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A Quick Guide to the Routine Management of Asthma in Primary Care

Primary Care Respiratory Society UK
Formerly known as General Practice Airways Group

Adapted from the 2014 BTS/SIGN Guideline for the Management of Asthma and incorporating NICE guidance on inhaled steroids, NICE Quality Standard for asthma and the recommendations of the RCP National Review of Asthma Deaths

A Quick Guide to the Routine Management of Asthma in Primary Care

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About PCRS-UK

Serving primary care for over two decades

The Primary Care Respiratory Society UK (PCRS-UK) is the UK-wide professional society supporting primary care to deliver high value patient centred respiratory care. Our ultimate vision is "optimal respiratory health for all" which we seek to achieve through:

- Campaigning to influence policy and set standards in respiratory medicine, relevant to primary care nationally and locally: the voice of primary care in respiratory medicine
- Educating primary care health professionals to deliver and influence respiratory care
- Open access to best practice, evidence based clinical guidance and resources, produced by primary care respiratory experts for primary care
- Membership scheme to support the respiratory professional development and empower primary care health professionals to provide and commission high value, patient-centred care
- Promoting and disseminating real life primary care research in respiratory conditions to support policy and education activities

Our scientific journal, *npj: Primary Care Respiratory Medicine*, flagship annual national primary care conference and Quality Award underpin our research, campaigning and education work.

The PCRS-UK is a membership organisation. To learn more about the full range of membership services and programmes or for information on how to join please visit our website at **http://www.pcrs-uk.org**.

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Content

Introduction

More than 3.4 million people in the UK are currently being treated for asthma[1] yet despite proven treatments there remains a high morbidity from this condition with rising numbers of emergency admissions. Many of these could be avoided with the correct management.

We still have deaths from asthma with 46% of cases having avoidable risk factors identified in the National Review of Asthma Deaths.[2] It is therefore important that healthcare professionals offer the best available management tailored to individual patients' needs. Guidelines can assist us in our care management and treatment of this common problem.

This 'Quick Guide' to the routine management of asthma in primary care is based on the British Thoracic Society (BTS) and Scottish Intercollegiate Guideline Network (SIGN) British Guideline on the Management of Asthma, May 2008, revised edition published October 2014[3] **https://www.brit-thoracic.org.uk/guidelines-and-quality-standards/asthma-guideline/** supported by the recommendations of the Royal College of Physicians National Review of Asthma Deaths[2] and the guidance published by NICE on the use of inhaled steroids in the management of asthma TA131 and TA138[4] and the NICE Quality Standard for Asthma.[5]

This Quick Guide also takes into consideration the approach proposed by NICE in the draft guideline on the diagnosis and monitoring of asthma[6] it recently put out for consultation. At various points we allude to what NICE recommended for your information.

It is intended as an 'aide memoire' for primary care health professionals.

The PCRS-UK is grateful to BTS/SIGN for permitting the adaptation of figures and text from the Guideline to support this publication. Additional tools and resources including slides and case studies to support the guideline are also available on the BTS website available at **http://www.brit-thoracic.org.uk/guidelines/asthma-guidelines.aspx**

Aim of asthma management

The aim of asthma management is disease control, this is defined as:

- No daytime symptoms
- No night time symptoms due to asthma
- No need for rescue medication
- No exacerbations
- No limitations on activity including exercise
- Normal lung function - in practical terms FEV_1 and/or PEF >80% predicted or best with minimal side effects[4,7]

Diagnosis of asthma

The NICE Quality Standard for Asthma statement 1 recommends that all people with newly diagnosed asthma are diagnosed in accordance with BTS/SIGN guidance.[5]

The approach proposed more recently by NICE[6] put greater emphasis on objective testing to support diagnosis than BTS/SIGN does. This is important where diagnosis is uncertain. This is a direction of travel that clinicians may want to consider.

The range of objective tests that NICE suggested includes: spirometry, bronchodilator reversibility testing, FeNO (fractional exhaled nitric oxide) testing and bronchial hyper-responsiveness challenge testing with histamine and methacholine. Importantly, NICE pointed out that there is no single gold standard objective test for asthma and suggested it can be useful to do more than one.

Diagnosis in children (See Figure 1, Page 7)

Spirometry and peak flow recording can be hard in younger children, but should be attempted and recorded in all if possible. Focus the initial assessment in children suspected of having asthma on:

- Presence of key features in the history and examination
- Careful consideration of alternative diagnoses

Clinical features that increase the probability of asthma

- More than one of the following symptoms - wheeze, cough, difficulty breathing, chest tightness:
  - particularly if these are frequent and recurrent;
  - are worse at night/early morning
  - occur in response to are worse after exercise or other triggers such as exposure to pets, pollens, cold or damp air, or with emotion, laughter
  - occur apart from colds
- Personal history of atopic disease
- Family history of atopic disease and/or asthma
- Widespread wheeze heard on auscultation
- History of improvement in symptoms or lung function in response to adequate therapy

The diagnosis of asthma in children aged under 5 yrs is a clinical one. It is based on recognising a characteristic pattern of episodic symptoms in the absence of an alternative explanation. Confirmation by objective demonstration of peak flow or spirometry reversibility is desirable in children old enough to perform these tests. Where diagnostic doubt persists referral for specialist assessment using tests for airway inflammation should be considered.

With a thorough history and examination, a child can usually be classified into one of three groups:

High probability of asthma - diagnosis of asthma is likely

- Start a trial of treatment
- Review and assess response after an agreed period, no longer than 3 months
- Reserve further testing for those with poor response

Low probability of asthma - diagnosis other than asthma is likely

- Consider alternative diagnosis and treat appropriately
- Consider more detailed investigation and/or specialist referral

Intermediate probability of asthma - diagnosis is uncertain

In some children including those less than five years of age, where there is insufficient evidence at the first consultation to make a firm diagnosis, but no features to suggest an alternative diagnosis, there are several possible approaches to reaching a diagnosis. These approaches include:

1. **Watchful waiting with review** - in children with mild, intermittent wheeze and other respiratory symptoms which occur only with URTIs, it is reasonable to give no specific diagnostic label or treatment and simply plan a review of the child after an agreed interval with the parents/carers

2. **Objective testing which includes** - lung function and reversibility testing, FeNO testing and bronchial hyper responsiveness challenge testing. Perform lung function and reversibility testing in children who can perform measurements of airflow via spirometry* or peak flow and have evidence of airways obstruction, assess the change in FEV_1 or PEF in response to an inhaled $\beta 2$-agonist such as salbutamol (reversibility) and/or response to a trial of treatment for a specified period. Because of the variable nature of asthma normal results on testing do not exclude a diagnosis of asthma especially if performed when the child is asymptomatic: If there is significant improvement in FEV_1 and/or PEF of 12% or a positive response to treatment the of asthma is highly probable. If there is no significant reversibility and a trial of treatment is not beneficial (see below), consider alternative diagnosis and/or specialist referral.

