

# Emergency Asthma Care



*with you every  
breath of the way*

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# Introduction

Despite greater understanding of the biology of asthma, new asthma treatments and better systems of care, asthma outcomes remain suboptimal in the UK, with high admission and death rates compared to other westernised countries. Mortality and admission rates have seen little, if any, reduction since the millennium. Acute severe asthma is a medical emergency and a stressful and frightening time for both patients and professionals. This updated resource provides front-line clinicians with a concise summary of current high-quality emergency asthma care, extending the partnership between Asthma UK and professionals with the aim of improving our management of acute asthma attacks. I would urge all professionals providing care to people with asthma to use it to update their practice and to ensure a copy is available to the whole healthcare team.

**Professor Mike Thomas MB, BS, MRCP, FRCP, PhD**  
**Chief Medical Adviser, Asthma UK**

## Why good emergency asthma care is important

An asthma exacerbation is a worsening of someone's asthma symptoms. Most asthma exacerbations build up over a period of days or weeks but they can also come on suddenly. Ideally, people with asthma can be taught to recognise their worsening symptoms and self-manage their condition with the help of a personal asthma action plan thereby preventing the need to access emergency care. However, when someone's asthma goes out of control and they do access emergency care, it's important to assess and treat their acute exacerbation quickly and effectively to avoid their condition worsening and becoming life threatening.

It's important to realise that even a person with seemingly mild asthma can have a severe or even life threatening exacerbation. With the right care and treatment they will be able to get their asthma back under control. A small proportion of people – around 5% or a quarter of a million<sup>1</sup> – have severe or difficult asthma. These people, despite high levels of asthma medicines, live with asthma symptoms on a daily basis and acute exacerbations requiring emergency care can be frequent and are more likely to be life threatening.

All asthma exacerbations are serious and potentially life threatening. About 1,200 people a year die from asthma. There is a real risk that if a person having an asthma exacerbation doesn't receive the correct care promptly and seamlessly the outcome could prove fatal.

# Access to emergency asthma care

People experiencing an exacerbation of their asthma can access emergency care through any of the following NHS services:

- GP surgery
- Walk-in-centre/urgent care centre/minor injury unit
- Out-of-hours service
- Telephone triage services such as NHS direct/NHS 111
- Hospital emergency department
- Ambulance service
- Medical or paediatric assessment unit
- Via healthcare professionals other than doctors doing home visits

This resource is for all healthcare professionals, working in any setting, who come into contact with people with asthma at the time of an asthma exacerbation. It highlights good practice based on current guidelines, from when a person with asthma first presents with an exacerbation, through to their discharge and follow up.

# How to improve emergency asthma care

Reading this resource may be your first step to improving emergency care services for people with asthma. You will then be able to use it to apply your learning and knowledge to your own personal practice.

You may be ready to make improvements, which start with a complete review of the emergency asthma care that your team provides. In this case, meeting with all stakeholders (people involved in asthma care) to gather ideas and put forward suggestions for improvement would be a good starting place. Ideally, you would form an asthma working party to positively influence change and raise standards of care. Your process would include audit and evaluation of the service before and after change and the involvement of patients who use your service.

# Developing emergency asthma treatment pathways

The BTS/SIGN British Guideline on the Management of Asthma 2008 (revised 2012) gives suggested pathways for treating asthma in adults and children both in emergency departments and GP surgeries; these are included on [page 20](#) for your reference.

These pathways can be adapted for other settings in which asthma emergency care is delivered. It's recommended that you develop your own pathways according to the skills and resources available in your particular practice area.

## How to develop your own treatment pathway

- Identify within your own locality an 'Asthma Champion' – to raise the profile of asthma care.
- Process mapping your current provision of emergency asthma care will help you to develop your care pathway. A map of a patient journey is a visual representation – a picture or a model – of the relevant procedures and administrative processes. The map shows how things are and what happens rather than what should happen. This helps everyone involved to see other people's views and roles. It also helps you to identify problems and areas for improvement. For more information visit:  
[www.institute.nhs.uk/quality\\_and\\_service\\_improvement\\_tools/quality\\_and\\_service\\_improvement\\_tools/process\\_mapping\\_-\\_an\\_overview](http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/process_mapping_-_an_overview)
- Discuss with the whole team, including receptionists, what needs to be included in your treatment pathway. Involve all relevant stakeholders and most importantly, your patients, carers and their families.
- Clarify the role and the responsibility of each individual team member in the management of asthma exacerbations and ensure there is a good communication structure between everyone involved both internally and externally.
- Consider both clinical and non clinical staff's knowledge, understanding and confidence in asthma care and offer training if any needs are identified. Here are some useful links:

[www.pcrs-uk.org](http://www.pcrs-uk.org)    [www.educationforhealth.org](http://www.educationforhealth.org)    [www.respiratoryeduc.com](http://www.respiratoryeduc.com)

- If you have an appointments system, review how emergency asthma patients fit in to your system for their unscheduled appointments and/or triage slots.
- Review the availability of your emergency equipment and medication and who is responsible for the ordering, maintenance and restocking.
- Use the evidence-based [BTS/SIGN British Guideline on the Management of Asthma 2008 \(revised 2012\)](#) as a basis for your pathway. The acute management pathways from the guideline are included on [page 20](#).
- Develop patient group directions (PGDs) to enable prompt treatment of asthma exacerbations ([see page 27](#)).
- Identify at least one team member to be responsible for good communication between all services, ensuring that relevant follow-up appointments are made and there is clear communication between services and the person with asthma. Consider the use of standardised discharge letters, computerised links, telephone, fax, post and email.
- Ensure the coding systems in place enable the correct information to be entered onto the computer systems for accurate patient information and data audit purposes. Liaise with your Information Technology department if areas for improvement are identified.
- Identify local specialists and relevant follow-up services and referral procedures for them. There is a local contacts list proforma in the [appendix](#).
- Pilot your pathway, and evaluate it to ensure it meets your service needs, adapting it as necessary.



# Audit

Clinical audit is a process that has been defined as “a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change”<sup>3</sup>. The clinical audit process seeks to identify areas for service improvement, develop and carry out action plans to rectify or improve service provision and then re-audit to ensure that these changes have had an effect.

The [BTS/SIGN British Guideline on the Management of Asthma 2008 \(revised 2012\) Section 8.3](#) gives a summary of recommended audits of different aspects of asthma management including both clinical and organisational.

The British Thoracic Society has a programme of national audits and the audit tools they use are available for local use at the following link:

[www.brit-thoracic.org.uk/Audit.aspx](http://www.brit-thoracic.org.uk/Audit.aspx)

There is an emergency asthma care audit form within the [appendix](#) for you to adapt and use for audit purposes. Examples of aspects you may wish to use the form to audit could include;

- Which areas of the initial assessment of someone having an exacerbation are commonly missed.
- The risk factors in people frequently attending with an asthma exacerbation.
- Areas of asthma care requiring staff training.

**[There is a sample form available here](#)**

## Audit Form for Emergency Asthma Care (sample)

Patient name: *Anne Smith*

DOB: *7-3-1966*

Date/time: *25.11.2012 23.00*

	YES	NO	NA
1 PEF on admission and after treatment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Arterial Blood Gases if saturation (Sa O <sub>2</sub> ) <92%	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 Inhaler technique checked and recorded	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Medication (current) recorded, including dose, frequency and concordance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Triggers identified	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Relevant past medical history recorded (asthma and atopy in particular)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Psycho-social or other risk factors (or their absence) recorded	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Peak expiratory flow variability of <75% on discharge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Stable on discharge medication for 24 hours and stable or diurnal variation <25% unless discharge agreed with respiratory physician	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Provided and documented written action plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11 Steroid tablets given (appropriate dose)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 Arrange follow-up with GP for 48 hours after discharge and send discharge letter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Where you have ticked N/A (not applicable) please explain here. Eg No Peak flow as under 6

*2. Sa O<sub>2</sub> of 95% therefore no blood gases taken.*

# Identifying asthma patients at risk of exacerbations

The following list will help your practice area identify people with asthma who are more at risk of asthma exacerbations. You can highlight risk factors as part of your initial assessment for emergency asthma care by documenting them on your [emergency asthma care assessment form \(sample on page 15\)](#). The same risk factors also need consideration when deciding whether to admit someone to hospital and also when planning their discharge.

## Risk factors for fatal or near fatal asthma attacks

**A combination of severe asthma recognised by one or more of the following:**

- Previous supported ventilation, respiratory acidosis or other indicator of a near fatal episode.
- Requiring three or more classes of asthma medicines.
- Heavy use of Beta-2 agonist.
- Previous admission to hospital for asthma, especially in the last year.
- Repeated attendances for emergency asthma care, especially in the last year.
- “Brittle” asthma.

and...

**Adverse behavioural or psychosocial features recognised by one or more of the following:**

- Non-compliance with treatment or monitoring.
- Failure to attend appointments.
- Fewer GP contacts.
- Frequent home visits.
- Self discharge from hospital.
- Psychosis, depression, other psychiatric illness or deliberate self-harm.
- Current or recent major tranquilliser use.
- Denial.

- Alcohol or drug abuse.
- Obesity.
- Learning difficulties.
- Employment problems.
- Income problems.
- Social isolation.
- Childhood abuse.
- Severe domestic, marital or legal stress.

Reproduced from BTS Guideline on the Management of Asthma 2008 (revised 2012) Section 6.1.3 Table 9

### Asthma at risk registers

Recent research has shown that using an ‘asthma at risk register’ in primary care reduces hospitalisations<sup>4</sup>. If you work in a primary care setting you may wish to consider developing a register for those people with asthma, identified using the BTS/SIGN criteria above, most at risk of exacerbations. Those on the register would be flagged to receive a more targeted approach to asthma care interventions such as:

- whole practice awareness of who is on the register including non clinical staff so everyone can encourage the person with asthma to engage with services
- longer or more frequent appointments
- pro-active chasing up of those who do not attend their asthma reviews
- sending text reminders about appointments
- opportunistic asthma reviews
- asthma reviews over the telephone or other novel approaches
- offering reviews with a named doctor or asthma nurse to ensure consistency
- pro-actively reviewing those who frequently request repeat prescriptions of reliever inhalers

- pro-actively reviewing those who do not request repeat prescriptions of their preventer medication
- ensuring someone who has recently had a course of oral steroids is followed up
- following up all those who have attended out of hours services, walk in clinics, accident and emergency departments or have recently been admitted to hospital with their asthma.

### Asthma UK's Triple A test

Asthma UK has developed the Triple A: Avoid Asthma Attacks test. It's an online test, to help people with asthma find out their risk of having an asthma attack and advise them what they can do to reduce it. It asks simple questions about factors which have all been independently linked to an increased or highly increased risk of an asthma attack that could lead to a hospital admission, for example how often respondents use their blue (reliever) inhaler. The test makes clear that everyone's asthma is different and symptoms can come and go; this does not mean there is no risk of an attack when symptoms are absent.

**You can signpost your patients to this test at the following link:**

The Triple A: Avoid Asthma Attacks campaign

# Initial assessment of an asthma exacerbation

Receptionists or telephone call takers in your care setting need to ensure your patients with symptoms of an asthma exacerbation gain quick access to a doctor or trained asthma nurse. Delay in treating an asthma exacerbation can adversely affect outcomes.

**Assessing the severity of the asthma exacerbation needs to be done quickly and accurately.** You can use the severity assessment tables provided (see page 16). This will enable you to choose the correct treatment pathway and provide you with a baseline on which to assess the effectiveness of the treatment and inform your ongoing care.

## Measure and record:

- Peak flow
- Pulse rate
- Respiration rate
- Pulse oximetry (SpO<sub>2</sub>)
- Arterial blood gases (ABG) or capillary blood gases (where available) in cases where SpO<sub>2</sub> <92% or there are features of life threatening asthma

## Consider the following:

- Levels of increasing symptoms. This can include one or any of the following; cough    breathlessness    chest tightness    wheeze\*
  - \* not everyone with asthma will wheeze. Absence of wheeze on auscultation does not indicate that the exacerbation is insignificant
- Amount of reliever use prior to presentation
- Ability to speak in full sentences
- Use of accessory muscles
- Even patients with severe or life-threatening asthma may not be distressed and may not have all of the features mentioned.

Below is an example assessment form for emergency asthma care. [Here is a link](#) to a template of the form which you can adapt to suit your needs.

## Assessment form for emergency asthma care (sample)

Patient name: Anne Smith

DOB: 07/03/1966 Date/time: 25/11/2012

1. Date(s) of last asthma attack requiring emergency treatment 20/09/2011

2. Previous admission for asthma requiring critical care? Yes/No and when? Yes, 20/09/2011

Ventilated? Yes/No and when? No

3. PEF before initial reliever treatment 200

PEF 15 mins after treatment 350

4. Best PEF (or predicted)\* 400

5. Pulse oximetry, SpO<sub>2</sub> (in room air or specify dose of O<sub>2</sub> if given) 95%

6. Arterial Blood Gas readings if SpO<sub>2</sub> <92% or any other feature of life threatening asthma

7. Pulse rate 98

8. Respiratory rate 23

9. Ability to speak in full sentences in one breath Yes/No Yes

10. Use of accessory muscles Yes/No No

11. Inhaler technique observed (good, moderate, poor) Poor, dislikes using large volume spacer

12. Inhaler device(s) Large volume spacer and pMDI

13. Current medication including dose Salbutamol 2 puffs PRN Flixotide 50mcg 2 puffs BD

14. Triggers Cats, smoke, house-dust mite, dust and walking up hills

15. In the last week or month:

asthma symptoms at night Awakes twice nightly coughing

asthma symptoms during the day Coughing in the morning, breathless on exercise in the last week

asthma symptoms interfering with usual activity? Takes longer to climb the stairs - has to stop twice

14. Smoker (current, ex, passive) Non-smoker

Smoking (pack/years)

15. Asthma (self/in family) Yes, diagnosed September 2006, no family history

Eczema (self/in family) Yes, her mother had it

Hay fever (self/in family) No

16. Allergies Plasters

17. Past medical history (PMH) Childhood bronchitis, diagnosed with depression in 2005

18. Psychological factors Feels depressed and lonely

19. Social factors Lives alone, 5th floor flat, unemployed IT consultant

20. Other significant factors eg pregnant, a carer, away from home Owns 2 cats

21. Communication difficulties None known

\*Predicted peak flow chart

## Levels of severity of asthma exacerbations in adults

If a patient has signs and symptoms across categories always treat according to their most severe feature.

