoring

- A regular review of individuals with asthma provides the chance to assess current symptom control and consider the future risk of an asthma attack.
- Record asthma control, a measure of lung function, asthma attacks, oral corticosteroids, absence from work/school and smoking status at each review.
- Identify the future risk of an asthma attack in all individuals with asthma: previous asthma attack, poor asthma control and short-acting beta agonist (SABA) over-reliance increase the risk substantially.
- Recognise individuals with severe asthma and refer for specialist review

Introduction

Asthma is a chronic respiratory condition affecting an estimated 5.4 million people in the UK.[1] Individuals with asthma suffer from wheeze, shortness of breath, cough and chest tightness, limiting everyday activities and fulfilment of roles at home and work.[2]

In the UK, public sector spending for asthma exceeds £1.1 billion each year, with the majority of costs (74%) arising from prescriptions and the estimated 6.4 million primary care consultations that occur each year.[3] Evidence-based management can maintain good day-to-day control for most people with asthma and substantially reduce the risk of asthma attacks.[2]

However, knowing which evidence-based strategies to implement has been made confusing by the presence of multiple guidelines for asthma care. In the UK, the National Institute for Health and Care Excellence (NICE) guideline (published 2017) concentrates on diagnosis, monitoring and chronic management and incorporates economic evaluation with interpretation from a multidisciplinary guideline group.[4] The British Thoracic Society/Scottish Intercollegiate Guideline Network (BTS/SIGN) guideline (updated 2019) covers all aspects of asthma care and is led by a multidisciplinary clinical group.[2] Whilst the evidence considered by the NICE and BTS/SIGN guideline groups is broadly the same, the methodology used to produce the guidelines is different, and has resulted in different recommendations.[5] Thankfully, following calls from PCRS (amongst others),[6] an agreement between BTS/SIGN and NICE has been reached, meaning that future asthma guidelines will be jointly produced.

Rationale for PCRS consensus

We look forward to the joint guideline but, in the meantime, we want to support primary care clinicians who are facing uncertainty due to conflicting recommendations between the national guidelines. This article, developed by PCRS members, aims to provide a clear, concise and pragmatic view on the diagnosis, management and monitoring of asthma in primary care. It does not attempt to reproduce all the details contained in each guideline, but instead focuses on the areas that vary substantially between NICE and BTS/SIGN versions, offering a workable solution.

Recommendations

Asthma diagnosis

Achieving a clear consensus for the best diagnostic strategy for asthma is a particular challenge as, on top of economic and implementation considerations,[4] the definition of asthma is also evolving. Traditionally a diagnosis of asthma was based on symptoms and demonstration of variable obstructive airflow on lung function testing.[2,7] Yet, more recent definitions of asthma include airway inflammation and airway hyper-responsiveness to incorporate the subtypes of asthma identified through recent research on genetics and pathophysiological mechanisms.[2] This changing understanding of asthma has delivered new ways in which to test and treat for asthma subtypes and may in the future lead to asthma being 'deconstructed' into distinct 'treatable traits'.[7,8] Until then, a clear pragmatic way forward is needed to guide clinicians in non-specialist settings, where most asthma cases are diagnosed.[8]

There is no definitive gold standard test which can categorically confirm or refute the diagnosis of asthma. Therefore, the diagnosis of asthma is made clinically following a structured clinical assessment; a careful integration of evidence from a wide variety of sources.[2,4] Key components of a structured clinical assessment include a detailed history, examination, review of the patient's clinical records and previously completed investigation results (for example, peak expiratory flow, spirometry, blood eosinophils from a full blood count).

When taking a history, ask about wheeze, shortness of breath, cough and chest tightness, the most suggestive symptoms of asthma.[2,4] Symptoms usually occur in episodes with no (or minimal) symptoms between episodes.[2] Combinations of symptoms (particularly wheeze, cough and shortness of breath) occurring in episodes are more useful for identifying asthma than individual symptoms, particularly in children.[9] Ask about variability in symptoms through the day and between seasons. Clarify any triggers that provoke or worsen symptoms[4] and, in adults, check specifically for work-related factors. Remember to enquire about personal or family history of other atopic conditions such as allergic rhinitis or eczema.[4] Information from the patient clinical record, including previous respiratory illnesses, treatments and responses and previous examination findings (particularly wheeze heard on chest auscultation by a health professional), can further build the clinical picture.

