

## Regular review pivotal in chronic asthma in children

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Dr Veena Vasi  
MB BAO  
ST8 Paediatrics,  
Royal Belfast Hospital for Sick Children, Belfast, UK

Dr Thomas Bourke  
MD MRCPCH  
Clinical Lecturer in Paediatrics,  
Queens University Belfast, Belfast, UK



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# Regular review pivotal in chronic asthma in children

**AUTHORS**

**Dr Veena Vasi**

MB BAO  
ST8 Paediatrics,  
Royal Belfast Hospital for  
Sick Children, Belfast, UK

**Dr Thomas Bourke**

MD MRCPCH  
Clinical Lecturer in  
Paediatrics,  
Queens University  
Belfast, Belfast, UK



**FIGURE 1**  
Examples of spacer  
devices that can  
be used in children

**How** should diagnosis be confirmed?

**How** should children be monitored?

**Which** children should be referred?



**ASTHMA IS A COMMON HETEROGENEOUS DISEASE CHARACTERISED CLINICALLY BY RECURRENT**

episodes of wheeze, cough, and breathlessness. Physiologically it is defined by bronchospasm resulting in variable airflow obstruction.<sup>1</sup>

It is a common cause of primary care attendance and hospital admissions. Asthma can be fatal with 14% of deaths in the UK occurring in children and young people under the age of 19. Of those who died 80% had evidence of poor care and 60% had modifiable risk factors, the National Review of Asthma Deaths found.<sup>2</sup>

**CLINICAL FEATURES**

Patients typically present with more than one of wheeze, cough and

**‘Parents use the word wheeze to describe a range of respiratory noises but this correlates poorly with objective findings’**

breathlessness occurring episodically. Symptoms may be worse at night. A strong personal or family history of eczema, rhinitis or other atopy is common.<sup>1,3</sup>

Parents use the word wheeze to describe a wide range of respiratory noises but this correlates poorly with objectively recorded findings.<sup>4,5</sup> An open mind should be kept about the nature of the sound described unless a true polyphonic wheeze has been documented by a clinician. Isolated chronic cough is rarely if ever due to asthma.<sup>6</sup>

Distinguishing asthma from episodic viral wheeze can be difficult and we »

**Table 1**

**Red flags suggestive of other diagnoses and warrant referral for specialist opinion<sup>2</sup>**

- Failure to thrive
- Abnormal voice, cry or dysphagia
- Stridor
- Symptoms from birth
- Excessive vomiting
- Severe upper respiratory tract infection
- Persistent wet cough
- Family history of unusual chest disease
- Nasal polyps

have discussed this previously in an earlier article in this journal.<sup>7</sup>

The red flag features which are suggestive of other diagnoses and warrant referral for further investigation are shown in table 1, above.<sup>3</sup>

**DIAGNOSIS**

At present asthma is a clinical diagnosis.<sup>18</sup> The difficulty with this approach is that children may be overdiagnosed and then overtreated. It is likely that investigation-based approaches such as exhaled nitric oxide measurements and demonstrating reversibility will play a much greater role. These approaches are currently being reviewed by NICE and new guidelines are expected in the near future. BTS/SIGN advise that children with recurrent episodes, documented wheeze and atopy are considered to have a high probability of asthma. Children with only some of these features have an intermittent probability and children with none have a low probability of asthma.<sup>5</sup>

Children considered to have a high probability should receive a six-week trial of inhaled corticosteroids (ICS). A good response to treatment confirms the diagnosis.<sup>3</sup>

In younger children with an intermittent probability of asthma either a watch and wait approach to symptoms or a monitored trial of treatment could be adopted. In older children with an intermittent probability of asthma spirometry may be useful to check for bronchodilator reversibility.

**EVIDENCE-BASED TREATMENT**

**Non-pharmacological management**

Exposure to environmental tobacco smoke increases wheezing in infancy, risk of persistent asthma, number of

exacerbations and need for ICS. Parents should be strongly advised to stop smoking and offered appropriate support.