Moderate exacerbation	Acute severe exacerbation	Life-threatening exacerbation
<ul style="list-style-type: none"> <li>● Peak flow &gt;50–75% best or predicted</li> <li>● SpO<sub>2</sub> ≥92%</li> <li>● Pulse &lt;110/min</li> <li>● Respiratory rate &lt;25 breaths/min</li> <li>● Increasing symptoms</li> <li>● Speech normal</li> <li>● No features of a severe exacerbation</li> </ul>	<p>Any one of the following:</p> <ul style="list-style-type: none"> <li>● Peak flow 33–50% best or predicted</li> <li>● SpO<sub>2</sub> ≥92%</li> <li>● Pulse ≥110/min</li> <li>● Respiratory rate ≥25/min</li> <li>● Inability to complete sentences in one breath</li> </ul>	<p>Any one of the following in a person with acute severe asthma:</p> <ul style="list-style-type: none"> <li>● Peak flow &lt;33% best or predicted</li> <li>● SpO<sub>2</sub> &lt;92%</li> <li>● PaO<sub>2</sub> &lt;8kPa</li> <li>● Normal PaCO<sub>2</sub></li> <li>● Altered level of consciousness</li> <li>● Exhaustion</li> <li>● Arrhythmia</li> <li>● Hypotension</li> <li>● Cyanosis</li> <li>● Silent chest</li> <li>● Poor respiratory effort</li> </ul>

Adapted from BTS/SIGN British Guideline on the Management of Asthma May 2008 (revised 2012)



### Levels of severity of asthma exacerbations in children aged 5–12 years

If a patient has signs and symptoms across categories always treat according to their most severe feature.

Moderate exacerbation	Acute severe exacerbation	Life-threatening exacerbation
<ul style="list-style-type: none"> <li>● Peak flow <math>\geq 50\%</math> best or predicted</li> <li>● SpO<sub>2</sub> <math>\geq 92\%</math></li> <li>● Pulse <math>\leq 125/\text{min}</math></li> <li>● Respiratory rate <math>\leq 30</math> breaths/min</li> <li>● Able to talk in sentences</li> <li>● No features of severe asthma</li> </ul>	<ul style="list-style-type: none"> <li>● Peak flow 33–50% best or predicted</li> <li>● SpO<sub>2</sub> <math>&lt; 92\%</math></li> <li>● Pulse <math>&gt; 125/\text{min}</math></li> <li>● Respiratory rate <math>&gt; 30</math> breaths/min</li> <li>● Unable to complete sentences in one breath or too breathless to talk</li> <li>● Use of accessory muscles</li> </ul>	<ul style="list-style-type: none"> <li>● Peak flow <math>&lt; 33\%</math> best or predicted</li> <li>● SpO<sub>2</sub> <math>&lt; 92\%</math></li> <li>● Silent chest</li> <li>● Cyanosis</li> <li>● Poor respiratory effort</li> <li>● Hypotension</li> <li>● Exhaustion</li> <li>● Confusion/agitation</li> <li>● Altered level of consciousness</li> </ul>

Adapted from BTS/SIGN British Guideline on the Management of Asthma May 2008 (revised 2012)

### Levels of severity of asthma exacerbations in children aged 2–5 years

If a patient has signs and symptoms across categories always treat according to their most severe feature.

Moderate exacerbation	Acute severe exacerbation	Life-threatening exacerbation
<ul style="list-style-type: none"> <li>● SpO<sub>2</sub> <math>\geq 92\%</math></li> <li>● Pulse <math>\leq 140/\text{min}</math></li> <li>● Respiratory rate <math>\leq 40</math> breaths/min</li> <li>● Able to talk in sentences</li> <li>● No features of severe asthma</li> </ul>	<ul style="list-style-type: none"> <li>● SpO<sub>2</sub> <math>&lt; 92\%</math></li> <li>● Pulse <math>&gt; 140/\text{min}</math></li> <li>● Respiratory rate: <math>&gt; 40</math> breaths/min</li> <li>● Unable to complete sentences in one breath or too breathless to talk or feed</li> <li>● Use of accessory muscles</li> </ul>	<ul style="list-style-type: none"> <li>● SpO<sub>2</sub> <math>&lt; 92\%</math></li> <li>● Silent chest</li> <li>● Cyanosis</li> <li>● Poor respiratory effort</li> <li>● Hypotension</li> <li>● Exhaustion</li> <li>● Confusion/agitation</li> <li>● Altered level of consciousness</li> </ul>

Adapted from BTS/SIGN British Guideline on the Management of Asthma May 2008 (revised 2012)

## Levels of severity of asthma exacerbations in children aged under 2 years

If a patient has signs and symptoms across categories always treat according to their most severe feature.

Moderate exacerbation	Acute severe exacerbation	Life-threatening exacerbation
<ul style="list-style-type: none"><li>● SpO<sub>2</sub> ≥92 %</li><li>● Audible wheezing</li><li>● Using accessory muscles</li><li>● Still feeding</li></ul>	<ul style="list-style-type: none"><li>● SpO<sub>2</sub> &lt;92%</li><li>● Cyanosis</li><li>● Marked respiratory distress</li><li>● Too breathless to feed</li></ul>	<ul style="list-style-type: none"><li>● Apnoea</li><li>● Bradycardia</li><li>● Poor respiratory effort</li></ul>

Adapted from BTS/SIGN British Guideline on the Management of Asthma May 2008 (revised 2012)

# Treatment of asthma exacerbations

Once you have established the level of severity of a person's asthma exacerbation you can plan treatment in accordance with [BTS/SIGN guidelines](#). It is important to note that if a person with an asthma exacerbation has symptoms across the severity levels, you should always treat them according to their most severe features.

The [BTS/SIGN guideline](#) provides treatment pathways for both adults and children in the following care settings; you may need to adapt them to suit your own area of care:

- General practice
- Emergency department
- In hospital

## Admission criteria

The [BTS/SIGN guideline](#) recommends the following:

### Refer to hospital:

- Patients with features of severe or life threatening asthma

### Admit to hospital:

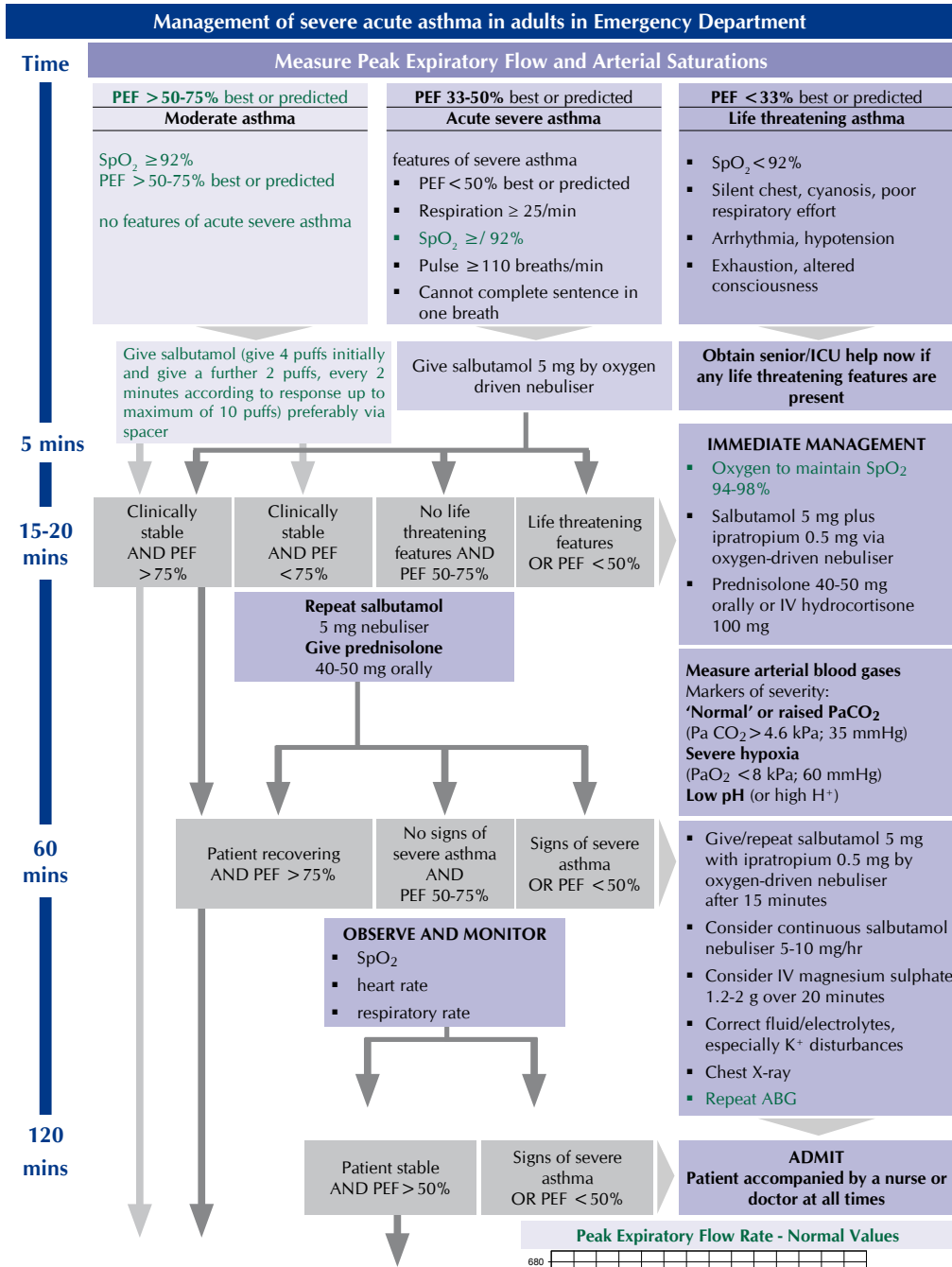
- Patients with any feature of life-threatening or near fatal asthma
- Patients with any feature of a severe asthma exacerbation persisting after initial treatment

### Additionally, patients with the following may also need admission:

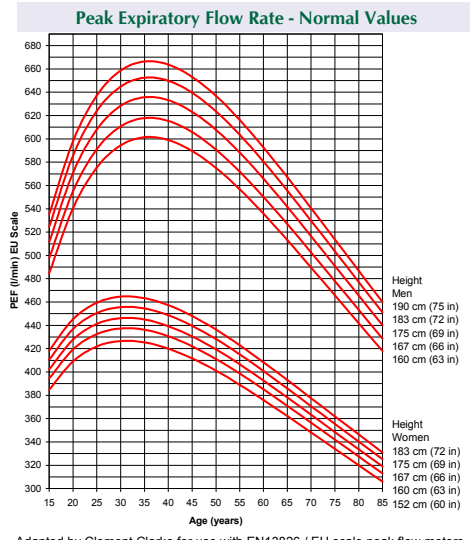
- Significant symptoms are still present.
- There are concerns about adherence.
- They live alone/are socially isolated.
- They have psychological problems.
- They have a physical disability or learning difficulties.
- They have previously had a near-fatal asthma exacerbation.
- Their exacerbation worsened despite an adequate dose of steroid tablets pre-presentation.
- They present at night.
- They are pregnant.

**The [BTS/SIGN treatment pathways](#) are included on the following pages for your reference**





- POTENTIAL DISCHARGE**
- In all patients who received nebulised β<sub>2</sub> agonists prior to presentation, consider an extended observation period prior to discharge
  - If PEF < 50% on presentation, give prednisolone 40-50 mg/day for 5 days
  - In all patients ensure treatment supply of inhaled steroid and β<sub>2</sub> agonist and check inhaler technique
  - Arrange GP follow up 2 days post-discharge
  - Fax or email discharge letter to GP
  - Refer to asthma liaison nurse/chest clinic



**Management of acute severe asthma in adults in hospital**

**Features of acute severe asthma**

- Peak expiratory flow (PEF) 33-50% of best (use % predicted if recent best unknown)
- Can't complete sentences in one breath
- Respirations  $\geq 25$  breaths/min
- Pulse  $\geq 110$  beats/min

**Life threatening features**

- PEF < 33% of best or predicted
- SpO<sub>2</sub> < 92%
- Silent chest, cyanosis, or feeble respiratory effort
- Arrhythmia or hypotension
- Exhaustion, altered consciousness

**If a patient has any life threatening feature,** measure arterial blood gases. No other investigations are needed for immediate management.