3. **Trial of treatment with review** - choice of treatment e.g. inhaled short-acting $\beta 2$-agonist to relieve symptoms or inhaled corticosteroid to prevent symptoms depends on the severity and frequency of symptoms. Due to the variable nature of asthma, it can be difficult to assess the response to treatment as an improvement in symptoms or lung function may be due to spontaneous remission. A period of careful observation while withdrawing medication may prove useful in establishing treatment effect. It may be necessary for prolonged observation to determine whether a child has asthma depending on individual disease patterns and triggers.

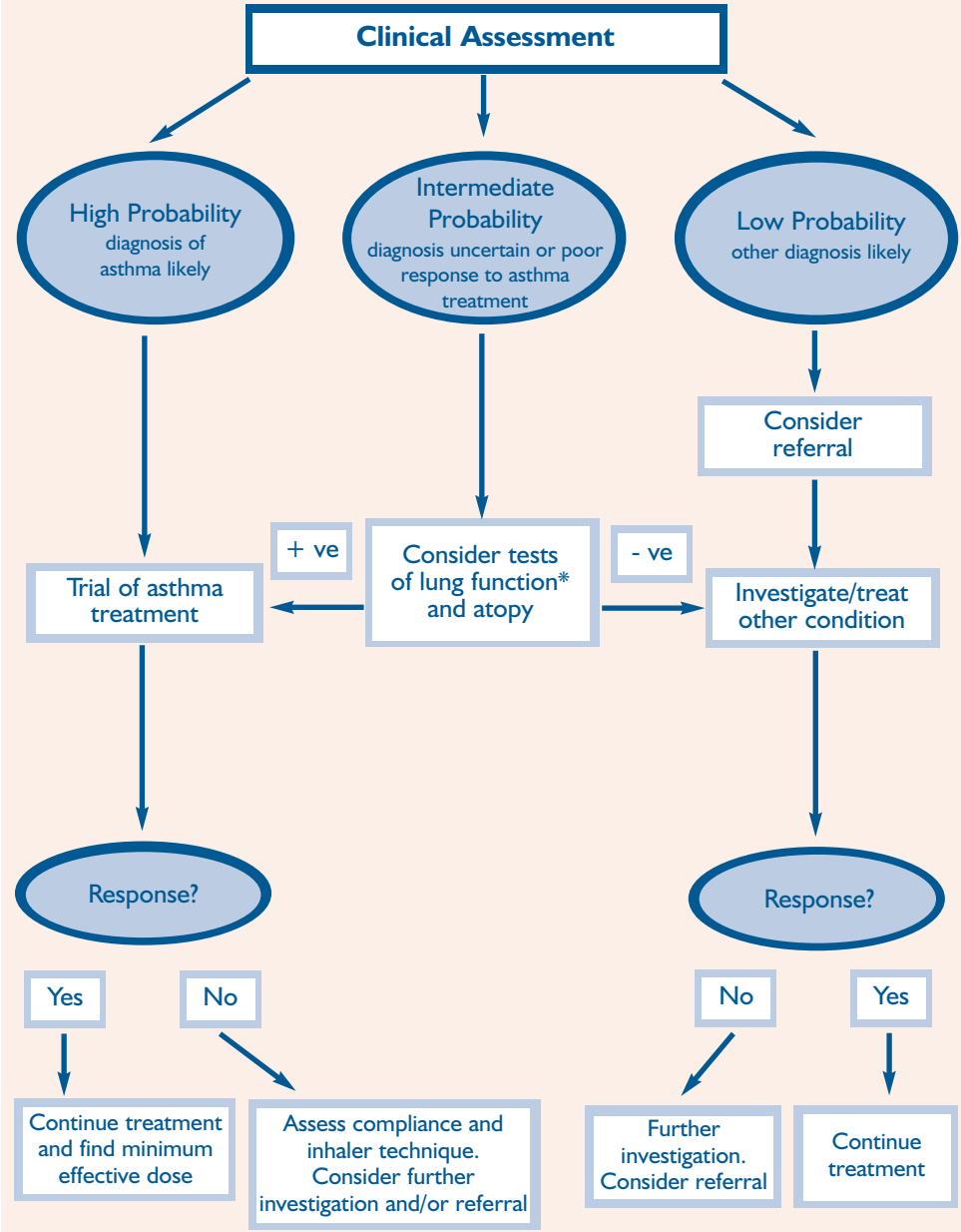
A response to treatment may present in the form of a reduction in symptoms, number of exacerbations and/or reliever use.

*Most children over the age of 5 years can perform lung function tests

Indications for specialist referral

- Diagnosis is unclear or in doubt
- Symptoms present from birth or perinatal lung problem
- Excessive vomiting or posseting
- Severe upper respiratory tract infection
- Persistent wet or productive cough
- Family history of unusual chest disease
- Failure to thrive
- Nasal polyps
- Unexpected clinical findings e.g. focal signs, abnormal voice or cry, dysphagia, inspiratory stridor
- Failure to respond to conventional treatment (particularly inhaled corticosteroids above 400micrograms per day or frequent use of steroid tablets
- Parental anxiety or need for reassurance

Presentation with suspected asthma in children



** Lung function tests include spirometry before and after bronchodilator (test of airway reversibility) and possible exercise or methacholine challenge (test of airway responsiveness). Most children over the age of five years can perform lung function tests.*

Diagnosis in adults (See Figure 2, Page 10)

The diagnosis of asthma is based on the recognition of a characteristic pattern of symptoms and signs, the demonstration of objective abnormalities and the absence of an alternative explanation for them. **The key is to take a careful clinical history and to measure lung function with spirometry in every patient**.