On auscultation of the chest, asthmatic wheeze tends to be end-expiratory, scattered and polyphonic. Consider alternative diagnoses if wheeze is never heard during symptomatic episodes (Table 1). Remember that respiratory examination may well be normal in an asymptomatic individual, so it is important not to exclude asthma solely on examination findings.[4] In addition to a respiratory examination, check the throat for enlarged tonsils and look out for other signs of atopic disease such as eczema or rhinitis.

Following a structured clinical assessment, the BTS/SIGN guide-

Table 1: Clinical features to suggest an alternative diagnosis to asthma in adults

Clinical clue	Possible diagnosis
No airflow obstruction	
Predominant cough with no lung function abnormality	Chronic cough syndromes; pertussis
Prominent dizziness, light-headedness or peripheral tingling	Dysfunctional breathing
Recurrent severe 'asthma attacks' without objective evidence to confirm	Vocal cord dysfunction
Predominant nasal symptoms without lung function abnormality	Rhinitis
Postural and food-related symptoms, predominant cough	Gastro-oesophageal reflux disease
Orthopnoea, paroxysmal nocturnal dyspnoea, peripheral oedema, pre-existing cardiac disease	Cardiac failure
Crackles on auscultation	Pulmonary fibrosis
With airflow obstruction	
Significant smoking history (ie, over 30 pack-years), age of onset over 35 years	COPD
Chronic productive cough in the absence of wheeze or breathlessness	Bronchiectasis*, inhaled foreign body*, obliterative bronchiolitis, large airway stenosis
New onset in smoker, systemic symptoms, weight loss, haemoptysis	Lung cancer*, sarcoidosis*

*May also be associated with non-obstructive spirometry.

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line recommends weighing up the probability that the individual has asthma based on three categories: high, intermediate and low.[2]

If a patient (whether adult or child) has all of the following typical clinical features, they are considered to have a high probability of asthma:[2]

- Recurrent episodes of symptoms ('attacks')
- Wheeze confirmed by a healthcare professional
- A personal or family history of atopy
- A past record of variable airflow obstruction
- No features to suggest an alternative diagnosis (Table 1).