**Blood gas markers of a life threatening attack:**

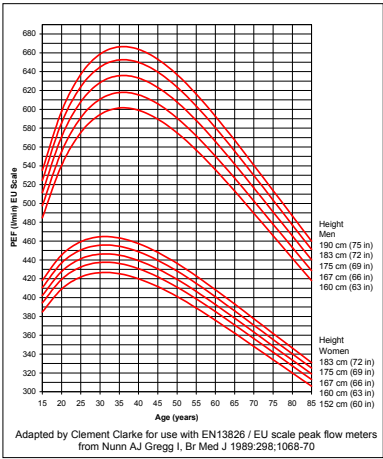
- 'Normal' (4.6-6 kPa, 35-45 mmHg) PaCO<sub>2</sub>
- Severe hypoxia: PaO<sub>2</sub> < 8 kPa (60mmHg) irrespective of treatment with oxygen
- A low pH (or high H<sup>+</sup>)

**Caution: Patients with severe or life threatening attacks may not be distressed and may not have all these abnormalities. The presence of any should alert the doctor.**

**Near fatal asthma**

- Raised PaCO<sub>2</sub>
- Requiring mechanical ventilation with raised inflation pressures

**Peak Expiratory Flow Rate - Normal Values**



**IMMEDIATE TREATMENT**

- Oxygen to maintain SpO<sub>2</sub> 94-98%
- Salbutamol 5 mg or terbutaline 10 mg via an oxygen-driven nebuliser
- Ipratropium bromide 0.5 mg via an oxygen-driven nebuliser
- Prednisolone tablets 40-50 mg or IV hydrocortisone 100 mg
- No sedatives of any kind
- Chest X ray if pneumothorax or consolidation are suspected or patient requires mechanical ventilation

**IF LIFE THREATENING FEATURES ARE PRESENT:**

- Discuss with senior clinician and ICU team
- Consider IV magnesium sulphate 1.2-2 g infusion over 20 minutes (unless already given)
- Give nebulised  $\beta_2$  agonist more frequently e.g. salbutamol 5 mg up to every 15-30 minutes or 10 mg per hour via continuous nebulisation (requires special nebuliser)

**SUBSEQUENT MANAGEMENT**

**IF PATIENT IS IMPROVING continue:**

- Oxygen to maintain SpO<sub>2</sub> 94-98%
- Prednisolone 40-50mg daily or IV hydrocortisone 100 mg 6 hourly
- Nebulised  $\beta_2$  agonist and ipratropium 4-6 hourly

**IF PATIENT NOT IMPROVING AFTER 15-30 MINUTES:**

- Continue oxygen and steroids
- Use continuous nebulisation of salbutamol at 5-10 mg/hour if an appropriate nebuliser is available. Otherwise give nebulised salbutamol 5 mg every 15-30 minutes
- Continue ipratropium 0.5 mg 4-6 hourly until patient is improving

**IF PATIENT IS STILL NOT IMPROVING:**

- Discuss patient with senior clinician and ICU team
- Consider IV magnesium sulphate 1.2-2 g over 20 minutes (unless already given)
- Senior clinician may consider use of IV  $\beta_2$  agonist or IV aminophylline or progression to mechanical ventilation

**MONITORING**

- Repeat measurement of PEF 15-30 minutes after starting treatment
- Oximetry: maintain SpO<sub>2</sub> > 94-98%
- Repeat blood gas measurements within 1 hour of starting treatment if:
  - initial PaO<sub>2</sub> < 8 kPa (60 mmHg) unless subsequent SpO<sub>2</sub> > 92%
  - PaCO<sub>2</sub> normal or raised
  - patient deteriorates
- Chart PEF before and after giving  $\beta_2$  agonists and at least 4 times daily throughout hospital stay

**Transfer to ICU accompanied by a doctor prepared to intubate if:**

- Deteriorating PEF, worsening or persisting hypoxia, or hypercapnea
- Exhaustion, altered consciousness
- Poor respiratory effort or respiratory arrest

**DISCHARGE**

**When discharged from hospital,** patients should have:

- Been on discharge medication for 12-24 hours and have had inhaler technique checked and recorded
- PEF > 75% of best or predicted and PEF diurnal variability < 25% unless discharge is agreed with respiratory physician
- Treatment with **oral and inhaled steroids** in addition to bronchodilators
- Own PEF meter and **written asthma action plan**
- GP follow up arranged within 2 working days
- Follow up appointment in respiratory clinic within 4 weeks

**Patients with severe asthma** (indicated by need for admission) **and adverse behavioural or psychosocial features are at risk of further severe or fatal attacks**

- Determine reason(s) for exacerbation and admission
- Send details of admission, discharge and potential best PEF to GP

British Guideline on the Management of Asthma

Management of acute asthma in children in general practice

Age 2-5 years

**ASSESS ASTHMA SEVERITY**

<p><b>Moderate asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> ≥92%</li> <li>Able to talk</li> <li>Heart rate ≤140/min</li> <li>Respiratory rate ≤40/min</li> </ul>	<p><b>Severe asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> &lt;92%</li> <li>Too breathless to talk</li> <li>Heart rate &gt;140/min</li> <li>Respiratory rate &gt;40/min</li> <li>Use of accessory neck muscles</li> </ul>	<p><b>Life threatening asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> &lt; 92% plus any of:                             <ul style="list-style-type: none"> <li>Silent chest</li> <li>Poor respiratory effort</li> <li>Agitation</li> <li>Altered consciousness</li> <li>Cyanosis</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>β<sub>2</sub> agonist 2-10 puffs via spacer ± facemask</li> <li>Consider soluble prednisolone 20 mg</li> </ul> <p><b>Increase β<sub>2</sub> agonist dose by 2 puffs every 2 minutes according to response up to 10 puffs</b></p>	<ul style="list-style-type: none"> <li>Oxygen via face mask</li> <li>2-10 puffs of β<sub>2</sub> agonist [give 2 puffs, every 2 minutes according to response up to maximum of 10 puffs] or nebulised salbutamol 2.5 mg or terbutaline 5 mg or Soluble prednisolone 20 mg</li> </ul> <p><b>Assess response to treatment 15 mins after β<sub>2</sub> agonist</b></p>	<ul style="list-style-type: none"> <li>Oxygen via face mask</li> <li>Nebulise:                             <ul style="list-style-type: none"> <li>salbutamol 2.5 mg or terbutaline 5 mg</li> <li>+ ipratropium 0.25 mg</li> </ul> </li> <li>Soluble prednisolone 20 mg or IV hydrocortisone 50 mg</li> </ul>
<p><b>IF POOR RESPONSE ARRANGE ADMISSION</b></p>	<p><b>IF POOR RESPONSE REPEAT β<sub>2</sub> AGONIST AND ARRANGE ADMISSION</b></p>	<p><b>REPEAT β<sub>2</sub> AGONIST VIA OXYGEN-DRIVEN NEBULISER WHILST ARRANGING IMMEDIATE HOSPITAL ADMISSION</b></p>
<p><b>GOOD RESPONSE</b></p> <ul style="list-style-type: none"> <li>Continue β<sub>2</sub> agonist via spacer or nebuliser, as needed but not exceeding 4-hourly</li> <li><b>If symptoms are not controlled repeat β<sub>2</sub> agonist and refer to hospital</b></li> <li>Continue prednisolone for up to 3 days</li> <li>Arrange follow-up clinic visit</li> </ul>	<p><b>POOR RESPONSE</b></p> <ul style="list-style-type: none"> <li>Stay with patient until ambulance arrives</li> <li>Send written assessment and referral details</li> <li>Repeat β<sub>2</sub> agonist via oxygen-driven nebuliser in ambulance</li> </ul>	<p><b>LOWER THRESHOLD FOR ADMISSION IF:</b></p> <ul style="list-style-type: none"> <li>Attack in late afternoon or at night</li> <li>Recent hospital admission or previous severe attack</li> <li>Concern over social circumstances or ability to cope at home</li> </ul> <p><b>NB: If a patient has signs and symptoms across categories, always treat according to their most severe features</b></p>

Age > 5 years

**ASSESS ASTHMA SEVERITY**

<p><b>Moderate asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> ≥92%</li> <li>PEF ≥ 50% best or predicted</li> <li>Able to talk</li> <li>Heart rate ≤125/min</li> <li>Respiratory rate ≤30/min</li> </ul>	<p><b>Severe asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> &lt;92%</li> <li>PEF 33-50% best or predicted</li> <li>Too breathless to talk</li> <li>Heart rate &gt;125/min</li> <li>Respiratory rate &gt;30/min</li> <li>Use of accessory neck muscles</li> </ul>	<p><b>Life threatening asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> &lt;92% plus any of:                             <ul style="list-style-type: none"> <li>PEF &lt;33% best or predicted</li> <li>Silent chest</li> <li>Poor respiratory effort</li> <li>Agitation</li> <li>Altered consciousness</li> <li>Cyanosis</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>β<sub>2</sub> agonist 2-10 puffs via spacer</li> <li>Consider soluble prednisolone 30-40 mg</li> </ul> <p><b>Increase β<sub>2</sub> agonist dose by 2 puffs every 2 minutes according to response up to 10 puffs</b></p>	<ul style="list-style-type: none"> <li>Oxygen via face mask</li> <li>2-10 puffs of β<sub>2</sub> agonist [give 2 puffs, every 2 minutes according to response up to maximum of 10 puffs] or nebulised salbutamol 2.5-5 mg or terbutaline 5-10 mg or Soluble prednisolone 30-40 mg</li> </ul> <p><b>Assess response to treatment 15 mins after β<sub>2</sub> agonist</b></p>	<ul style="list-style-type: none"> <li>Oxygen via face mask</li> <li>Nebulise:                             <ul style="list-style-type: none"> <li>salbutamol 5 mg or terbutaline 10 mg</li> <li>+ ipratropium 0.25 mg</li> </ul> </li> <li>Soluble prednisolone 30-40 mg or IV hydrocortisone 100 mg</li> </ul>
<p><b>IF POOR RESPONSE ARRANGE ADMISSION</b></p>	<p><b>IF POOR RESPONSE REPEAT β<sub>2</sub> AGONIST AND ARRANGE ADMISSION</b></p>	<p><b>REPEAT β<sub>2</sub> AGONIST VIA OXYGEN-DRIVEN NEBULISER WHILST ARRANGING IMMEDIATE HOSPITAL ADMISSION</b></p>
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Management of acute asthma in children in Emergency Department

Age 2-5 years

Age > 5 years

ASSESS ASTHMA SEVERITY

ASSESS ASTHMA SEVERITY

**Moderate asthma**

- SpO<sub>2</sub> ≥ 92%
- No clinical features of severe asthma

**NB: If a patient has signs and symptoms across categories, always treat according to their most severe features**

**Severe asthma**

- SpO<sub>2</sub> < 92%
- Too breathless to talk or eat
- Heart rate > 140/min
- Respiratory rate > 40/min
- Use of accessory neck muscles

**Life threatening asthma**

- SpO<sub>2</sub> < 92% plus any of:
  - Silent chest
  - Poor respiratory effort
  - Agitation
  - Altered consciousness
  - Cyanosis

β<sub>2</sub> agonist 2-10 puffs via spacer ± facemask (given one at a time single puffs, tidal breathing and inhaled separately)

- Increase β<sub>2</sub> agonist dose by 2 puffs every 2 minutes up to 10 puffs according to response
- Consider soluble oral prednisolone 20 mg

**Reassess within 1 hour**

Oxygen via face mask/nasal prongs to achieve SpO<sub>2</sub> 94-98%

- β<sub>2</sub> agonist 10 puffs via spacer ± facemask or nebulised salbutamol 2.5 mg or terbutaline 5 mg
- Soluble prednisolone 20 mg or IV hydrocortisone 4 mg/kg
- Repeat β<sub>2</sub> agonist up to every 20-30 minutes according to response
- If poor response** add 0.25 mg nebulised ipratropium bromide

Oxygen via face mask/nasal prongs to achieve SpO<sub>2</sub> 94-98%

- Nebulised β<sub>2</sub> agonist: salbutamol 2.5 mg or terbutaline 5 mg **plus** ipratropium bromide 0.25 mg nebulised
- Oral prednisolone 20mg or IV Hydrocortisone 4mg/kg if vomiting

**Discuss with senior clinician, PICU team or paediatrician**

- Repeat bronchodilators every 20-30 minutes

**Moderate asthma**

- SpO<sub>2</sub> ≥ 92%
- PEF ≥ 50% best or predicted
- No clinical features of severe asthma

**NB: If a patient has signs and symptoms across categories, always treat according to their most severe features**

**Severe asthma**

- SpO<sub>2</sub> < 92%
- PEF 33-50% best or predicted
- Heart rate > 125/min
- Respiratory rate > 30/min
- Use of accessory neck muscles

**Life threatening asthma**

- SpO<sub>2</sub> < 92% plus any of:
  - PEF < 33% best or predicted
  - Silent chest
  - Poor respiratory effort
  - Altered consciousness
  - Cyanosis

β<sub>2</sub> agonist 2-10 puffs via spacer

- Increase β<sub>2</sub> agonist dose by 2 puffs every 2 minutes up to 10 puffs according to response
- Oral prednisolone 30-40 mg

**Reassess within 1 hour**

Oxygen via face mask/nasal prongs to achieve SpO<sub>2</sub> 94-98%

- β<sub>2</sub> agonist 10 puffs via spacer or nebulised salbutamol 2.5-5 mg or terbutaline 5-10 mg
- Oral prednisolone 30-40 mg or IV hydrocortisone 4 mg/kg if vomiting
- If poor response** nebulised ipratropium bromide 0.25 mg
- Repeat β<sub>2</sub> agonist and ipratropium up to every 20-30 minutes according to response

Oxygen via face mask/nasal prongs to achieve SpO<sub>2</sub> 94-98%

- Nebulised β<sub>2</sub> agonist: salbutamol 5 mg or terbutaline 10 mg **plus** ipratropium bromide 0.25 mg nebulised
- Oral prednisolone 30-40mg or IV Hydrocortisone 4mg/kg if vomiting

**Discuss with senior clinician, PICU team or paediatrician**

- Repeat bronchodilators every 20-30 minutes

**DISCHARGE PLAN**

- Continue β<sub>2</sub> agonist 4 hourly pm
- Consider prednisolone 20 mg daily for up to 3 days
- Advise to contact GP if not controlled on above treatment
- Provide a written asthma action plan
- Review regular treatment
- Check inhaler technique
- Arrange GP follow up

Arrange immediate transfer to PICU/HDU if poor response to treatment

Admit all cases if features of severe exacerbation persist after initial treatment

Continue β<sub>2</sub> agonist 4 hourly as necessary

- Consider prednisolone 30-40 mg daily for up to 3 days
- Advise to contact GP if not controlled on above treatment
- Provide a written asthma action plan
- Review regular treatment
- Check inhaler technique
- Arrange GP follow up

**DISCHARGE PLAN**

- Continue β<sub>2</sub> agonist 4 hourly as necessary
- Consider prednisolone 30-40 mg daily for up to 3 days
- Advise to contact GP if not controlled on above treatment
- Provide a written asthma action plan
- Review regular treatment
- Check inhaler technique
- Arrange GP follow up

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Admit all cases if features of severe exacerbation persist after initial treatment