- In patients with a **high probability** of asthma move straight to a trial of treatment. Reserve further testing for those whose response to a trial of treatment is poor. Spirometry and, if necessary, peak flow diary monitoring to show variability or reversibility should be recorded and documented to justify diagnosis, response to treatment and aid future management
- In patients with a **low probability** of asthma whose symptoms are thought to be due to an alternative diagnosis, investigate and manage accordingly. **Reconsider the diagnosis in those who do not respond to asthma treatment**
- In patients with an **intermediate probability** of having asthma, carry out further objective investigations, and only use a trial of treatments for a specific period if access to objective testing (e.g. FeNO or bronchial challenge testing) is unavailable before confirming a diagnosis and establishing maintenance treatment

Spirometry* is the preferred initial test to assess the presence and severity of airflow obstruction as it has the advantage of providing more information than a PEF, however, normal spirometry when not symptomatic does not exclude the diagnosis of asthma. Repeated measurements of lung function are often more informative than a single measurement. Where no obstruction can be demonstrated and tests for airway hyper-responsiveness or inflammation are not available in primary care, refer for further objective testing.

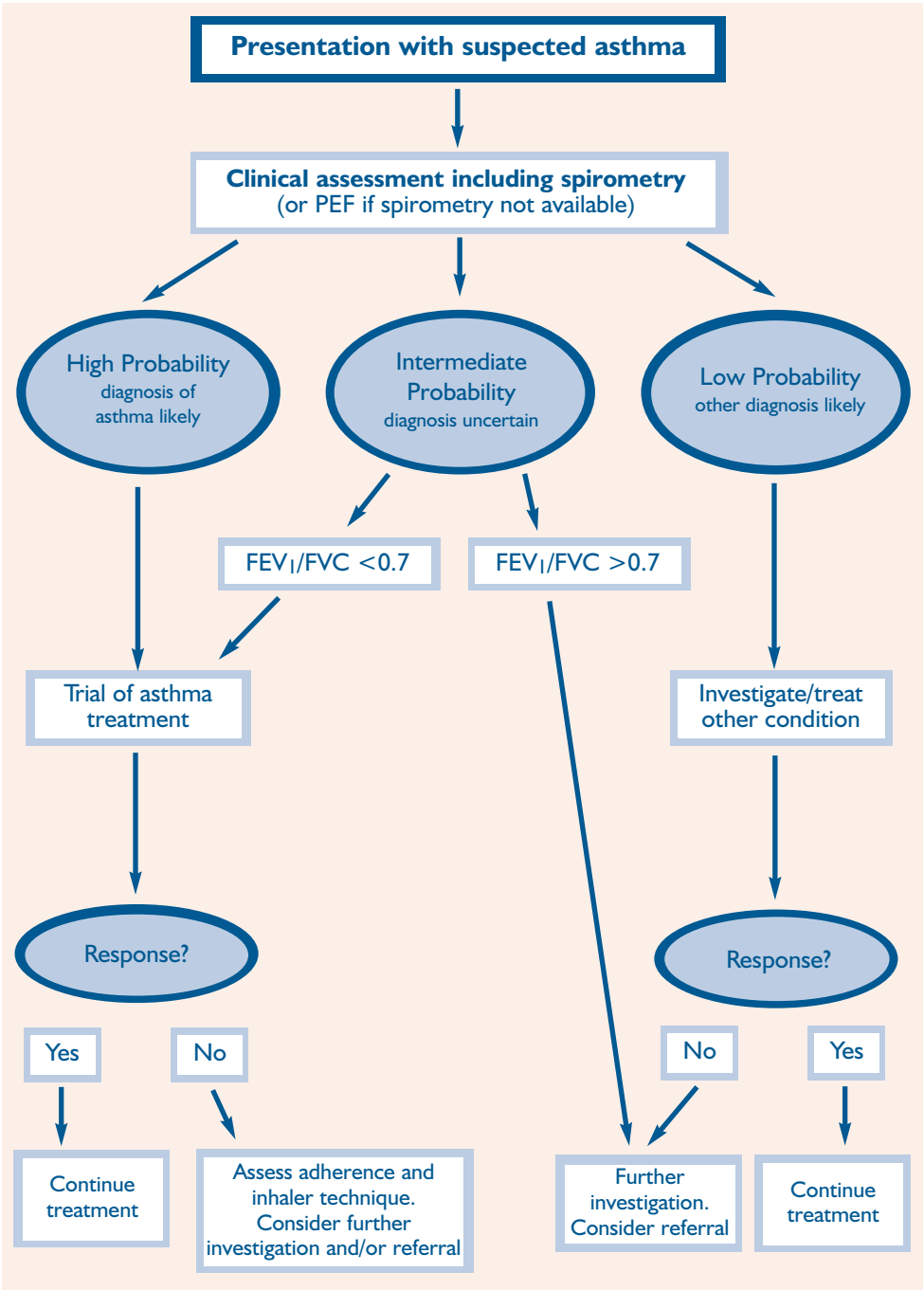
*All spirometry should be undertaken and performed by a trained operator - see the PCRS-UK Spirometry Standards paper: **http://dx.doi.org/10.4104/pcrj.2009.00054**

Adults with new onset asthma should be assessed for occupational and environmental causes.[5] This requires clinicians to be aware of common causes of asthma and to ask in detail about the environment in which they work.

Clinical features that increase the probability of asthma

- More than one of the following symptoms: wheeze, breathlessness, chest tightness and cough particularly if:
  - symptoms are worse at night and in the early morning
  - symptoms present in response to exercise, allergen exposure and cold air
  - symptoms present after taking aspirin, NSAIDs or beta-blockers
- Personal history of atopic disease
- Family history of asthma/atopic disease
- Widespread wheeze heard on auscultation of chest
- Otherwise unexplained low FEV_1 or PEF (historical or serial readings) which improves with time or treatment.
- Recurrent episodes of chest infections / wheezy bronchitis

Presentation with suspected asthma in adults



Monitoring asthma

Asthma is best monitored in primary care by routine clinical review using a validated tool* on at least an annual basis. When assessing asthma control use closed questions e.g. Do you use your reliever inhalers every day? This is more likely to yield useful information than non-specific enquiries about 'how is your asthma?' The best predictor of future exacerbations is a history of previous exacerbations. Patients with poor lung function and poor asthma control may also be at greater risk of future exacerbations and therefore closer monitoring of these individuals should be considered.