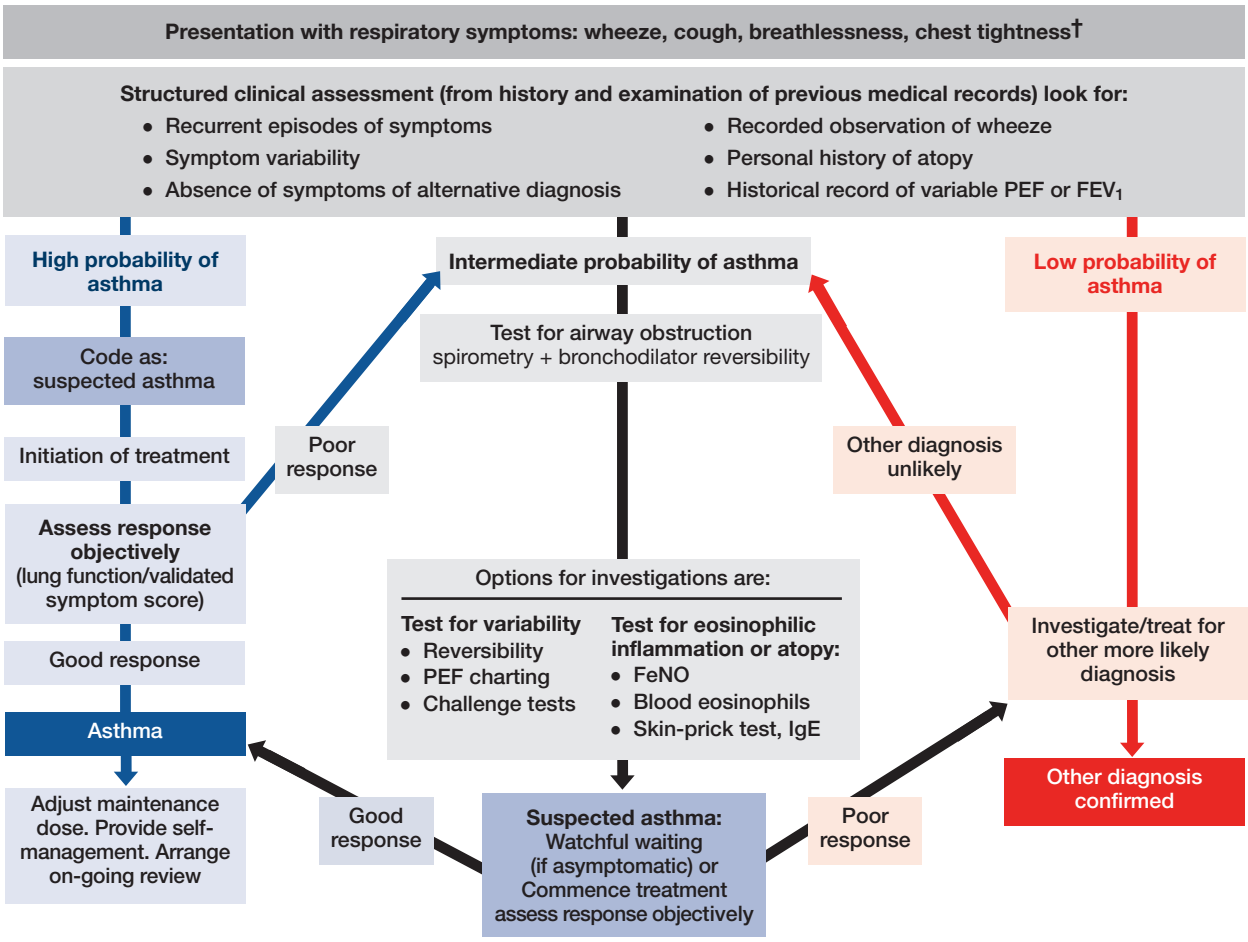
If there is any doubt, the diagnosis should be considered as intermediate probability. Adults and children who have none of the typical features of asthma or whose symptoms are suggestive of an alternative diagnosis have a low probability of asthma.[2] The probability of asthma informs the next steps in the diagnostic work-up, as demonstrated in Figure 1.

Even with a careful structured clinical assessment and diagnostic work-up, the diagnosis of asthma can be challenging, particularly due to the variable nature of symptoms and lung function over time and the heterogeneity of presentation. Primary care is ideally placed to collect, record and appraise the information required to make an asthma diagnosis and provide continuity to allow repeated assessments over time so that treatment response and natural variation can be evaluated. Consequently, a diagnostic strategy based on repeated clinical assessments, supported by objective clinical tests (including peak expiratory flow monitoring) and sensitively using trials of initiating and discontinuing therapy is recommended as a practical way forward.

It is important to refer to specialist services in cases of doubt or difficulty (Table 2).

Whilst investigating asthma, and until a diagnosis is confirmed, use the code 'suspected asthma'.[2,4] Once a diagnosis of asthma has been made, record the basis for the decision in a single entry in the person's medical records, alongside the coded diagnostic entry. The diagnosis of asthma should ideally be revisited and checked regularly – especially when you first take over the care of a patient thought to

Figure 1 - Diagnostic algorithm for individuals presenting with symptoms suggestive of asthma



† In children under 5 years and others unable to undertake spirometry in whom there is a high or intermediate probability of asthma, the options are monitored initiation of treatment or watchful waiting according to the assessed probability of asthma

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Table 2 Reasons for specialist referral

Adults	Children
Referral for tests not available in primary care	
Diagnosis unclear	Diagnosis unclear
Suspected occupational asthma (symptoms that improve when patient is not at work, adult-onset asthma and workers in high-risk occupations)	
Poor response to asthma treatment	Poor response to monitored initiation of asthma treatment
Severe/life-threatening asthma attack	Severe/life-threatening asthma attack
'Red flags' and indicators of other diagnoses	
Prominent systemic features (myalgia, fever, weight loss)	Failure to thrive
Unexpected clinical findings (eg crackles, clubbing, cyanosis, cardiac disease, monophonic wheeze or stridor)	Unexplained clinical findings (eg focal signs, abnormal voice or cry, dysphagia, inspiratory stridor)
Persistent non-variable breathlessness	Symptoms present from birth or perinatal lung problem
Chronic sputum production	Excessive vomiting or posseting
Unexplained restrictive spirometry	Severe upper respiratory tract infection
Chest X-ray shadowing	Persistent wet or productive cough
Marked blood eosinophilia	Family history of unusual chest disease
	Nasal polyps
Patient or parental anxiety or need for reassurance	