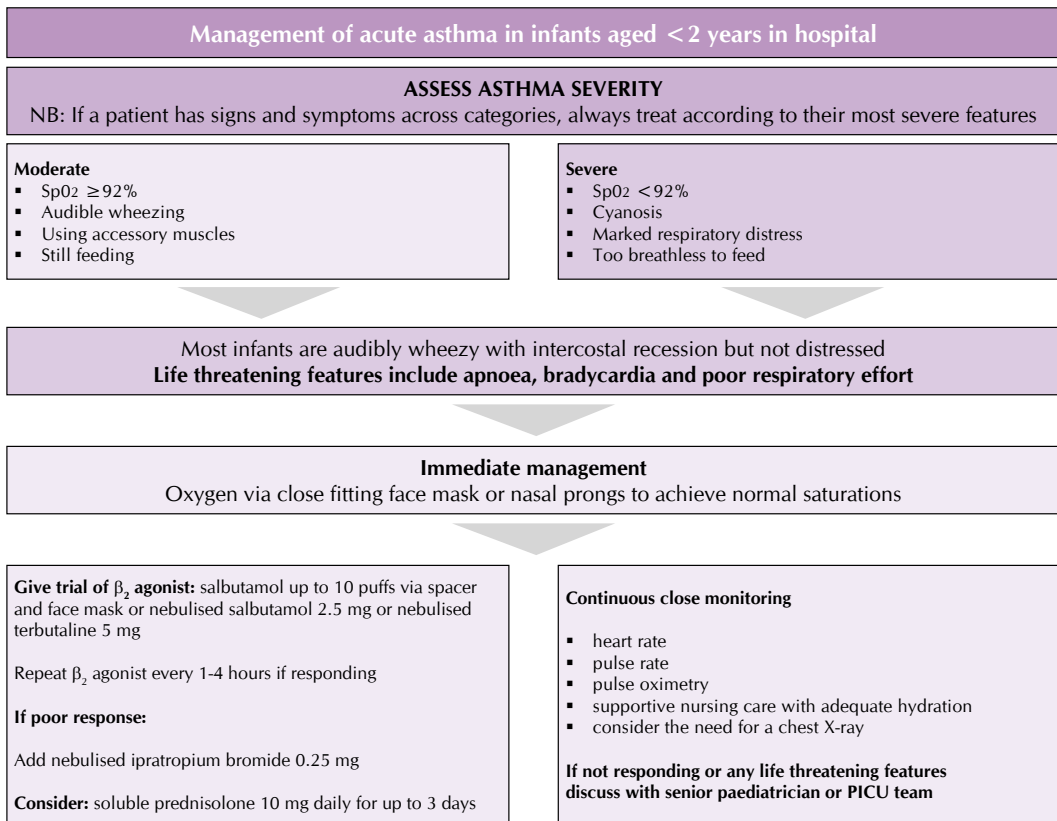
British Guideline on the Management of Asthma

Management of acute asthma in children in hospital

Age 2-5 years

Age > 5 years

Age 2-5 years		Age > 5 years	
ASSESS ASTHMA SEVERITY		ASSESS ASTHMA SEVERITY	
<p><b>Moderate asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> ≥ 92%</li> <li>No clinical features of severe asthma</li> </ul> <p><b>NB: If a patient has signs and symptoms across categories, always treat according to their most severe features</b></p>	<p><b>Severe asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> &lt; 92%</li> <li>Too breathless to talk or eat</li> <li>Heart rate &gt; 140/min</li> <li>Respiratory rate &gt; 40/min</li> <li>Use of accessory neck muscles</li> </ul>	<p><b>Moderate asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> ≥ 92%</li> <li>PEF &gt; 50% best or predicted</li> <li>No clinical features of severe asthma</li> </ul> <p><b>NB: If a patient has signs and symptoms across categories, always treat according to their most severe features</b></p>	<p><b>Severe asthma</b></p> <ul style="list-style-type: none"> <li>SpO<sub>2</sub> &lt; 92%</li> <li>PEF 33-50% best or predicted</li> <li>Heart rate &gt; 125/min</li> <li>Respiratory rate &gt; 30/min</li> <li>Use of accessory neck muscles</li> </ul>
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ASSESS RESPONSE TO TREATMENT		ASSESS RESPONSE TO TREATMENT	
Record respiratory rate, heart rate and oxygen saturation every 1-4 hours		Record respiratory rate, heart rate, oxygen saturation and PEF/FEV every 1-4 hours	
<p><b>RESPONDING</b></p> <ul style="list-style-type: none"> <li>Continue bronchodilators 1-4 hours pm</li> <li>Discharge when stable on 4 hourly treatment</li> <li>Continue oral prednisolone for up to 3 days</li> </ul> <p><b>At discharge</b></p> <ul style="list-style-type: none"> <li>Ensure stable on 4 hourly inhaled treatment</li> <li>Review the need for regular treatment and the use of inhaled steroids</li> <li>Review inhaler technique</li> <li>Provide a written asthma action plan for treating future attacks</li> <li>Arrange follow up according to local policy</li> </ul>	<p><b>RESPONDING</b></p> <ul style="list-style-type: none"> <li>Continue bronchodilators 1-4 hours pm</li> <li>Discharge when stable on 4 hourly treatment</li> <li>Continue oral prednisolone 30-40 mg for up to 3 days</li> </ul> <p><b>At discharge</b></p> <ul style="list-style-type: none"> <li>Ensure stable on 4 hourly inhaled treatment</li> <li>Review the need for regular treatment and the use of inhaled steroids</li> <li>Review inhaler technique</li> <li>Provide a written asthma action plan for treating future attacks</li> <li>Arrange follow up according to local policy</li> </ul>	<p><b>RESPONDING</b></p> <ul style="list-style-type: none"> <li>Continue bronchodilators 1-4 hours pm</li> <li>Discharge when stable on 4 hourly treatment</li> <li>Continue oral prednisolone 30-40 mg for up to 3 days</li> </ul> <p><b>At discharge</b></p> <ul style="list-style-type: none"> <li>Ensure stable on 4 hourly inhaled treatment</li> <li>Review the need for regular treatment and the use of inhaled steroids</li> <li>Review inhaler technique</li> <li>Provide a written asthma action plan for treating future attacks</li> <li>Arrange follow up according to local policy</li> </ul>	<p><b>NOT RESPONDING</b></p> <ul style="list-style-type: none"> <li>Continue 20-30 minute nebulisers and arrange HDU/PICU transfer</li> <li>Consider: Chest X-ray and blood gases</li> <li><b>Bolus IV salbutamol</b> 15 mcg/kg if not already given</li> <li>Continuous <b>IV salbutamol infusion</b> 1-5 mcg/kg/min (200 mcg/ml solution)</li> <li><b>IV aminophylline</b> 5 mg/kg loading dose over 20 minutes (omit in those receiving oral theophyllines) followed by continuous infusion 1mg/kg/hour</li> <li><b>Bolus IV infusion of magnesium sulphate</b> 40 mg/kg (max 2 g) over 20 minutes</li> </ul>
ASSESS RESPONSE TO TREATMENT		ASSESS RESPONSE TO TREATMENT	
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# Patient Group Directions

Prescription-only medicines are normally supplied and administered in response to a prescription written by a doctor or other clinical prescribers such as nurses or physiotherapists. However, it is possible for medicines to be supplied or administered in accordance with a 'patient group direction' (PGD).

PGDs are written instructions for the supply and administration of a licensed named medicine, to specific groups of patients. The individual patients are not identified before presenting for treatment but the group of patients covered by the PGD will all have sufficiently consistent presenting characteristics and requirements. PGDs should only be used by healthcare professionals who have been assessed as competent and whose names are identified within each document.

## **Examples of PGDs that could be useful to have in place in your practice area to improve the care of people with an asthma exacerbation include:**

- The supply and administration of salbutamol to adults and children.
- The supply and administration of an initial dose of oral prednisolone to adults and children.
- The supply and administration of high flow oxygen to adults and children.

Sample PGDs of two of the above examples are in the [appendix](#) courtesy of PCRS-UK.

## **PGDs need to comply with legislative requirements. When you have reached an agreement with your team on the need for a PGD to improve the way your patients with asthma are managed you will need to:**

- Contact the designated team of people in your health authority/ board/ trust that has responsibility for PGD development in your area. The designated team usually comprises a doctor, a pharmacist and a senior nurse.
- Develop your PGD under the guidance of the designated team, using the framework they will have drawn up for local use.
- Identify the staff to be named on the PGD and ensure they are competent to use the PGD appropriately and to the benefit of their patients.
- Ensure the documents are signed, copied and stored as per local guidance, are readily available for reference and are reviewed on the designated review date (usually every two years).

Further information and guidance on the development of PGDs can be found on the Patient Group Directions (PGD) website, a community of the National electronic Library for Medicines at the following link:

[www.nelm.nhs.uk/en/Communities/NeLM/PGDs/](http://www.nelm.nhs.uk/en/Communities/NeLM/PGDs/)

# Steroid treatment for asthma exacerbations

The following doses of prednisolone are recommended by the [BTS/SIGN asthma guidelines](#).

## Children aged under 2 years.

10mg soluble prednisolone (dissolved in a spoonful of water or juice) daily for up to three days.

Steroid tablet therapy is the preferred steroid preparation for use in this age group for those who are thought to have asthma causing acute wheeze. ([BTS/SIGN sections 6.10 and 6.11.2](#))

## Children aged 2 to 5 years.

20mg soluble prednisolone (dissolved in a spoonful of water or juice daily) for up to three days or until full recovery.

Those already receiving maintenance steroid tablets should receive 2mg/kg (body weight) prednisolone up to a maximum of 60mg.

Repeat the dose in children who vomit. Consider intravenous steroids if unable to retain oral steroids.

Weaning the dose down is unnecessary unless the course of steroids exceeds 14 days. ([BTS/SIGN section 6.8.4](#))

## Children aged 5 to 12 years.

30-40mg prednisolone daily for up to three days or until full recovery.

Those already receiving maintenance steroid tablets should receive 2mg/kg (body weight) prednisolone up to a maximum of 60mg.

Repeat the dose in children who vomit. Consider intravenous steroids if unable to retain oral steroids.

Weaning the dose down is unnecessary unless the course of steroids exceeds 14 days. ([BTS/SIGN section 6.8.4](#))

## Adults and children aged 12 years and over.

40-50mg prednisolone daily for at least five days or until full recovery.

Can be given as parenteral hydrocortisone 400mg daily (100mg 6-hourly) or intramuscular methyl prednisolone 160mg if oral treatment is a problem.

Weaning the dose down is unnecessary unless the course of steroids exceeds three weeks. ([BTS/SIGN section 6.3.3](#))

Systemic steroids take 4–6 hours to take effect, whether administered orally or parenterally, so the earlier they are commenced the better the outcome.

It is important to know that under treating airway inflammation with a dose of steroids which is too low or too short in duration is likely to fail to fully treat the inflammation and lead to a relapse.

### What is meant by full recovery?

- Having few or no symptoms of cough, wheeze, tightness in the chest and shortness of breath.
- No need for reliever inhaler.
- Peak flow reading should also be back to personal best (for children over the age of five and adults).

Parents and people with asthma **must** be told to seek medical help on the same day they finish their steroid tablets if they have not achieved full recovery because they will need a further prescription.

Although steroid tablets can be started at any time of day, the next dose should be taken first thing in the morning with or after breakfast and the full daily dose of tablets should be taken all at once.

Regular inhaled steroid treatment does not need to be stopped during an oral course of steroids.

If inhaled steroids are being started as part of the chronic disease management, they should be commenced as soon as possible alongside the oral steroid treatment. Do not wait until the oral course has finished.

When a course of oral steroids is prescribed a ‘steroid treatment card’ should be provided. See section 6.3.2 of the [British National Formulary](#) for details of where to obtain steroid cards or contact your pharmacist.

# Inhaler devices

The best inhaler device is the one a person can and will use. Correct inhaler technique is central to achieving the greatest benefit from asthma medicines. Inhalers should only be prescribed after the person has received training in the use of the device and they have demonstrated satisfactory technique (BTS/SIGN section 5.1). People with asthma should have their ability to use an inhaler device assessed by a competent healthcare professional. (BTS/SIGN section 5.5)

The following inhaler technique resource has been developed for use with people with asthma when assisting them in achieving optimum inhaler technique.

**[Inhaler techniques videos can be found here](#)**

# Inhaler technique

Most asthma medicines are inhaled directly into your lungs through inhalers. Using your inhaler correctly is the most important way to get your asthma under control. Your doctor, asthma nurse or pharmacist should show you the correct way to use your inhaler and check that you can use it properly. They should check your inhaler technique at every asthma review by asking you to demonstrate how you use it.

Inhalers come in many different devices. There are three main groups of inhalers, each requiring a different technique for effective use.

## The three main groups are:

Metered dose inhalers

Breath actuated metered dose inhalers

Dry powder inhalers

## 1. Metered dose inhalers (MDIs)

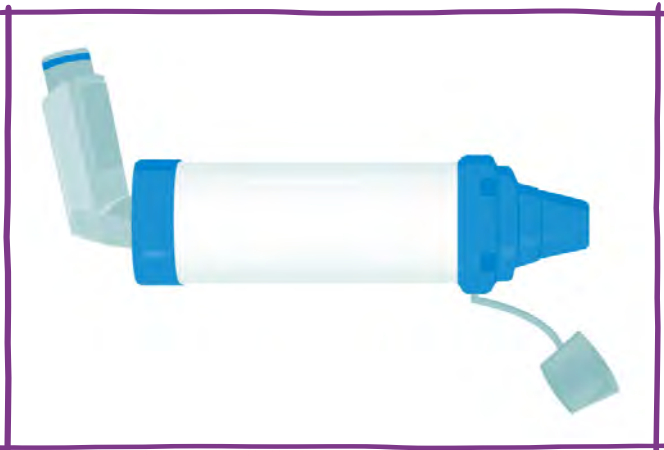
The metered dose inhaler contains the medicine in aerosol form. When you press the canister down a dose of the medicine is released as an aerosol at high speed. To use an MDI you have to press down on the canister just after you have started breathing in, and so it needs some co-ordination. You should breathe the aerosol in at a **slow and gentle rate**. This slows down the aerosol so it doesn't coat the back of your throat and allows more of the medicine to get into your lungs. But, if you breathe in too slowly the medicine will stay in your mouth or come out down your nose and won't get into your lungs where it's needed. It's tricky to get it right, so the best way to use a metered dose inhaler is with a spacer.