Interventions to promote weight loss in overweight children can be considered although evidence is limited. There is no evidence that strategies to reduce house dust mite exposure improve asthma control and these should not be recommended.<sup>9</sup>

A Cochrane review of air ionisers showed no benefit and one study actually showed an increase in cough.<sup>10</sup> Two randomised controlled trials on fish oils during pregnancy showed no reduction in asthma or other allergies.<sup>3</sup> There are no good quality studies on other supplements during pregnancy. There is no evidence to support the use of acupuncture, homoeopathy or other alternative treatments.<sup>3</sup>

Some retrospective studies suggest a modest association between paracetamol during pregnancy and childhood asthma.<sup>11</sup> However, UK guidance has not changed and pregnant women are still advised to take paracetamol at the lowest effective dose for the shortest time.

**‘Before stepping up treatment it is essential to reconsider if the diagnosis of asthma is correct’**

**Pharmacological management**

The aim of asthma treatment is complete control of symptoms as soon as possible while minimising side effects and inconvenience to the patient.<sup>3,8</sup>

All patients should be prescribed a short-acting beta-2 agonist to be used as required as a reliever. In some patients with infrequent short-lived symptoms this will be adequate.

The BTS/SIGN guidelines advocate a

stepwise approach to preventer therapy.<sup>3</sup> Before stepping up treatment it is essential to:

- Reconsider if the diagnosis of asthma is correct
- Check concordance with existing therapy and technique

Therapy should be escalated in children who are symptomatic more than three times a week, using their reliever inhaler more than three times per week or waking one night a week.<sup>3</sup> ICS should be started twice daily at a very low dose. Details of ICS preparations and dosages are available from [www.sign.ac.uk/assets/sign153\\_table10.pdf](http://www.sign.ac.uk/assets/sign153_table10.pdf)

The next step in children over five years is addition of a long-acting beta-2 agonist (LABA). In children under five years a leukotriene receptor antagonist (LTRA) should be added. If there is no response to the LABA it should be stopped and treatment increased to include low dose ICS. If there is a partial response to LABA therapy it should be continued and treatment increased to include low dose ICS. Addition of an LTRA should be considered if control is still inadequate.

Additional treatments that will be considered in secondary care include higher dose ICS, oral theophyllines or systemic steroids.

Children on low dose ICS are at low risk of side effects. We advise parents that those on medium and high dose ICS are at risk of poor growth and adrenal suppression. Those most at risk are likely to be attending secondary care where their growth is monitored regularly. If it falters their steroid dose will be reviewed. ICS dose should be reduced when control is achieved. However, there is no clear evidence on how best to do this.

Regular review and clinical judgment is required as patients can deteriorate at different rates. In principle, steroid doses should be decreased every few months. Some children have a clear seasonal pattern to their symptoms and it may be appropriate to taper doses over the summer months.

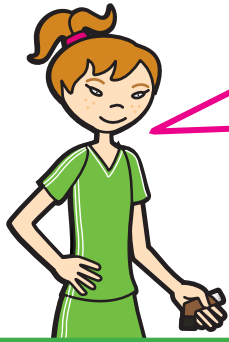
**Table 2**

**Factors to be considered during annual review of children with asthma<sup>2</sup>**

- Symptom score, e.g. on the Childhood Asthma Control Test
- Number of attacks, steroid use and time off school
- Inhaler technique
- Review of prescription refill frequency
- Review of written personalised asthma action plan
- Exposure to tobacco smoke
- Growth (height and weight centile)



# My Asthma Plan



Your asthma plan tells you when to take your asthma medicines.

And what to do when your asthma gets worse.