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have asthma. Good documentation is strongly recommended as the variable nature of asthma can lead to individuals experiencing long periods without symptoms, leading patients and clinicians to question the original diagnosis.[10]

Objective tests

Objective tests should be done in all patients old enough to perform them, as part of an initial diagnostic assessment to support a confident diagnosis of asthma. Increasing the quality and availability of objective testing across healthcare is an important policy priority. Understanding that each diagnostic test available for asthma has strengths and limitations is therefore valuable in order to use tests most effectively to build up sufficient evidence so that a differential diagnosis can be confirmed or refuted correctly.

Tests for demonstrating variability in airflow obstruction

A defining feature of asthma is variable airflow obstruction caused by airway bronchoconstriction. Yet, demonstrating variable airflow obstruction can be a challenge as airway physiology may be normal when an individual with asthma is asymptomatic. This is reflected in estimates for the negative predictive value of spirometry in adults and children which varies between 18% and 54%,[2] indicating that more than half of patients who have a negative result (non-obstructive spirometry) will have asthma.[11]

Therefore, relying on objective tests of airflow obstruction completed only at a single point of time risks missing asthma, particularly if the patient is asymptomatic at the time of testing. Instead, testing for variable airflow obstruction should be repeated over time.

In primary care, peak expiratory flow monitoring and spirometry with bronchodilator reversibility testing are recommended measures to demonstrate variable airflow obstruction. When interpreting spirometry, BTS/SIGN recommend the use of lower limit of normal for FEV_1/FVC ratio (instead of the fixed ratio of 70%) in order to avoid the substantial under-diagnosis in children and over-diagnosis of obstruction in older people.[2,5] Spirometry is a useful diagnostic test in all patients with suspected asthma, yet if resources are limited, prioritising those individuals who are considered intermediate probability is likely to be the best strategy. Although sometimes undervalued, peak expiratory flow monitoring can provide useful measurements. The value of peak expiratory flow monitoring as an important initial test in the assessment of asthma was discussed in the Spring 2017 edition of *Primary Care Respiratory Update* (see https://pcrs-uk.org/peak-flow-and-microspirometry-support-diagnosis).

Tests for demonstrating eosinophilic inflammation

A positive fractional exhaled nitric oxide (FeNO) test indicates the presence of eosinophilic inflammation, providing supporting (rather than conclusive) evidence for an asthma diagnosis. A systematic review of the accuracy of FeNO in diagnosing asthma in adults and children reported a pooled sensitivity of 65% and specificity of 82%, indicating that FeNO has a higher potential for ruling in – as opposed to ruling out – the diagnosis of asthma.[12] In adults, a FeNO reading of 40 ppb or more should be regarded as a positive test.[2,4] Accurate

Box 1 Factors that may confound the accuracy of fractional exhaled nitric oxide (FeNO) in making an asthma diagnosis[2,13,14]

- Increased levels in men, tall people and those with a diet high in nitrates (eg, spinach, broccoli)
- Increased levels in individuals with allergic rhinitis exposed to an allergen (even without respiratory symptoms)
- Increased levels in those with rhinovirus infection (inconsistent effect in those with asthma)
- Lower levels observed in children (N.B. accordingly a lower reference range is used)
- Reduced levels in cigarette smokers
- Reduced levels by inhaled or oral steroids

interpretation of a FeNO result requires an understanding of the potential confounding factors that may produce false positive and false negative results (Box 1).