### How to use an MDI



1. Remove mouthpiece cover and shake inhaler.
2. Breathe out gently as far as is comfortable.
3. Put the mouthpiece into your mouth between your teeth and close your lips around it.
4. As you begin to breathe in, press the canister down and continue to inhale **slowly and deeply** (eg 'deep inward sigh').
5. Remove the MDI from your mouth and hold your breath for 10 seconds, or as long as is comfortable.
6. For a second dose, wait for approximately 30 seconds before repeating steps 1–5. Replace the mouthpiece cover after use.

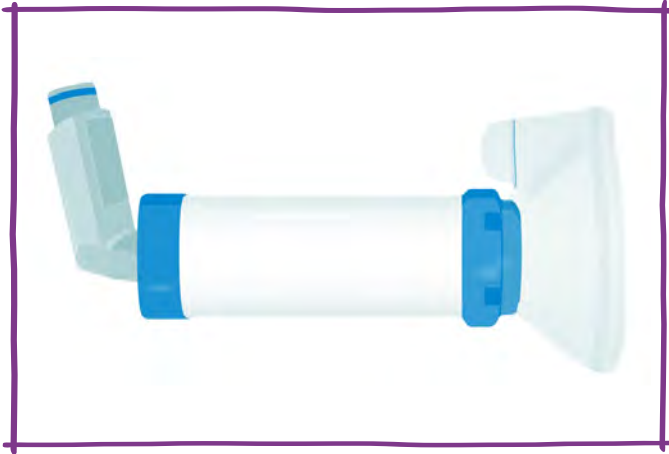
### How to use an MDI with a small volume spacer



1. Remove caps from the inhaler and spacer. Shake the inhaler and insert into the back of the spacer.
2. Breathe out gently as far as is comfortable. Put the mouthpiece of the spacer into your mouth and seal your lips around it.
3. Press the canister once to release a dose of medicine. Breathe in **slowly and steadily** (if you hear a whistling sound you are breathing in too quickly).
4. Remove spacer from your mouth and hold your breath for 10 seconds, or as long as is possible, then breathe out slowly.
5. If taking another dose, wait 30 seconds and repeat steps 1–4. Replace the mouthpiece covers after use.

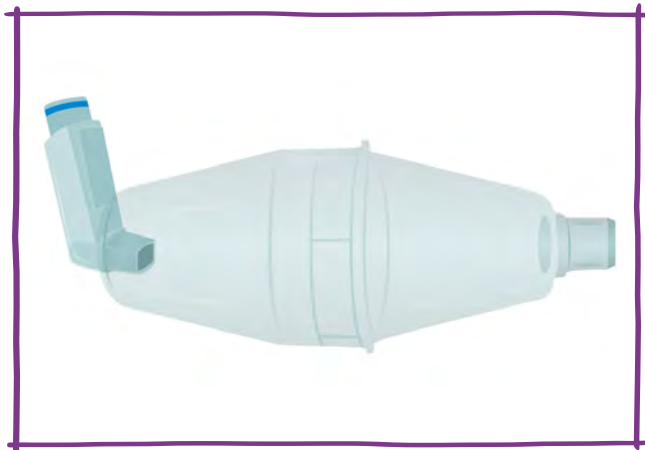


### How to use an MDI with a small volume spacer and mask



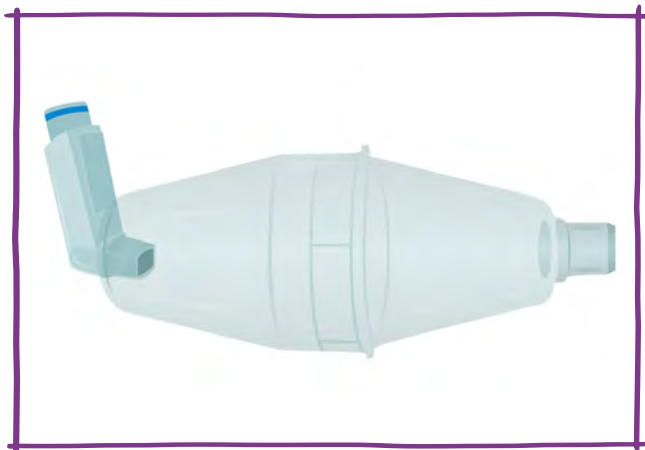
1. Remove the cap from the inhaler. Shake the inhaler and insert into the back of the spacer.
2. Place the mask of the spacer over the mouth and nose of the child and ensure there is a good seal.
3. Keeping the spacer level press the inhaler canister.
4. Encourage the child to breathe in and out **slowly and gently** for 5 breaths, (if you hear a whistling sound they are breathing in too quickly).
5. Remove the mask from the child's face.
6. If taking another dose, wait 30 seconds and repeat steps 1–4. Replace mouthpiece cover after use.

### How to use an MDI with a large volume spacer 'single breath technique'



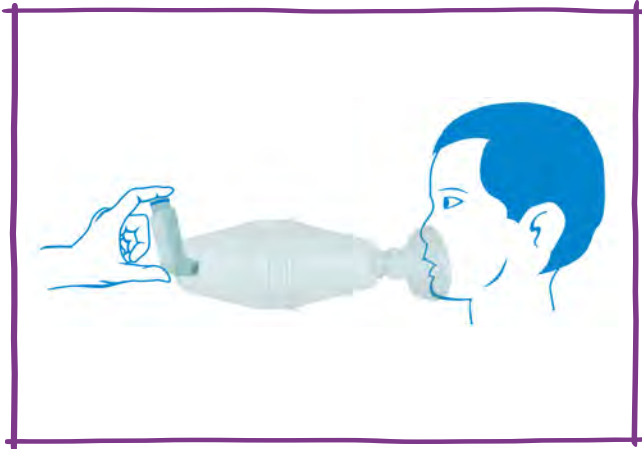
1. Remove the cap from the inhaler, shake the inhaler and insert into the back of the spacer.
2. Breathe out gently as far as is comfortable. Place the spacer mouthpiece in your mouth and seal your lips around it.
3. Press the canister once to release one dose of medicine. Breathe in **slowly and steadily**.
4. Remove the spacer from your mouth and hold your breath for 10 seconds, or as long as possible, then breathe out slowly.
5. If taking another dose, wait 30 seconds and repeat steps 1–4. Replace the mouthpiece cover after use.

### How to use an MDI with a large volume spacer – 'multiple breath technique'



1. Remove the cap.
2. Shake the inhaler and insert into back of spacer.
3. Breathe out gently as far as possible and place the spacer mouthpiece into your mouth, sealing your lips around it.
4. Breathe in and out **slowly and gently** and press the canister to release one dose of medicine. Continue breathing for 5 breaths (tidal breathing) then remove the spacer from your mouth.
5. The device should make a 'clicking' sound as the valve opens and closes.
6. For a further dose wait 30 seconds and repeat steps 2–4. Remove inhaler from spacer and replace cap.

### How to use an MDI with a large volume spacer and mask with a child



1. Remove cap from inhaler, shake inhaler and insert into back of spacer.
2. Place mask of spacer over mouth and nose of child and ensure there is a good seal.
3. Encourage the child to breathe in and out **slowly and gently**. The valve will click with each breath.
4. Once a breathing pattern is established press the canister once to release a dose of medicine, and count 5 breaths in and out.
5. Remove mask from the child's face.
6. If taking another dose, wait 30 seconds and repeat steps 1–5. Replace mouthpiece cover after use.

### How to use an MDI with a large volume spacer and mask with an infant/small child

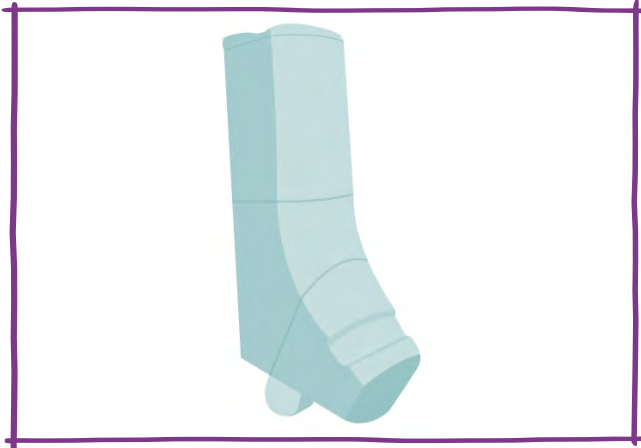


1. Remove the cap from the inhaler.
2. Attach the facemask to the spacer mouthpiece.
3. Shake the inhaler and insert into back of spacer.
4. Tip the spacer to an angle of 45° or more to enable the valve to remain open.
5. Place the mask over the mouth and nose of the child and ensure there is a good seal.
6. Press the inhaler canister and keep the mask on the child's face for 5 breaths.
7. Remove the mask from child's face.
8. For a further dose repeat steps 3–7.

## 2. Breath actuated metered dose inhalers

These inhalers are activated by your breath (known as actuation). When you seal your lips around the mouthpiece and breathe in, the inhaler automatically sprays the medicine in response to your in breath. This cuts down on the need to co-ordinate the timing of your breath in with activating the inhaler. You need to continue to breathe in **slowly and gently** after the dose has been released to get the medicine into your lungs. Too slow and the medicine will coat your mouth or come down your nose. Too fast and the medicine will impact on the back of your throat.

### How to use an Easi-breathe



1. Shake the Easi-breathe.  
Open the mouthpiece cover.
2. Breathe out normally, as far as is comfortable.
3. Hold the Easi-breathe upright, put the mouthpiece in your mouth and close your lips around it. Do not block the air holes on top.
4. Breathe in **slowly and steadily** through your mouth. Do not stop breathing when the Easi-breathe ‘puffs’ but continue taking a deep breath.
5. Remove the Easi-breathe from your mouth and hold your breath for 10 seconds, or as long as is comfortable, then breathe out slowly.
6. For a second dose close the cap, wait about one minute then repeat steps 1–5. Replace the mouthpiece cover after use.

### How to use an Autohaler



1. Remove the mouthpiece cover and shake the Autohaler.
2. Hold the Autohaler upright and push the grey lever on top of the device right up.
3. Breathe out gently as far as is comfortable.
4. Keeping the Autohaler upright, put the mouthpiece into your mouth and close your lips around it. Make sure your hand does not block the air holes at the bottom.
5. Breathe in **slowly and steadily** through your mouth. Do not stop breathing when the Autohaler clicks (releasing the dose) – continue taking a deep breath.
6. Remove the Autohaler from your mouth and hold your breath for 10 seconds or as long as is comfortable, then breathe out slowly. Lower the grey lever.
7. To take another dose, wait for approximately 30 seconds before repeating steps 1–6. Replace the mouthpiece cover after use. Only use the Autohaler for the total number of doses on the label.

### 3. Dry powder inhalers

The medicine in dry powder inhalers is stored in a reservoir or as individual doses. When you breathe in through the mouthpiece the force of your breath releases the medicine, so your breath has to be **fast and deep**. The turbulence created in the inhaler by your breath will break the medicine down into small particles so it can get down into your airways where it's needed. Different dry powder inhalers need different amounts of effort so they need to be carefully selected by the doctor or nurse to suit you.

#### How to use a Turbohaler



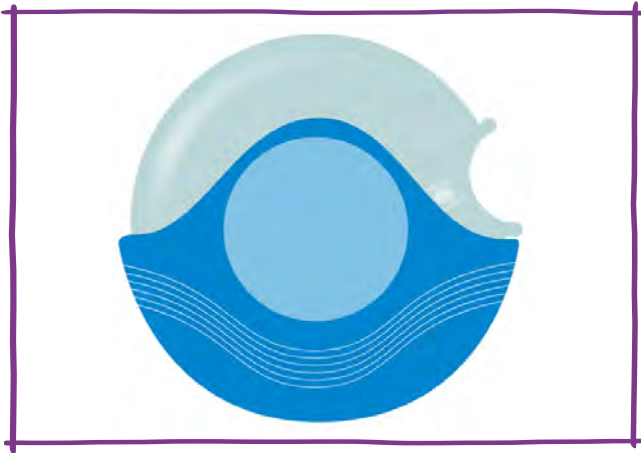
1. Unscrew and lift off the white mouthpiece cover.
2. Hold the Turbohaler upright and twist the grip (at the base) forwards and backwards as far as it will go. You should hear a click.
3. Breathe out gently as far as is possible. Put the mouthpiece between your teeth and close your lips around it. Do not block the air holes on top.
4. Breathe in **quickly and deeply**. Even when a full dose is taken there may not be any taste.
5. Remove from mouth and breathe out slowly.
6. For a second dose repeat steps 1–5. Replace the mouthpiece cover after use. When a red line appears at the top of the window on the Turbohaler, there are approximately 20 doses left.

#### How to use an Easyhaler



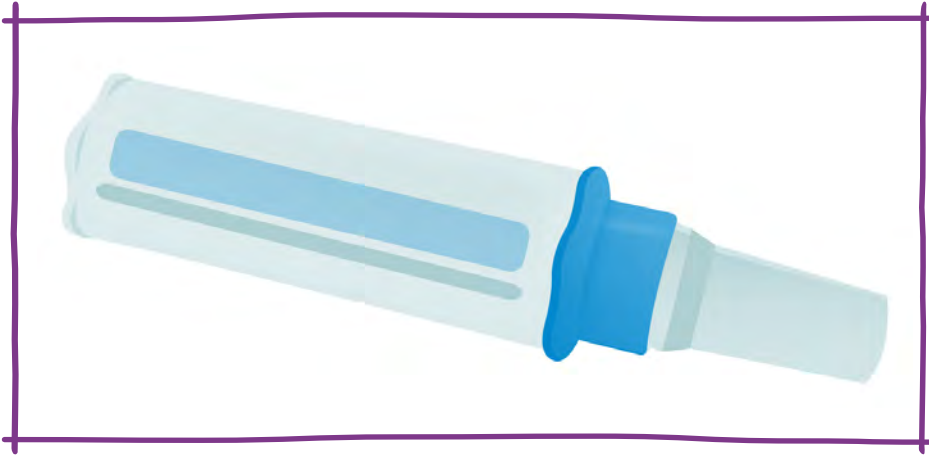
1. Shake the Easyhaler, keep in an upright position and remove the cap.
2. Press the top of the device once. You will hear a click.
3. Breathe out away from the Easyhaler, place the Easyhaler between your teeth and close your lips around the mouth.
4. Take a **quick and deep** breath through the Easyhaler. Hold your breath for 5–10 seconds then breathe out away from the Easyhaler.
5. Repeat steps 2–4 if you need to take a second dose.
6. Replace the mouthpiece cap.