Monitoring asthma in primary care

Factors that should be assessed, monitored and recorded include:-

- Symptomatic asthma control: best assessed using directive questions such as RCP 3 Questions or Asthma Control Test (ACT) or the Asthma Control Questionnaire (ACQ) since broad questions may underestimate symptom control. {NB the RCP 3 questions is not validated for use in children}
- Exercise induced symptoms and how these are managed as well as ability to enjoy exercise/regular activity appropriate to age
- Exacerbations, oral steroid use and time off school/college/university/work, or usual activities, since last assessment
- Adherence – assessed by prescription refill frequency
- Checking inhaler technique is essential; the device may need to be changed to meet the patient's needs
- Exposure to triggers especially allergens and, in adults, occupation.
- Exposure to tobacco smoke (consider asking about exposure to cannabis and other inhaled illicit inhaled drugs)
- Bronchodilator reliance. Ask, for example – how many times per day or per week do you use the reliever inhaler, how long does the reliever inhaler last you?
- Provision and review of and training in the use of a personalised asthma action plan (see PCRS-UK opinion sheet on personal asthma action plans http://www.pcrs-uk.org/resource/Opinion-sheets/personal-asthma-action-plans-opinion-sheet)
- Lung function assessed by spirometry (adults and older children) or PEF (adults and older children), reduced lung function compared to previously recorded values may indicate current bronchoconstriction or a long term decline. Patients with irreversible airflow obstruction may be at an increased risk of exacerbations
- Weight monitoring and advice on weight reduction in obese patients
- In children, growth (height and weight centile) at least annually

At the time of writing the collection and recording of the RCP 3 questions as part of an annual asthma review is required under the UK Quality and Outcomes Framework.

Patient education and self-management

All people with asthma (and /or their parents or carers) should be offered self-management education which should include a written personalised asthma action plan and be supported by regular professional review.

In adults, written personalised asthma action plans may be based on symptoms and/or peak flows: symptom-based plans are generally preferable for children.

Health care professionals providing asthma care should have heightened awareness of the complex needs of ethnic minorities, socially disadvantaged groups, adolescents, the elderly and those with communication difficulties.

- The practice should keep an 'at risk' register of those at high risk of life threatening asthma events, including those with previous life threatening exacerbations, high short-acting β2-agonist (SABA) users (12 or more canisters per year)[2] (particularly when associated with low inhaled corticosteroid (ICS) use), 2 or more courses of oral corticosteroids in the previous 12 months, and those with complex social and lifestyle issues'.
- Patients with asthma should be provided with self-management education that focuses on individual needs and is reinforced by a written personalised action plan
- Components of a self-management programme should encompass:
  - Specific advice about recognising loss of asthma control, this may be assessed by peak flows, symptoms or both
  - Specific advice about trigger avoidance and achieving a smoke-free environment
  - Actions, summarised as 2 or 3 actions to be taken if asthma deteriorates, including seeking emergency help, commencing oral steroids or temporarily increasing current medication
  - How/where to obtain advice, if needed
- Self-management programmes will only achieve better health outcomes if the prescribed asthma treatment is appropriate, therefore clinicians should have a good working knowledge of current national guidance
- Practices should ensure that there is a robust local notification system for hospital discharge, (within 48 hrs), to ensure that they can facilitate early practice-based review to explore the reasons for the asthma exacerbation

Every asthma consultation is an opportunity to review, reinforce and extend both the patient's knowledge and skills. It is important to recognise that education is a process and not a single event.

Pharmacological management of asthma

The step-wise approach (see charts on pages 16-18)

The introduction of regular preventer therapy with inhaled corticosteroids (step 2) should be considered when a person has had exacerbations of asthma in the previous 2 years, is symptomatic three times a week or more, or is waking at night at least once a week because of asthma.[3] Regular use of a SABA (more than three times a week) should alert clinicians to the need to step up treatment.

1. In accordance with guidance from NICE (http://www.nice.org.uk/TA138) the least expensive product that is suitable for the individual patient, within its marketing authorisation should be used. However, patients should be involved in the choice of inhaler device and treatment option, and should demonstrate good technique before a new device is used.

   Start treatment at the step most appropriate to severity to initial severity – a reasonable starting dose of ICS in adults would be 400mcg/day of beclometasone BDP-HFA (or equivalent) and in children 200mcg/day. In children <5 years higher doses may be required if there are problems in obtaining consistent drug delivery.

   Encourage spacer use in patients using inhaled corticosteroids by metered dose inhaler.

2. Achieve early control

3. Maintain control by:
   - Stepping up treatment as necessary
   - Stepping down when control is good

The majority of children will be adequately managed on 200-400mcgs of beclometasone BDP-HFA (or equivalent) per day (see table on page 24 for inhaled corticosteroid equivalent doses). In children aged 5-12 years consider very carefully before going above an inhaled steroid dose of beclometasone BDPHFA 400mcg/day (or equivalent) and refer patients with inadequately controlled asthma, especially children, to secondary care.

In children under five years who are unable to take ICS, leukotriene receptor antagonists may be used as an alternative preventer.

Before stepping up drug therapy practitioners should always check compliance with existing therapies, inhaler technique and, where possible, eliminate trigger factors.

Inhaler devices

- Prescribe inhalers only after patients have received training in the use of the device and have demonstrated satisfactory technique and have expressed agreement and been involved in the choice of device
- The choice and ability to use a device may be determined by the choice of drug
- If the patient is unable to use a device satisfactorily, an alternative should be found
- In children aged 0-5 years pMDI and spacer are the preferred delivery system, for SABA and ICS. A face mask is required until the child can breathe reproducibly using the spacer mouthpiece

Long acting bronchodilators / Combination inhalers

Long acting beta-agonists (LABA) are the preferred first option for add-on therapy, rather than increasing the dose of an inhaled corticosteroid dose of 400mcg Beclometasone BDP-HFA or equivalent per day in adults and 200mcg per day in children.

In accordance with NICE guidance, and in line with the recommendations from the National Review of Asthma Deaths (NRAD) the use of a combination inhaler is recommended rather than giving separate inhalers for patients needing both ICS and a LABA.

Combination inhalers have the advantage, once a patient is on stable therapy, of guaranteeing that the LABA is not taken without the ICS. Prescribing a LABA without ICS masks underlying inflammation and can prove to be life threatening.