NICE (2017) recommendations for the role of FeNO in the diagnosis of asthma are different from those advocated by BTS/SIGN.[2,4] Given the limitations of FeNO, a central role in the diagnostic work-up of all people suspected of asthma, as advocated by NICE, seems over-emphasised and may lead to unintended consequences. Currently, FeNO is not widely available in UK primary care so, if FeNO is perceived as a required test, referrals to secondary care may increase, adding to the workload in specialist settings and potentially de-skilling clinicians in primary care. Cost may be a barrier for individual practices adopting FeNO, as ongoing consumables are required in addition to an initial investment. A future solution might be for practices to pool resources and develop a locality-based diagnostic service, as successfully implemented in the Netherlands and currently being trialled in the UK.[4,15]

Despite these concerns, there are clear benefits to be gained from using FeNO, which could be realised if appropriately implemented. For instance, if an individual has an intermediate probability of asthma following a structured clinical assessment, a positive FeNO test increases the probability of asthma, providing further supporting evidence to confirm or refute a diagnosis. Therefore, in primary care, PCRS recommend using FeNO as an optional investigation to test for eosinophilic inflammation in individuals where diagnostic uncertainty remains. Routine use of FeNO testing in adults and children is not recommended except in specialist respiratory clinics. The PCRS position statement on FeNO testing is available from https://www.pcrs-uk.org/resource/feno-testing-asthma-diagnosis.

Diagnosis in children

Confirmation of variable airflow obstruction by objective demonstration of peak flow monitoring or spirometry with reversibility is desirable in children old enough to perform these tests. However, the use of spirometry is not well established in children in primary care and additional training may be needed to ensure accurate results. If FeNO is used in children aged 5–16 years, a result of 35 ppb or more is regarded as a positive test.[2,4]

In children under 5 years of age, a diagnosis of asthma is based on establishing the probability of asthma after an initial structured clinical assessment.[2] If the probability of asthma is high, a trial of an inhaled corticosteroid (ICS) using a dosage of 400 µg/day beclomethasone or equivalent may be considered.[2,16] If a child is started on a trial of treatment, it should last for 6–8 weeks and be stopped at the end of the trial.[2,16] If the child has had no response to treatment and the medication has been taken, the diagnosis of asthma is unlikely.[16] If symptoms improve with ICS but recur when stopped, then settle again with reintroduction of treatment, a diagnosis of asthma can be made.[16] Where diagnostic doubt persists, referral for specialist assessment should be considered (Table 2).

Asthma management

Management of asthma should be patient-centred, encouraging and supporting self-management and making treatment decisions in partnership with the individual. This should include promoting non-pharmacological approaches including weight control, encouraging physical activity and addressing tobacco dependency. Supported self-management, which includes the provision of an asthma action plan, improves individual asthma control whilst reducing visits to unscheduled care.[17]

ICS are regarded as the foundation of asthma pharmacological treatment.[2,5] Therefore, a regular (low-dose) ICS with a short-acting beta-agonist (SABA) as required is the recommended first-line maintenance treatment for adults. In children, once a diagnosis has been made, the starting dose of ICS is 'very low dose' (200 µg/day beclomethasone or equivalent). If the dose needs to be increased, be aware that 'medium dose' (800 µg/day beclomethasone or equivalent) represents a level of treatment to be used only if referring to specialist care.[2]

If asthma is well controlled there should be little or no need for SABA.[2] Three or more doses of SABA per week may indicate poor asthma control and a need to move up treatment. Over-reliance on SABAs is well established as a risk factor for fatal asthma[18] (see Monitoring section for further details), therefore anyone prescribed more than one SABA a month should have their asthma urgently assessed.[2]

Prescribing inhalers by brand name and device ensures that patients receive the inhaler that the prescriber intends for them. Prescribing a generic inhaler or not specifying the device should be avoided as it may result in a patient receiving an inhaler they have not been taught to use. If prescribing a metered dose inhaler (MDI), remember to issue with a spacer to increase the efficacy of drug delivery.

A further consideration when prescribing inhalers is environmental impact. MDIs have a higher global warming potential than dry powder inhalers (DPIs),[19] so if there is no obvious clinical reason to

choose between inhaler types, opt for the lower carbon footprint DPIs. Remember, however, that any decisions about inhaler choice should be made on an individual basis between clinicians and patients, so PCRS warn against any 'blanket switching' from MDIs to DPIs.