Name: \_\_\_\_\_

## 1 My daily asthma medicines

- My preventer inhaler is called \_\_\_\_\_ and its colour is \_\_\_\_\_
- I take \_\_\_\_\_ puff/s of my preventer inhaler in the morning and \_\_\_\_\_ puff/s at night. I do this every day even if I feel well.
- Other asthma medicines I take every day:  
\_\_\_\_\_  
\_\_\_\_\_
- My reliever inhaler is called \_\_\_\_\_ and its colour is \_\_\_\_\_. I take \_\_\_\_ puff/s of my reliever inhaler (usually blue) when I wheeze or cough, my chest hurts or it's hard to breathe.
- My best peak flow is \_\_\_\_\_

## 2 When my asthma gets worse

I'll know my asthma is getting worse if:

- I wheeze or cough, my chest hurts or it's hard to breathe, or
- I'm waking up at night because of my asthma, or
- I'm taking my reliever inhaler (usually blue) more than three times a week, or
- My peak flow is less than \_\_\_\_\_

If my asthma gets worse, I should:

Keep taking my preventer medicines as normal.

And also take \_\_\_\_\_ puff/s of my blue reliever inhaler every four hours.



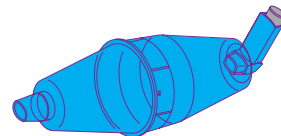
If I'm not getting any better doing this I should see my doctor or asthma nurse today.

Does doing sport make it hard to breathe?



If YES I take:

\_\_\_\_\_ puff/s of my reliever inhaler (usually blue) beforehand.



Remember to use my inhaler with a spacer (if I have one)



# My Asthma Plan

## 3 When I have an asthma attack

### I'm having an asthma attack if:

- My blue reliever inhaler isn't helping, or
- I can't talk or walk easily, or
- I'm breathing hard and fast, or
- I'm coughing or wheezing a lot, or
- My peak flow is less than \_\_\_\_\_

### When I have an asthma attack, I should:

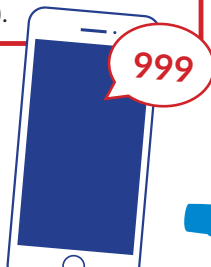
**Sit up** – don't lie down. Try to be calm.

Take one puff of my reliever inhaler **every 30 to 60 seconds** up to a total of 10 puffs.

**Even if I start to feel better,** I don't want this to happen again, so I need to see my doctor or asthma nurse today.



**If I still don't feel better and I've taken ten puffs,** I need to call **999** straight away. If I am waiting longer than 15 minutes for an ambulance I should take another \_\_\_\_\_ puff/s of my blue reliever inhaler every 30 to 60 seconds (up to 10 puffs).



### My asthma triggers:

Write down things that make your asthma worse

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### I need to see my asthma nurse every six months

Date I got my asthma plan:

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Date of my next asthma review:

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Doctor/asthma nurse contact details:

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**Make sure you have your reliever inhaler (usually blue) with you. You might need it if you come into contact with things that make your asthma worse.**



### Parents – get the most from your child's action plan

Make it easy for you and your family to find it when you need it

- **Take a photo** and keep it on your mobile (and your child's mobile if they have one)
- **Stick a copy** on your fridge door
- **Share** your child's action plan with school, grandparents and babysitter (a printout or a photo).

### You and your parents can get your questions answered:

Call our friendly expert nurses  
**0300 222 5800**  
 (9am – 5pm; Mon – Fri)

Get information, tips and ideas  
**www.asthma.org.uk**

## key points

### SELECTED BY

**Dr Matthew Lockyer**  
GP, Suffolk, UK

**Asthma is a heterogeneous disease characterised** clinically by recurrent episodes of wheeze, cough, and breathlessness. Physiologically it is defined by bronchospasm resulting in variable airflow obstruction. Patients typically present with more than one of wheeze, cough and breathlessness occurring episodically. At present asthma is a clinical diagnosis. The difficulty with this approach is that children may be overdiagnosed and then overtreated. It is likely that investigation-based approaches such as exhaled nitric oxide measurements and demonstrating reversibility will play a much greater role. These approaches are currently being reviewed by NICE and new guidelines are expected in the near future. BTS/SIGN advise that children with recurrent episodes, documented wheeze and atopy are considered to have a high probability of asthma. These children should receive a six-week trial of inhaled corticosteroids. A good response to treatment confirms the diagnosis.