Combinations of inhaled corticosteroid/formoterol in one inhaler for maintenance and reliever use

- In selected adult patients at Step 3 who are poorly controlled or in selected patients at step 2 (>400mcg BDP/day who are poorly controlled) the use of budesonide/formoterol (Symbicort®) or HFA Beclometasone/formoterol (Fostair®) in a single inhaler as rescue medication -instead of a short acting β2-agonist-in addition to its regular use as a preventative (controller) treatment, has been shown to be effective
- When this management option is introduced the total regular dose of daily inhaled steroids should not be decreased, and patients should be advised that there is a maximum licensed daily dose (e.g. 12 puffs for Symbicort® and 8 puffs for Fostair®) over a period of days before clinical review is recommended

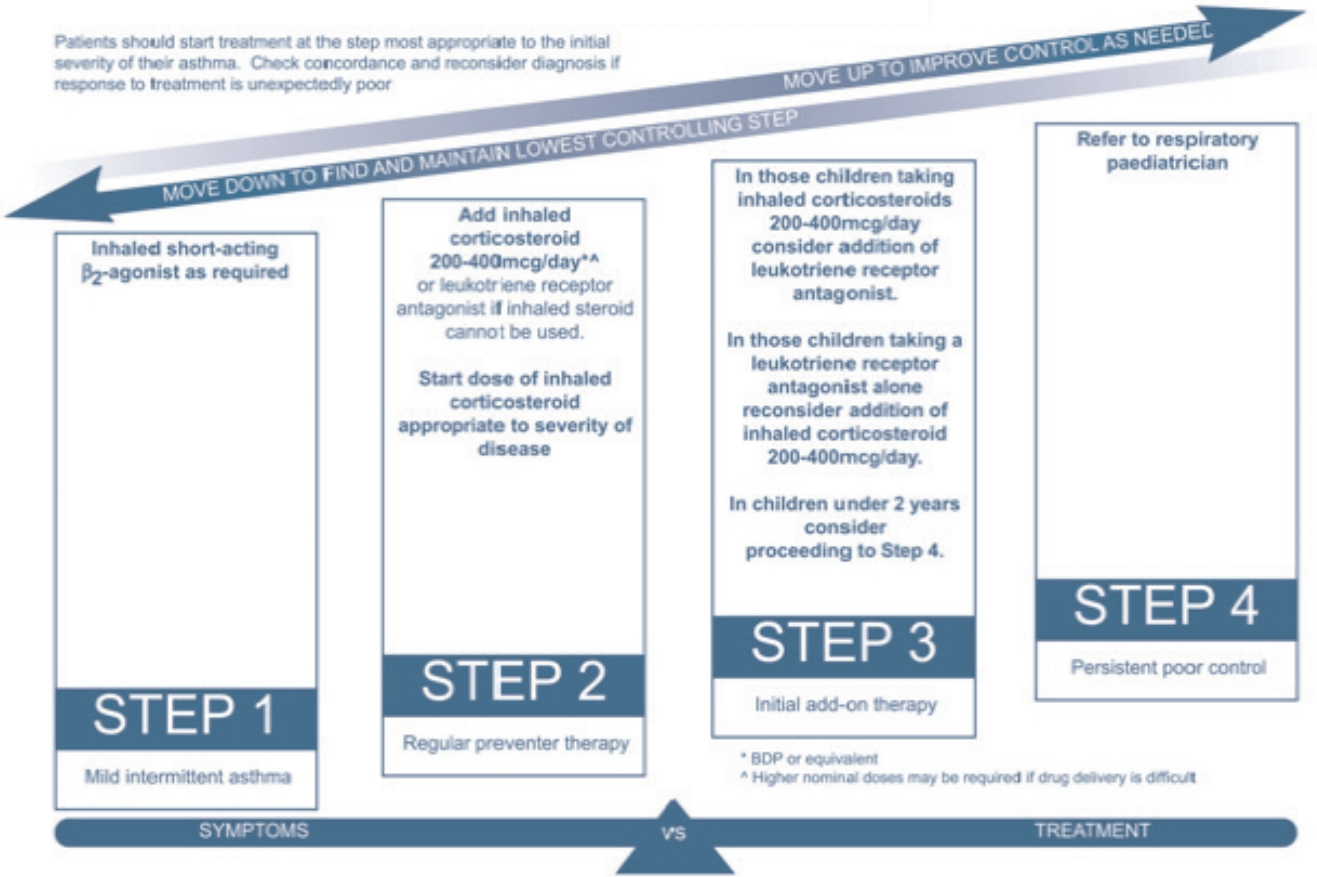
- The regular daily dose of ICS is budesonide 200mcg bd or 400mcg bd (Symbicort®) or HFA Beclometasone 100mcg bd (Fostair®)
- Patients taking rescue Symbicort® or Fostair® once/day or more for a prolonged period should have their treatment reviewed
- Before instituting this management regime careful patient education is required.

Stepping Down

Regular review of patients as treatment is stepped down is important. When deciding which drug to step down first and at what rate, the severity of the asthma, the side-effects of the treatment, time on current dose, the beneficial effect achieved and the patient's preference should all be considered.

- Patients should be maintained at the lowest possible dose of inhaled corticosteroid that maintains control
- Any reduction in inhaled corticosteroid should be undertaken slowly, every three months, since patients deteriorate at different rates
- For severe asthma, the reduction in inhaled steroid should be 25% e.g. if taking 800mcg of inhaled corticosteroid they could be reduced to 600mcg- 1 puff am and 2 puffs in the evening or vice-versa
- For more stable patients, the inhaled corticosteroid could be reduced by 50% with the patient taking 400mcg instead of 800mcg/day
- Some children with mild asthma and a clear seasonal pattern to their symptoms may have a more rapid dose reduction during their "good season"