Add-on therapies

The choice of initial add-on treatment to low-dose ICS remains a contentious issue and, therefore, was one of the key questions addressed by the BTS/SIGN 2019 update.[2] To understand why the two guidelines continue to offer different advice, remember that the NICE multidisciplinary guideline group considers an economic evaluation in addition to clinical evidence[4,5] whilst BTS/SIGN make recommendations based purely on a critical appraisal of the literature.[2,5]

Adding long-acting beta-agonists (LABA) to ICS alone improves symptoms, lung function and decreases asthma attacks in adults and children.[2] In comparison to leukotriene receptor antagonists (LTRA), LABA are more effective in reducing the number of exacerbations,[20] leading BTS/SIGN to recommend LABA as first-line add-on treatment in adults.[2] If prescribing, LABA should always be issued in combination inhalers with ICS, reducing the risk of harm from using LABA as monotherapy[21] and improving the likelihood of adherence to an additional medication. In children, BTS/SIGN state there is insufficient evidence to choose between LABA or LTRA as initial add-on therapy.[2]

NICE recommends LTRA as the first-line add-on therapy in adults and children because the marginal superiority in efficacy of LABA (noted in adults)[20] is outweighed by its greater cost.[4] As an oral medication, LTRA may offer an advantage for some for whom an inhaler is impractical. LTRA also offer treatment benefit for those with allergic rhinitis.

PCRS supports the value-based approach[22] that NICE used, and therefore recommend LTRA as the first-line add-on therapy to ICS. Effectiveness and tolerability should be reviewed in 4–6 weeks. If LTRA is found ineffective it should be withdrawn, as adding a LABA on top of a LTRA removes any cost advantage. In children, the use of a paediatric low-dose ICS with LTRA as first-line add-on treatment is recommended. If this combination is ineffective, then switch the LTRA for a LABA.

Ultimately, the decision to opt for LTRA or LABA as initial add-on therapy should be made after discussion between the clinician and patient and should take consideration of other factors including patient preference, adherence (including the potential for additional prescription costs), concomitant diseases (eg, rhinitis) and risk of exacerbation. Furthermore, there is no need to change the medication of patients who are already well controlled on ICS/LABA.

Single combination inhaler for maintenance and reliever therapy

Particular types of ICS/LABA combination inhaler may be used to provide both a regular daily dose and relief from symptoms when needed, so-called Maintenance and Reliever Therapy (MART). In comparison with the more traditional fixed daily dosing regimens, MART may have advantages for some individuals as only one inhaler is needed and every inhalation contains ICS, reducing the risk of undertreated airway inflammation.

There are, however, important points to consider with MART. Firstly, only those inhalers which contain formoterol as the LABA are suitable for MART, as formoterol has a rapid onset of action. Secondly, the evidence to support MART is based on trials done on adults, and whilst there was a reduction in asthma attacks (compared with standard ICS/LABA treatment), there was no difference to quality of life, asthma control, lung function or asthma medication use.[23] Thirdly, with limited evidence[23] and no licensed product for under-12-year-olds, MART is not recommended in children.

In summary, MART may be considered as an option in adults who have a history of asthma attacks despite medium-dose ICS or ICS/LABA.[2] To become more widely used, there is a need for better training and greater clarity on self-management instructions for MART.

Asthma monitoring

A regular review of individuals with asthma provides the chance to assess current symptom control and consider the future risk of an asthma attack. Primary care is best placed to monitor asthma by staff who are trained, competent and confident, and should be completed regularly (at least annually in stable patients with a definite diagnosis) as a pre-planned appointment but also opportunistically. A more frequent review may be necessary when a diagnosis is first made, or for those with poor asthma control. At each review, asthma control, lung function, asthma attacks, oral corticosteroids, absence from work or school and smoking status should be recorded in the notes. In children, growth (height and weight centile) should also be measured.[2]

Monitoring asthma symptom control

Asthma control should be assessed using the validated asthma control questionnaire or asthma control test and are recommended over the Royal College of Physician's three questions which has greater value as a screening test for poor control.[2] Peak flow or spirometry (or both) should be used to assess lung function. If asthma control is sub-optimal, check for and address the common causes of poor asthma control listed in Box 2. For more information on supporting smokers to quit (be that individuals with asthma or parents/carers of children with asthma), see the PCRS article on tobacco dependency (https://www.pcrs-uk.org/sites/pcrs-uk.org/files/TobaccoDependFlier_FINAL.pdf).

Currently there is insufficient evidence from real-life primary care to support using FeNO routinely to monitor asthma control. However, it may be an option to support asthma management in people who are symptomatic despite using ICS as it can help to identify poor adherence.