**Exposure to environmental tobacco smoke increases** wheezing in infancy, risk of persistent asthma, number of exacerbations and need for inhaled corticosteroids. Parents should be strongly advised to stop smoking and offered appropriate support. There is no evidence that strategies to reduce house dust mite exposure improve asthma control and these should not be recommended.

**The aim of asthma treatment is complete control of** symptoms as soon as possible while minimising side effects and inconvenience to the patient. Therapy should be escalated in children who are symptomatic more than three times a week, using their reliever inhaler more than three times per week or waking one night a week. Children on low dose inhaled corticosteroids are at low risk of side effects. Those on medium and higher doses are at risk of poor growth and adrenal suppression. The dose of inhaled corticosteroids should be reduced when control is achieved. However, there is no clear evidence on how best to do this.

**Studies have shown that in children under 12 years of age,** metered dose inhalers with an appropriate spacer are as effective as any other devices. There is no evidence to support the use of breath-actuated inhalers. In primary care children should be monitored at least once a year. All parents and older children should be offered a written action plan. This should include details of the patient's regular medicines, how to recognise deterioration and what to do in the event of an attack.

**Children should be referred to secondary care if:** the diagnosis is unclear; control remains poor despite monitored treatment; they have suffered a life-threatening attack or red flag features are present.

## DEVICES

Studies have shown that in children under 12 years, metered dose inhalers (MDI) with an appropriate spacer are as effective as any other devices.<sup>3</sup> There is no evidence to support the use of breath-actuated inhalers. In practice some patients continue to have difficulty with MDIs and some older children may prefer a dry powder inhaler.

A spacer with a face mask is required until the child can use a spacer with a mouthpiece, see figure 1, p19. The correct technique must be taught and reassessed at each visit.

## 'Some patients continue to have difficulty with MDIs and some older children may prefer a dry powder inhaler'

## MONITORING

The National Review of Asthma Deaths found that 43% of patients who died had had no primary care review in the previous 12 months.<sup>2</sup> Other risk factors identified included:

- Healthcare professionals failing to adhere to asthma guidelines
- More than 12 reliever inhalers in 12 months
- Underprescription of ICS
- Inappropriate use of single component LABA

In children and young people there was a particular lack of adherence to medical advice and a lack of awareness about the risks of a poor outcome. These risk factors should all be addressed at every consultation and at least once yearly at the annual review, see table 2, p20.

The National Review of Asthma Deaths also noted that fewer than one quarter of patients who died from asthma had a written action plan and recommended that all parents and young people should have one.<sup>2</sup> An example produced by Asthma UK is shown in figure 2, pp 21-22, and includes details of the patient's regular medicines, how to recognise deterioration and what to do in the event of an attack.

## REFERRAL

Children should be referred to secondary care if:

- The diagnosis is unclear

- Control remains poor despite monitored treatment
- They have suffered a life-threatening attack
- Red flag features are present, see table 1, p20.

## CONCLUSION

Chronic asthma is a common disease of childhood and a significant burden on primary care and other health services. If diagnosed and managed correctly most patients can have a safe and symptom-free lifestyle.

BTS/SIGN advocate a stepwise approach to management to ensure adequate control while minimising potential side effects from ICS.

Competing interests: None

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## We welcome your feedback

If you wish to comment on this article or have a question for the authors, write to: [editor@thepractioner.co.uk](mailto:editor@thepractioner.co.uk)

## Useful information

**Asthma UK**  
[www.asthma.org.uk](http://www.asthma.org.uk)

**The British guideline on asthma management. SIGN 153**  
Copies of the full guideline and quick reference guide can be downloaded from: [www.sign.ac.uk](http://www.sign.ac.uk)