Summary of stepwise management in children less than five years



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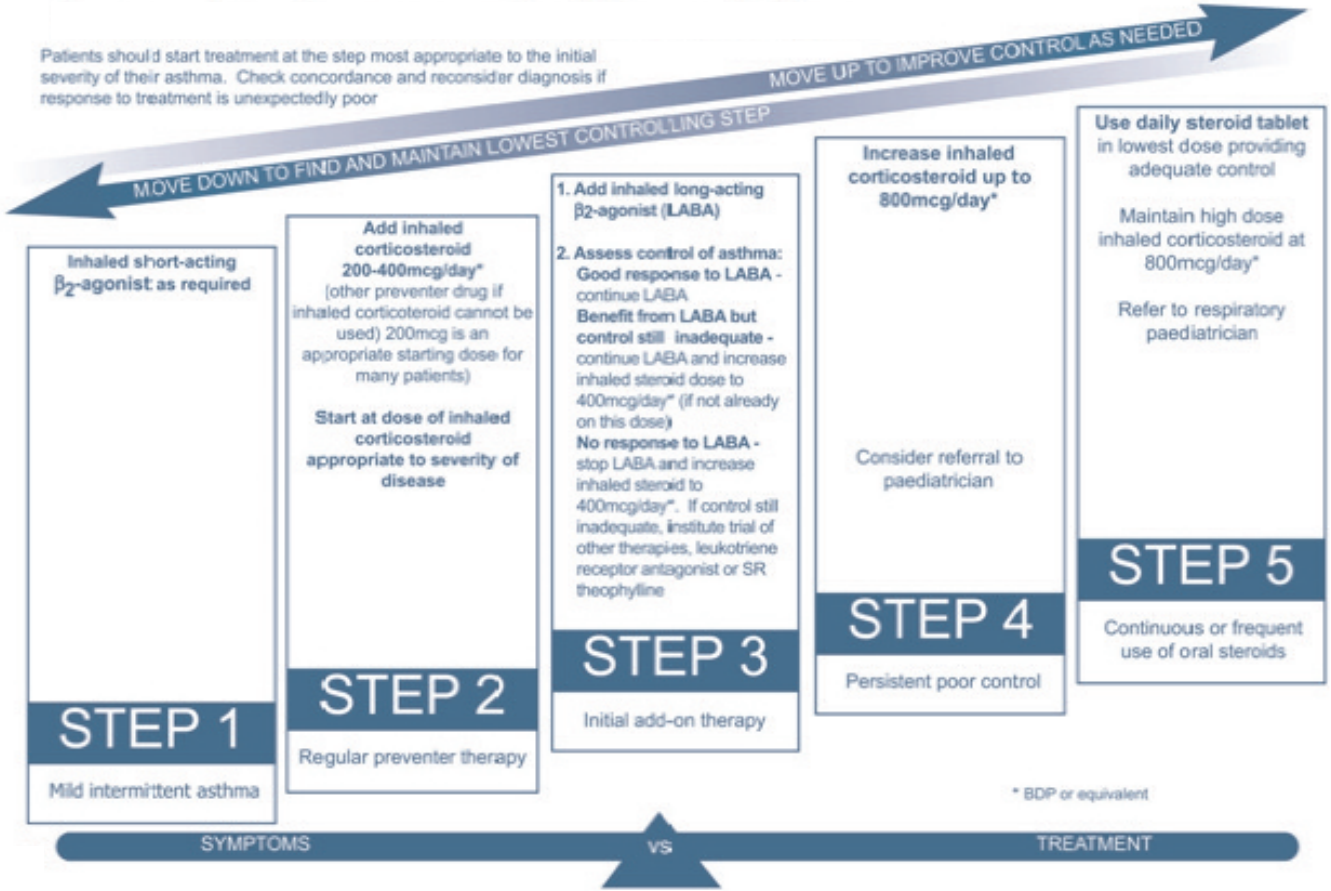
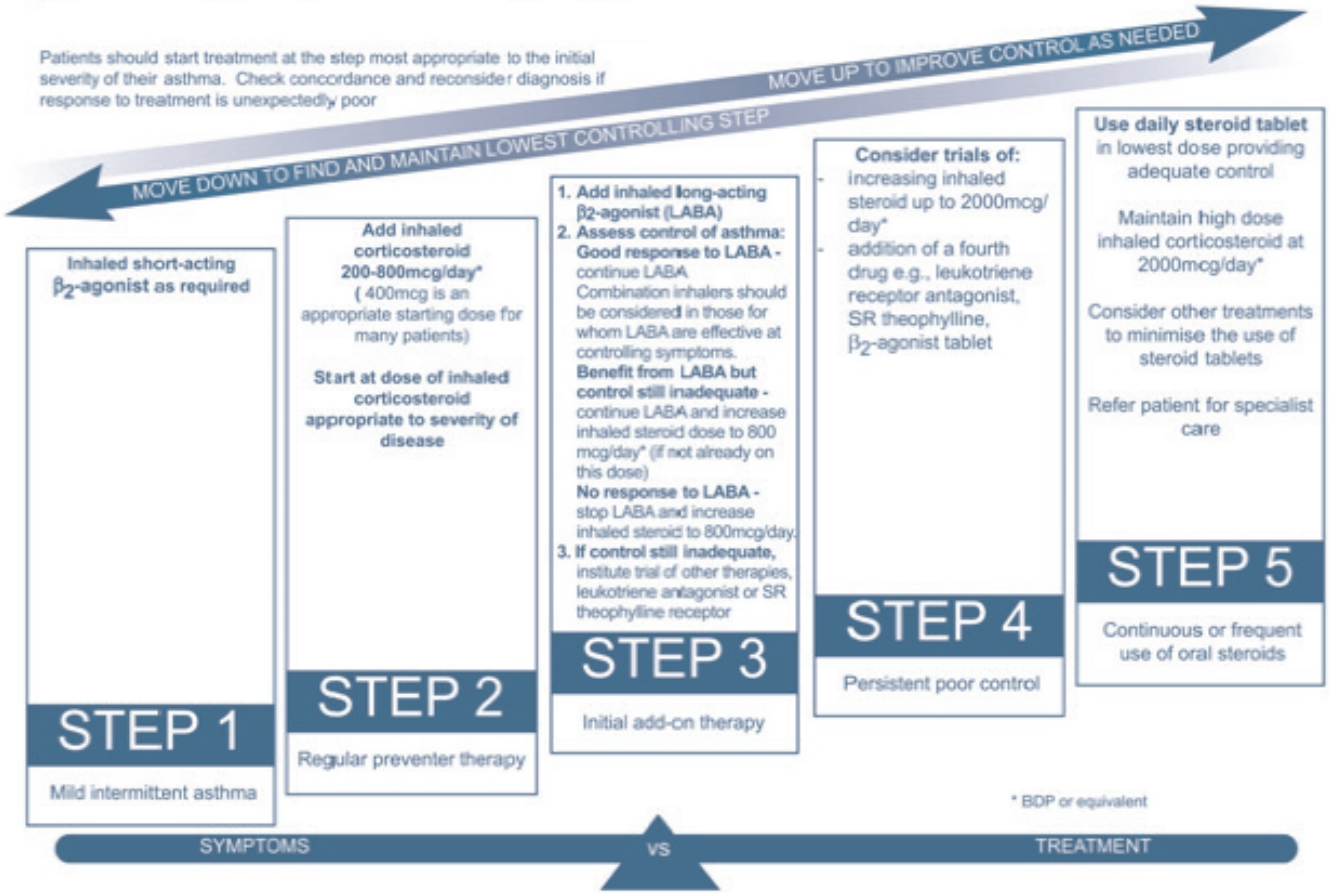
Summary of stepwise management in children aged 5-12 years