## How to use an Accuhaler



1. Hold the outer casing of the Accuhaler in one hand while sliding the thumb grip away with the thumb of the other hand until a click is heard. This will open a small hole in the mouthpiece.
2. Hold the Accuhaler with the mouthpiece towards you, and push the lever down until it clicks. This makes the dose available for inhalation and moves the dose counter on.
3. Hold the Accuhaler away from your mouth, and breathe out as far as is comfortable.
4. Put the mouthpiece to your lips; suck in **quickly and deeply**.
5. Remove the Accuhaler from your mouth and hold your breath for 10 seconds or as long as is comfortable, then breathe out slowly.
6. To close, slide thumb grip back towards you until it clicks.
7. For a second dose repeat steps 1–6. The counter on top of the Accuhaler will tell you how many doses are left.

## How to use a peak flow meter



1. Check that the pointer is at zero.
2. Stand or sit in a comfortable, upright position.
3. Hold the peak flow meter level (horizontally) and keep your fingers away from the pointer.
4. Take a deep breath and hold it in.
5. Close your lips firmly around the mouthpiece.
6. Blow as **hard and fast** as you can – as if you were blowing out candles on a birthday cake – remember it is the speed of your blow that is being measured.
7. Look at the pointer and check your reading.
8. Reset the pointer back to zero.
9. Do this three times and record the highest reading.

# Discharge and follow up

## Preparation for discharge and follow up

Discharge planning should ideally begin at the point of presentation/admission to a clinical setting. This is to ensure:

1. the correct information and education has been provided to the patient
2. the appropriate referrals and appointments have been made for follow up

## Timing of discharge

There are no defined parameters for when a person can be safely discharged following an exacerbation. Research suggests that those with peak flow readings  $<75\%$  best or predicted and with diurnal variability  $>25\%$  are at greater risk of relapse and readmission. (BTS/SIGN section 6.6.1)

The BTS/SIGN treatment pathways give reference to discharge criteria and BTS/SIGN section 6.6.1 states that the patient:

- should have clinical signs compatible with home management
- be on reducing amounts of Beta-2 agonist (preferably  $<4$  hourly)
- be on therapy they can safely continue on at home

## Information and education

People with asthma and parents of children with asthma may be at their most receptive to information following an asthma exacerbation. By covering the following checklist of educational aspects you can help prevent patients re-attending with another exacerbation:

## Checklist of topics to be covered following emergency asthma treatment

### Check that the person with asthma or their carer:

- is aware they have asthma, understands what asthma is and knows that with the right help and treatment it can be controlled
- understands their asthma medicines – how they work, when to take them, how much to take and for how long
- understands the importance of taking their preventer inhaler regularly even when they are well
- knows it is important to carry their reliever inhaler with them at all times
- knows how to use their reliever inhaler in an asthma attack
- is able to demonstrate correct inhaler technique using a spacer if appropriate
- knows when to start a new inhaler
- has discussed their fears or concerns about taking their medicines
- understands the potential side effects of their asthma medicines and how to minimise them
- has enough medicine to last until their follow-up appointment
- has explored their personal story leading up to their exacerbation and recognises possible actions they could take to prevent future exacerbations
- has discussed and recognised their personal triggers and how they can avoid or minimise exposure to their triggers
- knows how to recognise if their asthma is worsening, what to do and how, when and who to call for help
- has a written personal asthma action plan
- has discussed lifestyle issues including smoking cessation if appropriate
- understands the importance of regular asthma reviews even when well
- has been given written information about asthma including an *After your asthma attack* leaflet
- has been signposted to [Asthma UK](#) for further information and support



## Appointments

Make an appointment for the patient to be reviewed by their GP or asthma nurse within 48 hours of discharge and give them the written details. For patients who have been admitted, a follow-up appointment with a hospital asthma nurse specialist or respiratory physician should be made for one month after discharge. (BTS/SIGN section 6.6.3)

## Administration

The GP surgery should be informed about the emergency care and/or admission within 24 hours of the patient's discharge. A sample discharge letter is given below and a [template](#) is available in the appendix for your use.

BTS/SIGN guidelines recommend that direct communication is made with a named individual responsible for asthma care. (BTS/SIGN section 6.6.3)

You may also consider giving/sending a copy of the discharge letter to each of the following:

- the person with asthma or their carer
- the patient's named GP
- the patient's named asthma nurse/practice nurse
- school nurse/health visitor/physiotherapist, where appropriate
- professional carers eg care home/community nurses, where appropriate.

### Discharge letter following emergency asthma care (sample)

Patient details *Anne Smith* ..... DOB *07/03/1966* .....  
Hospital Number *1234567* ..... Date *25/11/2012* .....

Dear *Dr James* .....

This patient was treated today for an acute exacerbation of asthma.

Age *46* ..... Height *150cm* ..... Predicted peak flow *433* .....

	Initial assessment	On discharge
PEF	<i>250</i>	<i>375</i>
SaO2	<i>95% (room air)</i>	<i>99% (room air)</i>
Pulse	<i>98</i>	<i>80</i>
Respiratory rate	<i>23</i>	<i>17</i>

We have discussed

- inhaler use technique with (type) *Volumatic Spacer* .....
- medicines including potential side effects *Concerned about oral thrush* .....
- trigger avoidance .....
- smoking cessation *n/a* .....
- how to recognise worsening asthma and what to do in an attack *Has leaflet* .....

**Other important issues**

- 1. Discussed trigger avoidance. Anne is reluctant to get rid of her pet cats but will consider this.*
- 2. Is actively job seeking and has two interviews in the next month*
- 3. Anne has booked an appointment with you to review her depression*

They have been given written information and details of the Asthma UK Adviceline (0800 121 62 44) and Asthma UK website (www.asthma.org.uk).

They have a follow up appointment

with *Dr James* ..... (name)  
on *27.11.2012 at 15.00* ..... (date and time)  
at *The Medical Practice, London, DE45 6FG* ..... (phone)

**They have been discharged with the following medicines**

*Prednisolone 50 mg daily for 5 days, Flixotide 125 mcg 2 puffs bd pMDI and Volumatic, Salbutamol 100mcg 2 puffs prn pMDI*

Yours sincerely

*Dr A Evans SHO*

Contact details *Accident and Emergency Department  
The General Hospital, London AB1 23C  
08457 010203 Bleep 1234*

## GP or asthma nurse review 48 hours post emergency asthma care

It's important for somebody who has had an asthma exacerbation to be seen by their doctor or asthma nurse at their surgery within 48 hours following their emergency care. The purpose of this appointment is essentially to make sure that the asthma control is improving.

### The review should include:

- a full respiratory assessment including recording of peak flow to compare to their usual best or predicted peak flow.
- an assessment of their current asthma symptoms and frequency of reliever usage.
- a review of their current medication regime and adjustment of their regime according to their symptoms. In particular, the oral prednisolone course will need to be continued until the patient has achieved full recovery (see [steroid treatment for asthma exacerbation](#)). Tell the patient to make an urgent appointment on the day they take their final dose of prednisolone if they have not fully recovered so they can receive a further prescription.
- Review the [checklist of topics to be covered following emergency treatment](#) and adjust the personal asthma action plan.
- Consider if referral is needed for specialist opinion as per [BTS/SIGN section 6.6.3](#).
- Ensure the patient is given an appointment for a further review in 1–2 week's time and understands the importance of attending.

## GP or asthma nurse review 1–2 weeks post emergency asthma care

The purpose of this appointment is essentially to make sure that the asthma is back under control.

### The review should include:

- a full respiratory clinical assessment including recording of PEF to compare to patient's usual best or predicted.
- assessment of control using the RCP 3 questions<sup>5</sup> or the Asthma Control Test<sup>6</sup> (ACT) and asking about frequency of reliever usage.

### Review of current medication regime and adjustments according to control

- Review the [checklist of topics to be covered following emergency treatment](#) and adjust the personal asthma action plan.
- Agree a date for further review with the patient.

# Acknowledgements and references

Asthma UK would like to thank Novartis, who generously funded this update to our Emergency Care Resource for Healthcare Professionals.

We are also very grateful to all of the healthcare professionals from around the UK, who helped us to evaluate the resource and offer suggestions for improvements, and to Primary Care Respiratory Society UK for allowing us to use their Patient Group Directions.

## **Asthma UK Adviceline**

Ask an asthma nurse specialist  
0800 121 62 44

## **Asthma UK website**

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

## **Asthma UK publications**

Asthma UK has produced emergency care information booklets for you to use with patients after they have had an asthma attack. *After your Asthma Attack* and *After your Child's Asthma Attack* are available via our website or by contacting our Supporter Care Team, on 0800 121 62 55. Email: [info@asthma.org.uk](mailto:info@asthma.org.uk)

- 
1. Fighting for breath: the hidden lives of people with severe asthma. Asthma UK, 2010
  2. British Guideline on the Management of Asthma 2008 (revised 2012). British Thoracic Society and Scottish Intercollegiate Guidelines Network
  3. Principles of Best Practice in Clinical Audit NICE 2002. Accessed 05/02/2013 [www.nice.org.uk/niceMedia/pdf/BestPracticeClinicalAudit.pdf](http://www.nice.org.uk/niceMedia/pdf/BestPracticeClinicalAudit.pdf)
  4. Smith et al, The At-Risk Registers in Severe Asthma (ARRISA) Study: a cluster-randomised controlled trial examining effectiveness and costs in primary care. 2012. Thorax Online First, published on August 31, 2012 as 10.1136/thoraxjnl-2012-202093
  5. Pearson MG, Bucknall CE, editors, Measuring Clinical Outcome in Asthma: a Patient-Focused Approach. London: Royal College of Physicians, 1999
  6. Nathan RA et al, Development of the Asthma Control Test: A Survey for Assessing Control. Journal of Allergy and Clinical Immunology 2004 Jan; 113(1) 59–65

# Appendix

Assessment form for emergency asthma care (blank)	2
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Read codes	19
Diagnosis codes, Monitoring codes, Procedure codes, Exception codes	

## Assessment form for emergency asthma care

Patient name: .....

DOB: ..... Date/time: .....

1. Date(s) of last asthma attack requiring emergency treatment .....
2. Previous admission for asthma requiring critical care? Yes/No and when? .....  
Ventilated? Yes/No and when? .....
3. PEF before initial reliever treatment .....  
PEF 15 mins after treatment .....
4. Best PEF (or predicted)\* .....
5. Pulse oximetry. SpO<sub>2</sub> (in room air or specify dose of O<sub>2</sub> if given) .....
6. Arterial Blood Gas readings if SpO<sub>2</sub> <92% or any other feature of life threatening asthma .....
7. Pulse rate .....
8. Respiratory rate .....
9. Ability to speak in full sentences in one breath Yes/No .....
10. Use of accessory muscles Yes/No .....
11. Inhaler technique observed (good, moderate, poor) .....
12. Inhaler device(s) .....
13. Current medication including dose .....
14. Triggers .....
15. In the last week or month:  
asthma symptoms at night .....  
asthma symptoms during the day .....  
asthma symptoms interfering with usual activity? .....
14. Smoker (current, ex, passive) .....  
Smoking (pack/years) .....
15. Asthma (self/in family) .....  
Eczema (self/in family) .....  
Hay fever (self/in family) .....
16. Allergies .....
17. Past medical history (PMH) .....
18. Psychological factors .....
19. Social factors .....
20. Other significant factors eg pregnant, a carer, away from home .....
21. Communication difficulties .....

\*Predicted peak flow chart

## Discharge letter following emergency asthma care

Patient details ..... DOB .....

Hospital Number ..... Date .....

Dear .....

This patient was treated today for an acute exacerbation of asthma.

Age ..... Height ..... Predicted peak flow .....

	Initial assessment	On discharge
<b>PEF</b>		
<b>SaO<sub>2</sub></b>		
<b>Pulse</b>		
<b>Respiratory rate</b>		

We have discussed

- inhaler use technique with (type) .....
- medicines including potential side effects .....
- trigger avoidance .....
- smoking cessation .....
- how to recognise worsening asthma and what to do in an attack .....

Other important issues

They have been given written information and details of the Asthma UK Adviceline (0800 121 62 44) and Asthma UK website ([www.asthma.org.uk](http://www.asthma.org.uk)).

They have a follow up appointment

with ..... (name)

on ..... (date and time)

at ..... (phone)

They have been discharged with the following medicines

Yours sincerely

Contact details

## Audit Form for Emergency Asthma Care

Patient name: .....

DOB: ..... Date/time: .....

	YES	NO	NA
1 PEF on admission and after treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Arterial Blood Gases if saturation (Sa O <sub>2</sub> ) <92%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Inhaler technique checked and recorded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Medication (current) recorded, including dose, frequency and concordance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Triggers identified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Relevant past medical history recorded (asthma and atopy in particular)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Psycho-social or other risk factors (or their absence) recorded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Peak expiratory flow variability of <75% on discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Stable on discharge medication for 24 hours and stable or diurnal variation <25% unless discharge agreed with respiratory physician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Provided and documented written action plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11 Steroid tablets given (appropriate dose)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 Arrange follow-up with GP for 48 hours after discharge and send discharge letter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Where you have ticked N/A (not applicable) please explain here. Eg No Peak flow as under 6



# Checklist of topics to be covered following emergency asthma treatment

## Check that the person with asthma or their carer:

- is aware they have asthma, understands what asthma is and knows that with the right help and treatment it can be controlled
- understands their asthma medicines – how they work, when to take them, how much to take and for how long
- understands the importance of taking their preventer inhaler regularly even when they are well
- knows it is important to carry their reliever inhaler with them at all times
- knows how to use their reliever inhaler in an asthma attack
- is able to demonstrate correct inhaler technique using a spacer if appropriate
- knows when to start a new inhaler
- has discussed their fears or concerns about taking their medicines
- understands the potential side effects of their asthma medicines and how to minimise them
- has enough medicine to last until their follow-up appointment
- has explored their personal story leading up to their exacerbation and recognises possible actions they could take to prevent future exacerbations
- has discussed and recognised their personal triggers and how they can avoid or minimise exposure to their triggers
- knows how to recognise if their asthma is worsening, what to do and how, when and who to call for help
- has a written personal asthma action plan
- has discussed lifestyle issues including smoking cessation if appropriate
- understands the importance of regular asthma reviews even when well
- has been given written information about asthma including an *After your asthma attack* leaflet
- has been signposted to [Asthma UK](#) for further information and support

## Useful contacts – local

**Allergy specialist**

.....  
.....