Box 2 Common causes of poor asthma control

- Incorrect diagnosis, or co-morbidity that has been missed
- Lack of medication adherence
- Current treatment is unsuitable
- Under-use of ICS or overuse of SABAs
- Inappropriate inhaler technique
- Failure to use a spacer with ICS delivered by a metered dose inhaler
- Smoking (active or passive) – ideally use a carbon monoxide meter to monitor smoking
- Exposure to occupational triggers
- Seasonal or environmental factors
- Psychosocial reasons, including ideas and concerns about asthma/treatment

As well as during a routine review, inhaler technique should be observed and errors in technique corrected at every opportunity when there is a deterioration in asthma control, when the inhaler is changed and if the patient requests a check.

Predicting future risk of asthma attacks

In line with the delivery of personalised asthma care, identifying the future risk of an asthma attack for children and adults should be incorporated into any asthma review. In children aged 5–12 years (Table 3), the factors associated with a greatly increased risk of asthma attack are persistent asthma symptoms and past history of asthma attack.[24] School-aged children are at moderately increased risk if they are over-reliant on SABA, have a co-existing atopic disease, are vitamin D deficient or from a low-income family.[24] Additional factors known to slightly increase the risk of asthma attack are exposure to tobacco smoke, obesity, low parental education and younger aged children (ie, closer to 5 than 12 years).[24]

In adults (Table 4), having a history of previous asthma attacks is associated with a greatly increased risk of asthma attack.[25] Poor asthma control and SABA over-reliance are both associated with a moderately increased risk of an asthma attack.[26] Smoking, obesity, depression, older age, reduced lung function and female gender are all associated with a slightly increased risk of a future asthma attack.

Understanding the factors associated with an increased risk of attack can help clinicians to know what to enquire about in consultation, but should also lead to proactive care by identifying at-risk individuals who do not consult regularly (for instance, by searching the practice record to identify those individuals over-using SABAs). At-risk individuals should receive targeted care by increasing the frequency of review, optimising medication choice and adherence and reviewing self-management strategies. For ideas and tools to facilitate action on SABA over-reliance, see the work of the Asthma Right Care Project (https://www.pcrs-uk.org/asthma-right-care).

Severe asthma

When monitoring individuals and weighing up future risk of attack, have in mind the possibility of severe asthma as such patients require referral for specialist review. BTS/SIGN define severe asthma as more than two asthma attacks a year or persistent symptoms with SABA use more than twice a week despite adequate adherence (>80%) and therapies beyond initial or add-on controller treatments (ie, 'specialist therapies').[2] Severe asthma is increasingly regarded as a distinct disease entity requiring specialist treatment and is the subject of a PCRS pragmatic guide for clinicians (available at

Table 3 Factors associated with increased risk of future asthma attacks in school-aged children

Level of increased risk	Children
Greatly increased risk	• History of previous asthma attacks • Persistent asthma symptoms
Moderately increased risk	• Suboptimal drug regimen (the ratio of the number of prescriptions for controller medication to total number of prescriptions for asthma medication <0.5) • Comorbid atopic/allergic disease • Low-income family • Vitamin D deficiency
Slightly increased risk	• Younger age • Exposure to environmental tobacco smoke • Obesity • Low parental education
Unclear (evidence limited or equivocal)	• Reduced lung function • Raised FeNO at routine interviews • Positive skin prick tests • History of allergen exposure

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Table 4 Factors associated with increased risk of future asthma attacks in adults

Level of increased risk	Children
Greatly increased risk	• History of previous asthma attacks
Moderately increased risk	• Poor control (assess review using objective patient reported control questionnaire such as ACT or ACQ) • Inappropriate or excessive SABA use
Slightly increased risk	• Older age • Female • Reduced lung function • Obesity • Smoking • Depression
No increased risk	• Gender • Urban residence
Unclear (evidence limited or equivocal)	• History of anaphylaxis • Comorbid gastro-oesophageal reflux • COPD • Raised FeNO at routine reviews • Blood eosinophilia • Poor adherence

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https://www.pcrs-uk.org/resource/triggers-referral-poorly-controlled-and-severe-asthma).

Conclusions

We look forward to the return of a single asthma guideline developed through the collaboration of NICE and BTS/SIGN. In the meantime, we have proposed clear guidance to address particular concerns over conflicting aspects of asthma diagnosis, management and monitoring that will support non-specialists to continue providing high quality asthma care.

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