Summary of stepwise management in adults



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Primary Care Review - Organisation and delivery of care

Practice

- The practice should have a named, trained and qualified, clinical lead for asthma care
- All people with asthma should have access to primary care services delivered by doctors/nurses/pharmacists with appropriate training in asthma management (see PCRS-UK Skills Document available at https://www.pcrs-uk.org/resource/Professional-development/nurse-skills-document
- General practices should maintain a register of people with asthma – READ coding of patients who are newly diagnosed or register at a practice will ensure a meaningful database for audit and review purposes
- Good note-keeping, and documenting of objective tests is essential, especially at the time of diagnosis and whenever changing medication. Justifying the clinical decisions made may be important for medico-legal reasons, but will also aid future decision making. Practices should ensure there is a system in place for notification of any hospital admission so that the patient can be seen for review to explore reasons for the exacerbation and to discuss and implement actions to prevent further relapses

Routine Review

- Reviewing patients using a patient-centred style of consultation can lead to improved outcomes
- Patient education and understanding of medication role and use is important including personalised asthma action plans and inhaler technique training
- Proactive clinical reviews of people with asthma improve clinical outcomes and clinicians trained in asthma management achieve better outcomes for their patients
- Structured review, at least annually, as opposed to opportunistic or unscheduled review is associated with reduced exacerbation rates and days lost from normal activity
- Consider offering routine reviews by telephone for patients with well-controlled asthma. However, face-to-face review is better for patients with poor control or inhaler related problems

Exacerbation / Post exacerbation

- Follow-up of patients is essential for those who have attended an emergency department, been admitted to hospital, or been treated in the practice with an acute exacerbation of asthma, ideally within two days of discharge
- People with asthma who present with an exacerbation of their symptoms should receive an objective measurement of severity at the time of presentation. Patients aged 5 years or over who present at the practice with a severe or life-threatening acute exacerbation of asthma should receive oral or intravenous steroids within one hour of presentation

Difficult asthma

Difficult asthma is defined as persistent symptoms and/or frequent exacerbations despite treatment at step 4 or 5. Patients with difficult asthma should be systematically evaluated including:

- Confirmation of the diagnosis of asthma
- Identification of the mechanism of persisting symptoms e.g. concomitant conditions (e.g. GORD, allergic rhinitis, obesity) and triggers including smoking, psychosocial and occupation factors
- Assessment of adherence to therapy and inhaler technique
- Assessment and exploration of any social, psychological or family issues that might be contributing to the poor control of asthma.

Increased numbers of asthma deaths and difficult asthma is commonly associated with poor adherence to maintenance therapy and coexistent psychosocial morbidity.

Patients who fall into this category, despite the factors above being modified, should be referred to a specialist team experienced in the assessment and management of difficult asthma.

Asthma in adolescents

Studies confirm that eczema and allergic rhinitis are amongst the factors most strongly associated with asthma persisting in teenage years. Frequent or severe episodes of wheezing in childhood are associated with recurrent wheeze that persists into adolescence. From age 13-14 years asthma, and asthma exacerbations, are more prevalent in females than males.

Key elements of working effectively with adolescents in the transition to adulthood include:

- Seeing them on their own, without their parent/care giver, for part of the consultation (discussing confidentiality and its limitations)
- Asking about symptoms of anxiety or depression
- Addressing issues of adherence to treatment (unintentional and intentional)
- Discussing lifestyle choices such as smoking and occupations that can impact on lung disease
- Encouraging them to see good control of their asthma as a sign of adult capability and responsibility

Providing high quality education adapted to meet the individual's needs together with careful future planning regarding career choices to mitigate against high risk occupations that might exacerbate symptoms are essential. Education must be provided by a trained professional who can engage with, encourage and motivate the patient and should embrace modern social media/technology to support asthma education.

Telephone consultations may be useful in supporting annual reviews in teenagers who fail to attend.

Guidance for Healthcare Professionals on Inhaled Corticosteroids in Adults

Adapted with permission from London Respiratory Team

The side effect profile of an ICS

- ICS are prescribed in asthma to improve control, reduce exacerbations and risk of death, and in those with severe to very severe COPD, to reduce the frequency of exacerbations. The benefits of an ICS outweigh the risks when used in clinically effective doses, however, long-term high doses (>1000 micrograms beclometasone dipropionate (BDP) equivalent/day) may cause systemic side effects.
- The systemic side effects of corticosteroids are well known. High doses of ICS are associated with clinically detectable adrenal suppression (*Arch Intern Med* 1999;**159**:941-55), increased risk of non-fatal pneumonia in patients with COPD (*Arch Intern Med* 2009;**169**:219-29), increased risk of type II diabetes (*Am J Med* 2010;**123**:10016), and may increase the risk of fractures (*Thorax* 2011;**66**:699-708) and tuberculosis (*Chest* 2014;**145**(6):1286-1297). It is recommended that all patients on high doses of ICS are made aware of the risks and given an ICS safety warning card.
- At equipotent doses, the safety profiles of all ICS are similar. Budesonide and ciclesonide are approximately equipotent with BDP, while fluticasone propionate (FP), mometasone and ultrafine particle BDP-HFA inhalers (Qvar® and Fostair®) are twice as potent as standard BDP inhalers. Equivalence data for fluticasone furoate is not currently available.