**Asthma nurse specialist**

.....  
.....

**Consultant physician (respiratory)**

.....  
.....

**ENT specialist**

.....  
.....

**GP with special interest in asthma**

.....  
.....

**Health visitor**

.....  
.....

**Lung function department**

.....  
.....

**Paediatrician (respiratory)**

.....  
.....

**Pharmacist**

.....  
.....

**Physiotherapist**

.....  
.....

**School nurse**

.....  
.....

**Support group**

.....  
.....

**Respiratory clinic (adults)**

.....  
.....

**Respiratory clinic (paediatrics)**

.....  
.....

## Useful contacts

### Asthma UK

Summit House, 70 Wilson Street,  
London EC2A 2DB  
T 020 7786 4900  
F 020 7256 6075

### Asthma UK Cymru

Eastgate House, 3rd Floor  
34-43 Newport Road  
Cardiff CF24 0AB  
T 02920 435 400  
E wales@asthma.org.uk

### Asthma UK Northern Ireland

Ground Floor, Unit 2,  
College House, City Link Business Park  
Durham Street, Belfast BT12 4HQ  
T 0800 151 3035  
E ni@asthma.org.uk

### Asthma UK Scotland

4 Queen Street  
Edinburgh EH2 1JE  
T 0131 226 2544  
E scotland@asthma.org.uk

### Asthma UK Adviceline

Ask an asthma nurse  
T 0800 121 62 44  
www.asthma.org.uk/adviceline

### Asthma UK website

Read the latest independent  
advice and news on asthma  
www.asthma.org.uk

### Asthma UK publications

Asthma UK has produced emergency care  
information booklets for you to use with patients.

For free copies of *After your asthma attack*  
and *After your child's asthma attack* or any  
of the other Asthma UK publications contact:

### Supporter Care Team

T 0800 121 62 55  
E info@asthma.org.uk

### Allergy UK

Planwell House, LEFA Business Park  
Edgington Way, Sidcup  
Kent DA15 5BH  
Allergy helpline: 01322 619898  
E info@allergyuk.org

### Anaphylaxis Campaign

Helpline: 01252 542029

### Asthma Relief Charity

Suite 1A, The Shaftesbury Centre,  
Percy Street, Swindon SN2 2AZ  
T 01793 524004  
F 01793 529005  
E info@asthmarelief.org.uk  
www.asthmarelief.org.uk

### Association of Respiratory Nurse Specialists

10 Hartley Close  
Stoke Pages SL3 6NS  
T 020 7269 5793  
E info@arns.co.uk

### **Asthma Society of Ireland**

42–43 Amiens Street  
Dublin 1  
T 01-817 8886  
E [office@asthmasociety.ie](mailto:office@asthmasociety.ie)

### **Anxiety UK**

T 08444 775 774  
[www.anxietyuk.org.uk](http://www.anxietyuk.org.uk)

### **British Lung Foundation**

73–75 Goswell Road  
London EC1V 7ER  
**Helpline:** 03000 030 555  
T 020 7688 5555  
E [enquiries@blf.org.uk](mailto:enquiries@blf.org.uk)

### **British National Formulary (BNF)**

[www.bnf.org](http://www.bnf.org)

### **British National Formulary for Children (BNFC)**

[www.bnfc.org](http://www.bnfc.org)

### **The British Thoracic Society**

17 Doughty Street  
London WC1N 2PL  
T 020 7831 8778  
E [bts@brit-thoracic.org.uk](mailto:bts@brit-thoracic.org.uk)

### **BTS/SIGN Guideline on Asthma Management**

[www.brit-thoracic.org.uk/Portals/o/Guidelines/AsthmaGuidelines/sign101%20Jan%202012.pdf](http://www.brit-thoracic.org.uk/Portals/o/Guidelines/AsthmaGuidelines/sign101%20Jan%202012.pdf)

### **Child Bereavement UK**

Clare Charity Centre  
Wycombe Road, Saunderton  
Buckinghamshire HP14 4BF  
T 01494 568900  
E [support@childbereavementuk.org](mailto:support@childbereavementuk.org)  
[www.childbereavement.org.uk](http://www.childbereavement.org.uk)

### **Child Death Helpline**

Great Ormond Street Hospital  
Great Ormond Street  
London WC1N 3JH  
T 0800 282 986  
0808 800 6019

### **Citizens Advice**

PO Box 833, Moulton Park  
Northampton NN3 0AN  
[www.citizensadvice.org.uk](http://www.citizensadvice.org.uk)  
T 020 7833 2181  
**Adviceline:** 08454 040506

### **Cruse Bereavement Care**

[www.crusebereavementcare.org.uk](http://www.crusebereavementcare.org.uk)

### **Education for Health**

The Athenaeum, 10 Church Street  
Warwick CV34 4AB  
E [info@educationforhealth.org.uk](mailto:info@educationforhealth.org.uk)

### **Electronic Medicines Compendium – access to most SPCs**

[www.emc.medicines.org.uk](http://www.emc.medicines.org.uk)

### Primary Care Respiratory Society (PCRS-UK)

(Formerly known as General Practice Airways Group)  
Smithy House, Waterbeck, Lockerbie DG11 3EY  
T 01461 600639  
www.pcrs-uk.org

### Global Allergy & Asthma European Network

www.ga2len.net

### Global Initiative For Asthma (GINA)

www.ginasthma.org

### Lung & Asthma Information Agency (LAIA)

www.laia.ac.uk

### MedicAlert

327–329 Witan Court, Milton Keynes MK9 1EH  
T 0800 581420  
020 7833 3034  
E info@medicalert.org.uk

### Medicines and Healthcare

#### Products Regulatory Agency

Information Centre, 151 Buckingham Palace Road,  
Victoria, London SW1W 9SZ  
T 020 3080 6000  
F 0203 118 9803  
E info@mhra.gsi.gov.uk  
www.mhra.gov.uk

### MIMS

www.mims.co.uk

### NARA - The Breathing Charity

Moulton Park Business Centre, Redhouse Road  
Northampton NN3 6AQ  
T 01604 494960  
F 01604 497550  
E info@thebreathingcharity.org.uk  
www.naratbc.org.uk

### National Review of Asthma Deaths/ Royal College of Physicians

www.rcplondon.ac.uk/projects/  
national-review-asthma-deaths

### NHS Direct

0845 46 47

### NHS Stop Smoking Service

www.smokefree.nhs.uk  
0800 0224 332

### Patient.co.uk

www.patient.co.uk

### Patient Group Directions

www.nelm.nhs.uk/en/Communities/NeLM/PGDs/

### Practitioner Development UK

www.pduk.net

### Respiratory Education UK

University Hospital Aintree, Lower Lane  
Liverpool L9 7AL  
T 0151 529 2598  
www.respiratoryeduc.com

### Samaritans

Freepost RSRB-KKBY-CYJK,  
Chris, PO Box 90 90,  
Stirling, FK8 2SA  
T 08457 90 90 90  
E jo@samaritans.org  
www.samaritans.org

### Underoak UK Training Index

www.underoak.co.uk

# Normal values for peak expiratory flow on the EU scale

AGE (yrs)	HEIGHT (CM)												
	135 (4ft 5in)	140 (4ft 7in)	145 (4ft 9in)	150 (4ft 11in)	155 ) (5ft 1in)	160 (5ft 3in)	165 (5ft 5in)	170 (5ft 7in)	175 (5ft 9in)	180 (5ft 11in)	185 (6ft 1in)	190 (6ft 3in)	195 (6ft 5in)
<b>MALE</b>													
15	454	467	479	491	502	512	523	532	542	551	559	568	576
20	508	522	536	549	561	573	585	596	606	616	626	635	644
25	541	557	571	585	598	611	623	635	646	656	667	677	686
30	559	575	590	604	618	631	644	656	667	678	689	699	709
35	566	582	597	611	625	638	651	663	675	686	697	707	717
40	563	579	594	609	622	636	648	660	672	683	694	704	714
45	554	570	585	599	612	625	638	650	661	672	683	693	703
50	540	556	570	584	597	610	622	633	645	655	666	676	685
55	523	538	551	565	578	590	602	613	624	634	644	654	663
60	503	517	530	543	555	567	578	589	600	610	619	628	637
65	481	494	507	519	531	542	553	564	574	583	592	601	610
70	458	471	483	495	506	516	527	537	546	555	564	572	580
75	434	446	458	469	480	490	500	509	518	527	535	543	551
80	410	422	433	443	453	463	472	481	490	498	506	513	520
<b>FEMALE</b>													
15	379	387	394	401	408	414	420	426	431	437	442	447	451
20	402	410	418	426	433	440	446	452	458	464	469	474	479
25	414	422	430	438	445	452	459	465	471	477	483	488	493
30	417	426	434	442	449	456	463	469	475	481	487	492	497
35	415	424	432	440	447	454	461	467	473	479	484	490	495
40	409	417	425	433	440	447	454	460	466	472	477	482	487
45	400	408	416	423	430	437	443	450	455	461	466	471	476
50	389	396	404	411	418	425	431	437	442	448	453	458	463
55	376	383	391	398	404	411	417	422	428	433	438	443	448
60	362	369	376	383	389	395	401	407	412	417	422	427	431
65	347	354	361	368	374	379	385	390	395	400	405	409	414
70	332	339	346	352	358	363	368	374	378	383	387	392	396
75	317	324	330	336	341	347	352	357	361	366	370	374	378
80	302	308	314	320	325	330	335	340	344	348	352	356	360

## Normal EU scale for peak expiratory flow in young people

	Height (cm)	Peak flow l/m
<b>Males aged 5 to 18</b>	100	66
	110	121
	120	176
	130	231
	140	286
	150	341
	160	395
	170	450
	180	505
	190	560
<b>Females aged 5 to 18</b>	100	65
	110	119
	120	173
	130	226
	140	280
	150	333
	160	387
	170	441
	180	494
	190	548

# PCRS-UK

## Patient Group Direction

PGD Number 2  
Issue: 01  
Date: October 2008



### The supply/administration of salbutamol to adults and children of 2 years of age and older presenting with an acute episode of uncontrolled asthma

For PCT use only:

PCT Implementation date	
Review date	

#### Approval for use and Implementation

	Authorising Professional	Name	Signature	Date
This PGD has been approved and authorised for use:	PCT Clinical Governance Chair or other authorising person			
	PCT Prescribing Manager or other prescribing advisor authorised to sign			

#### Approval by the appropriate manager for the healthcare professional listed below to administer salbutamol to adults and children of 2 years of age and older presenting with an acute episode of uncontrolled asthma

	Authorising Professional	Name	Signature	Date
For PCT employed staff only:	Manager of healthcare professional			
For Primary Care Practice staff only:	GP/Authorising professional			

#### Agreement by healthcare professional to administer the medicine in accordance with the PGD

I hereby confirm that I have read and agree to administer the medicine in accordance with this directive

Health Professional Name	Position	Signature	Date

#### Review

Plan a review to enable completion prior to the date of the next review listed above. Retain a copy of each version of the Patient Group Direction for ten years. A copy of this PGD should be given to the PCT, the healthcare professional(s) listed above, their manager(s) and the original is to be retained by the Prescribing Advisor/Manager.

This patient group direction (PGD) has been developed specifically to be utilised by primary care nurses delivering respiratory care. It has been produced in Microsoft Word™ format as a general guide only, to allow for local adaptation. It must be stressed that the use of all, or part, of this PGD must be sanctioned and approved by the appropriate authorised individual from the practice and/or primary care organisation in which it is to be used. The PCRS-UK is neither responsible nor liable, directly or indirectly for any form of damage or injury caused as a result of information provided in this document.