In patients with Asthma:

- Once a patient has persistently good control (e.g. for 3 months), consider stepping down to the lowest dose of ICS that maintains symptom control.
- There is limited evidence that increasing an ICS dose above 800 micrograms BDP equivalent/day improves asthma control, even in acute exacerbations (Cochrane Review CD007524). MHRA guidance suggests that a total daily dose of 500-1000 micrograms of fluticasone propionate should only be prescribed for moderate to severe asthma, with doses above this, only prescribed by an asthma specialist, when additional benefit is expected or demonstrated, or by the ability to reduce oral corticosteroid use (http://www.mhra.gov.uk/home/groups/pl-p/documents/websiteresources/con007456.pdf).

Before increasing an ICS (or any therapy) the following are recommended:

1. **Check adherence to therapy**. Very few patients take their medicines as directed all the time. Sub-optimal inhaler technique or not taking the medicines regularly as directed are common, but often fixable causes of treatment failure. Always ask the patient to describe how they take their medicines in a non-judgmental way – the purpose is to discover if you should change therapy or discuss how to take current therapy more effectively.

2. **Improve ICS delivery to the lungs**. This may be more effective than increasing the dose, so inhaler technique must be checked and optimized regularly. Using a metered dose inhaler (MDI) with a spacer device improves lung deposition (*Br J Clin Pharmacol* 1998;**46**:45-8, *Clin Pharmacokinet* 2004;**43**:349-60) and in aiding co-ordination, reduces oropharyngeal deposition and local side effects (e.g. hoarseness or sore throat).

3. **Encourage people to stop smoking**. Provide stop smoking advice/therapy for people with asthma who smoke. In asthma, stopping smoking may avoid the need for stepping up ICS dose when poorly controlled (*Thorax* 2005;**60**:282-287).

Doses of inhaled corticosteroids in adults that require an inhaled corticosteroid card

	Total Daily Dose of Inhaled Corticosteroid		
	Low dose No ICS card required (micrograms)	**Intermediate dose Consider an ICS card (micrograms)**	**High dose ICS card is required (micrograms)**
Beclometasone dipropionate			
Aerosol Inhaler (prescribe by brand name)			
Non-proprietary	<800	800-1000	≥1000
Clenil modulite®	<800	800-1000	≥1000
Qvar® (BDP HFA)	<400	400-500	≥500
Fostair® (BDP HFA)	<400	400-500	≥500
Dry Powder Inhaler			
Asmabec Clickhaler®	<800	800-1000	≥1000
Budesonide			
Dry Powder Inhaler			
Easyhaler®, Novolizer®	<800	800-1000	≥1000
Turbohaler® (Pulmicort®, Symbicort®)	<800	800-1000	≥1000
Ciclesonide			
Aerosol Inhaler			
Alvesco®	≤240	320	≥480
Fluticasone propionate (FP)			
Aerosol Inhaler			
Flixotide®, Flutiform®▼, Seretide®	<400	400-500	≥500
Dry Powder Inhaler			
Flixotide®, Seretide®	<400	400-500	≥500
Fluticasone furoate (FF)*			
Dry Powder Inhaler			
Relvar Ellipta®▼	Literature not available*		
Mometasone furoate			
Dry Powder Inhaler			
AsmanexTwisthaler®	220	440	≥880

*Fluticasone furoate 92 micrograms once daily is approximately equivalent to fluticasone propionate 250 micrograms twice daily (https://www.medicines.org.uk/emc/medicine/28496). This could be interpreted as being equivalent to 1000 micrograms of beclomethasone dipropionate, but caution is advised as direct comparator studies have not been published.

- Dosage equivalents are approximate and dose delivered will depend on other factors such as inhaler technique
- Encourage patients to use appropriate breathing techniques according to inhaler device e.g.: "Slow and Steady" for an aerosol inhaler, "Quick and Deep" for a dry powder inhaler
- Using a spacer device with MDI for regular inhaled corticosteroids improves their effectiveness and reduces the likelihood of side effects such as oral thrush and dysphonia.
- If a patient is using nasal corticosteroids and an inhaled ICS, they should be assessed individually. For example, for a patient taking nasal corticosteroids and 800-1000 micrograms of BDP equivalent/day, a corticosteroid safety card is recommended.
- Before prescribing, patients should always have their therapy reviewed for continued appropriateness and if necessary, issued an ICS card – see samples at www.ashleyforms.co.uk/products-and-services/high-dose-ics-safety-card.

References

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2. National Review of Asthma Deaths. Royal College of Physicians. May 2014. https://www.rcplondon.ac.uk/projects/national-review-asthma-deaths
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PCRS-UK Resources

The PCRS-UK produces a range of resources to support healthcare professionals in the diagnosis and management of high quality respiratory care. To view the resources available visit our website at **http://www.pcrs-uk.org**

Additional improvement tools and resources are also available to members wishing to improve respiratory care in their practice or wider locality. These resources are available to members of the PCRS-UK. For information on how to join visit our website **http://www.pcrs-uk.org/join/**.

npj Primary Care Respiratory Medicine includes a range of academic and educational peer-reviewed articles on the diagnosis and management of asthma. Links to suggested articles are shown below:-

- Self-management **http://www.nature.com/articles/npjpcrm201463**
- Difficult asthma
  http://www.thepcrj.org/journ/view_article.php?article_id=1065
- Occupational asthma
  http://www.thepcrj.org/journ/view_article.php?article_id=1024
- Exercise induced asthma
  http://www.thepcrj.org/journ/view_article.php?article_id=1007
- Rhinitis **http://www.thepcrj.org/journ/view_article.php?article_id=924**

For those practices already delivering respiratory care to a high standard why not consider participating in the PCRS-UK Quality Award? The award, developed in conjunction with the British Thoracic Society, Royal College of General Practitioners, Association of Respiratory Nurse Specialists, Asthma UK, British Lung Foundation, Education for Heath and Respiratory Education UK, sets out the standards that best define high quality respiratory care in primary care, providing:

- Recognition of practices providing a high standard of respiratory care – serving as a quality assurance mark not only for patients, but also commissioning groups and the wider NHS.
- A developmental framework that can be used at practice, locality and national level to promote, support and reward quality respiratory care in the primary care setting.

For more information on the Quality Award visit
http://www.pcrs-uk.org/quality_award%20

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