**Date of Preparation:** October 2008

**Author:** Stephanie Austin, Derby **Review and Input:** PCRS-UK Nurse Committee **Editor:** Dr Mark Levy, PCRS-UK

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Registered Offices: 2 Wellington Place, Leeds, LS1 4AP

**Address for Correspondence:** PCRS-UK, Smithy House, Waterbeck, Lockerbie, DG11 3EY, UK

Tel: 44 (0)121 629 7741 Facsimile: +44 (0)1361 331811 Email: [info@pcrs-uk.org](mailto:info@pcrs-uk.org)



## The supply/administration of salbutamol to adults and children of 2 years of age and older presenting with an acute episode of uncontrolled asthma

### Clinical Condition

Define situation/condition	Registered healthcare professionals in primary care may administer salbutamol in the manner outlined below without medical prescription
Criteria for inclusion	Adults and children aged ≥ 2 years presenting with an acute episode of uncontrolled asthma, who are unresponsive to conventional therapy or in whom no conventional therapy has yet been tried i.e. requiring emergency treatment
Criteria for exclusion	Hypersensitivity to salbutamol or any other ingredient
Action if included	<ul style="list-style-type: none"> <li>Administer salbutamol ideally via oxygen driven nebuliser</li> <li>If patient deteriorates or fails to respond arrange for immediate emergency hospital transfer</li> <li>If patient stabilises and improves seek further advice and guidance from GP or on-site duty doctor</li> <li>In cases of life threatening asthma in children of 2 years and over, (signs include cyanosis, silent chest or poor respiratory effort, fatigue or exhaustion, agitation or reduced level of consciousness and in older children a peak flow of less than 33% of predicted of best) arrange for immediate emergency hospital admission. Nebulised high-dose salbutamol, ideally oxygen driven, should be administered whilst waiting for ambulance transfer. Further advice and assistance from GP or on-site duty doctor should also be sought.</li> <li>Ambulance staff should be fully advised of the situation and any treatment administered</li> </ul> <p>Document details in patient's clinical records</p>
Action if excluded	<ul style="list-style-type: none"> <li>In children under 2 years seek further medical guidance from GP or on-site duty doctor giving supplemental oxygen if available</li> <li>Document details in patient's clinical records</li> </ul>
Action if patient declines	Seek further medical guidance from GP or on-site duty doctor or refer to A&E if patient's condition warrants emergency treatment

### Characteristics of staff:

Qualifications required	Registered healthcare professional
Additional requirements	<ol style="list-style-type: none"> <li>Will have undertaken training in the use and administration of salbutamol nebuliser solution and salbutamol inhaler with spacer device.</li> <li>Must have access to a current copy of the British National Formulary (BNF) and comply with its recommendations/guidance <a href="http://www.bnf.org/bnf/bnf/current/104945.htm">http://www.bnf.org/bnf/bnf/current/104945.htm</a></li> <li>Must keep informed of current best practice and have knowledge of BTS/SIGN asthma guidelines <a href="http://www.sign.ac.uk/guidelines/fulltext/101/index.html">http://www.sign.ac.uk/guidelines/fulltext/101/index.html</a></li> </ol>
Continued training requirements	<ol style="list-style-type: none"> <li>To reinforce and update knowledge and skills in this area of practice, with particular reference to changes and national directives.</li> <li>Regular approved anaphylaxis training</li> </ol>

### Procedure for reporting Adverse Drug Reactions (ADRs):

All ADRs must be reported in the clinical record, the doctor must be informed and the incident reported on a yellow card to the Committee on the Safety of Medicines (CSM) - <http://www.bnf.org/bnf/bnf/current/yellow.htm>

## Description of treatment

Name of medicine	Salbutamol: 2.5mg/2.5ml and 5mg/2.5ml solutions for inhalation via a nebuliser 100mcg metered dose inhaler (MDI) via a spacer device
POM/P/GSL POM	POM
Dose and frequency	<b>Nebulised salbutamol:</b> Adults: 5mg by nebulisation Children: 2.5 - 5 mg by nebulisation <b>Salbutamol MDI (100mcg per puff) using spacer device:</b> Adults: 4 – 10 puffs each inhaled separately via spacer device, dose repeated every 10-20 minutes if necessary. Children: 4 - 6 puffs - dose can be repeated every 10-20 mins according to clinical response to a maximum of 10 puffs. Administer via a spacer device or connect face mask to mouthpiece if < 3 yrs. <b>If response is poor arrange hospital admission</b>
Route/method	<b>Nebuliser solution:</b> Inhalation undiluted over 5-10 minutes via a facemask or mouthpiece from an oxygen driven nebuliser in a well-ventilated room. <b>MDI using a spacer device:</b> This route is the preferred option in children over 2years and adults with mild to moderate asthma. Inhalers should be actuated into the spacer in individual puffs and inhaled immediately by tidal breathing.
Additional patient advice/information	Ensure written information, e.g. Patient Information Leaflet (PIL), is available. See acute asthma protocol (URL here!)
Specify method of recording supply / administration sufficient to include audit	The health care professional must record the administration of salbutamol in the clinical record. Record the following: • name of drug, dose administered and batch number of drug used • response to treatment • patient/carer/guardian consent (either verbal or written)
Side effects and adverse drug reactions.	Paradoxical bronchospasm: potentially as with any inhalation therapy. Solutions with a non-neutral pH may rarely cause this. Discontinue the preparation immediately and give oxygen, if available. <b>Common side effects</b> • Headaches • Small increase in heart rate. • After high doses, fine tremor of the skeletal muscle (especially the hand) <b>Uncommon side effects</b> • Mouth and throat irritation. • Transient muscle cramps <b>Rare side effects</b> • Peripheral vasodilatation • Hypokalaemia <b>Very rare side effects</b> • Cardiac arrhythmias, usually in susceptible patients. • Hypersensitivity reactions including angioedema, urticaria, bronchospasm, hypotension and collapse; • Hyperactivity in children • Paradoxical bronchospasm For all other side effects not relevant in this emergency situation, refer to SPCs and current BNF.
Drug interactions	Not applicable in the emergency use covered by this PGD, but see the current BNF, Appendix 1: Interactions.

# PCRS-UK

## Patient Group Direction



PGD Number 3

Issue: 01 Date: March 2010

### The administration of an emergency initial dose (STAT) of oral prednisolone to adults and children of 2 years of age and older presenting with an acute episode of uncontrolled asthma

This PGD covers stat dosing in emergency situations only, when an authorised prescriber is not on the premises.

**IMPORTANT NOTE:** It is **imperative** that patients (or their guardians) are made aware that prednisolone is required as an ongoing treatment for several days and that the patient will need to be reviewed by an authorised prescriber **within 24 hours** to ensure continuity of treatment.

For PCT use only:

PCT Implementation Date	
Review Date	

#### Approval for use and Implementation

	Authorising Professional	Name	Signature	Date
This PGD has been approved and authorised for use:	PCT Clinical Governance Chair or other authorising person			
	PCT Prescribing Manager or other prescribing advisor authorised to sign			

#### Approval by the appropriate manager for the healthcare professional listed below to administer oral prednisolone to adults and children of 2 years of age and older presenting with an acute episode of uncontrolled asthma

	Authorising Professional	Name	Signature	Date
For PCT employed staff only:	Manager of healthcare professional			
For Primary Care Practice staff only:	GP/Authorising professional			

#### Agreement by healthcare professional to administer the medicine in accordance with the PGD

I hereby confirm that I have read and agree to administer the medicine in accordance with this directive

Health Professional Name	Position	Signature	Date

#### Review

Plan a review to enable completion prior to the date of the next review listed above. Retain a copy of each version of the Patient Group Direction for ten years.

A copy of this PGD should be given to the PCT, the healthcare professional(s) listed above, their manager(s) and the original is to be retained by the Prescribing Advisor/Manager

This patient group direction (PGD) has been developed specifically to be utilised by primary care practitioners delivering respiratory care. It has been produced as a general guide only. It must be stressed that the use of all, or part, of this PGD must be sanctioned and approved by the appropriate authorised individual from the practice and/or primary care organisation in which it is to be used. The PCRS-UK is neither responsible or liable, directly or indirectly for any form of damage or injury caused as a result of information provided in this document.

Date of Preparation: March 2010 Author: Thea Oliver. Review and Input: PCRS-UK Nurse Committee. Editor: Dr Mark L Levy, PCRS-UK

Websites: <http://www.pcrs-uk.org>, <http://www.thepcrj.org> @PCRS-UK.

See website for terms and conditions <http://www.pcrs-uk.org/about/disclaimer.php>.

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Registered Offices: 2 Wellington Place, Leeds, LS1 4AP

Address for Correspondence: PCRS-UK, Smithy House, Waterbeck, Lockerbie, DG11 3EY, UK +

Tel: 44 (0)121 351 4455 Facsimile: +44 (0)1361 331811 Email: [fo@pcrs-uk.org](mailto:fo@pcrs-uk.org)

## The supply/administration of prednisolone to adults and children of 2 years of age and older presenting with an acute episode of uncontrolled asthma

### Clinical Condition:

Define situation/condition	Registered healthcare professionals in primary care may administer oral prednisolone in the manner outlined below without medical prescription to patients in whom acute asthma symptoms have not been controlled sufficiently by the use of bronchodilator therapy alone (via inhaler or nebuliser)
Criteria for inclusion >5yrs resps 30 and pulse 125 2-5yrs resps 40 and pulse 140	<p><b>Adults and children over 2 years presenting with signs and symptoms of acute severe asthma and:</b></p> <ul style="list-style-type: none"> <li>• already being treated with a bronchodilator (salbutamol) by inhaler or nebuliser.</li> </ul> <p><b>Acute severe asthma in adults if:</b></p> <ul style="list-style-type: none"> <li>• Cannot complete sentences in one breath</li> <li>• Pulse &gt;110bpm</li> <li>• Respiration &gt;25pm</li> <li>• Peak Expiratory Flow (PEF) 33-50% of predicted or usual best</li> </ul> <p><b>Acute severe asthma in children if:</b></p> <ul style="list-style-type: none"> <li>• Too breathless to talk</li> <li>• Too breathless to feed</li> <li>• Respiration &gt;40pm, (&gt;30pm in children over 5yrs)</li> <li>• Pulse &gt;140bpm (125bpm in children over 5yrs)</li> <li>• In younger children, use of accessory muscles</li> <li>• In older children PEF &lt;50% predicted or best</li> </ul> <p><b>Life threatening asthma in adults:</b></p> <ul style="list-style-type: none"> <li>• Silent chest</li> <li>• Cyanosis</li> <li>• Feeble respiratory effort</li> <li>• Bradycardia, exhaustion, arrhythmia, hypotension, confusion</li> <li>• PEF &lt;33% predicted or best</li> <li>• SpO<sub>2</sub> &lt;92%</li> </ul> <p><b>Life threatening asthma in children:</b></p> <ul style="list-style-type: none"> <li>• Silent chest, feeble respiratory effort or cyanosis</li> <li>• Exhaustion, hypotension, confusion, agitation</li> <li>• In older children: PEF &lt;33% predicted or best</li> <li>• SpO<sub>2</sub> &lt;92%</li> </ul> <p><b>In life-threatening asthma call 999, give salbutamol via nebuliser, high flow oxygen (if available) and give oral prednisolone immediately.</b></p>
Criteria for exclusion	<ul style="list-style-type: none"> <li>• Known hypersensitivity to any of the ingredients in the tablet.</li> <li>• Patient already taking maximum dose of steroid.</li> <li>• Patient has current or active peptic ulceration.</li> <li>• Patient shows clear signs/symptoms of systemic infection (rarely bacterial – usually viral)</li> </ul>
Cautions/Need for further advice	Refer to GP or A&E as appropriate. Document action taken in patient's records.
Action if patient declines	Refer to GP or A&E as appropriate. Document refusal and action taken in patient's records.
Follow-up	<p>Once the patient has been stabilised with short-acting bronchodilator and prednisolone has been administered:</p> <ul style="list-style-type: none"> <li>• Monitor response. If any signs of acute asthma persist call 999</li> <li>• If no signs of acute asthma remaining, ensure that patient has an appointment to see a prescriber/doctor within 24 hours in order to enable an authorised prescriber to prescribe the remainder of the course of prednisolone and to monitor the patients progress</li> <li>• Advise patients discharged home, to contact surgery/emergency out of hours services, or to call 999 if they deteriorate again. Advise them to attend for review within 24 hours.*</li> </ul>

## Description of Treatment

Name of medicine	Prednisolone tablets 5mg or Prednisolone tablets 5mg enteric coated or Prednisolone soluble tablets 5mg
POM/P/GSL	POM
Dose	Adults and children over 12 years: 40mg -50 mg as stat dose Use a dose of 20 mg prednisolone for children aged 2 to 5 years and a dose of 30 - 40 mg for children >5 years. Repeat the dose of prednisolone in children who vomit  Note – children already taking maintenance steroid tablets should receive 2mg/kg prednisolone (up to a maximum dose of 60mg)
Frequency	As above, as stat dose
Route/method	<b>Oral</b> Give prednisolone early in the treatment of acute asthma attacks. <b>Steroid tablets should never be withheld because of pregnancy: Use steroid tablets as normal when indicated for severe asthma</b>
Duration	<b>This PGD covers stat dosing in emergency situations only</b>  * <b>IMPORTANT NOTE:</b> It is <b>imperative</b> that patients (or their guardians) are made aware that prednisolone is required as an ongoing treatment for several days and that the patient will need to be reviewed by an authorised prescriber <b>within 24 hours</b> to ensure continuity of treatment. The dose and duration of ongoing treatment of oral steroids should be decided by the authorised prescriber at a follow-up GP appointment or A&E/Walk-in centre and is usually given for 5 days for adults and 3 days for children
Additional patient advice/information	<ul style="list-style-type: none"> <li>• Explain that the prednisolone only takes effect 4-6 hours after administration and that this drug should be continued until advised to stop</li> <li>• Explain treatment and course of action.</li> <li>• Explain importance of the need to be reviewed by an authorised prescriber within 24 hours</li> <li>• A copy of the consultation document should be sent with the patient to hospital stating that prednisolone has been given.</li> <li>• Give the patient a 'Steroid Treatment' card.</li> </ul>
Specify method of recording supply / administration sufficient to include audit	The health care professional must record the administration of prednisolone in the clinical record. Record the following: <ul style="list-style-type: none"> <li>• name of drug and dose administered</li> <li>• response to treatment</li> <li>• patient/carer/guardian consent (either verbal or written)</li> </ul>
Side effects and adverse drug reactions.	Predictable side effects such as hypothalamic-pituitary-adrenal suppression depend on the dosage, timing of administration and duration of treatment. Others have included: fluid and electrolyte disturbance, dyspepsia, peptic ulceration, raised intra-ocular pressure, euphoria, nausea, depression, insomnia and aggravation of epilepsy, pancreatic disturbances, leucocytosis, thrombo-embolism and hypersensitivity including anaphylaxis have been reported.
Drug interactions	Please refer to current BNF or SPC for full details.

## Procedure for reporting Adverse Drug Reactions (ADRs):

All ADRs must be reported in the clinical record, the doctor must be informed and the incident reported on a yellow card to the Committee on the Safety of Medicines (CSM) - <http://www.bnf.org/bnf/bnf/current/yellow.htm>

**Characteristics of staff:**

Qualifications required	Registered healthcare professional
Specialist competencies or qualifications	<ul style="list-style-type: none"> <li>• Has undertaken appropriate training to carry out clinical assessment of patient leading to diagnosis that requires treatment according to the indications listed in the PGD</li> <li>• Had undertaken appropriate training for working under patient group directions for the supply and administration of medicines</li> <li>• Had undertaken training appropriate to this PGD</li> <li>• Mandatory yearly updating on anaphylaxis and resuscitation</li> </ul>
Continued training/education requirements	<ul style="list-style-type: none"> <li>• The practitioner should be aware of any change to the recommendations for the medicine listed. It is the responsibility of the individual to keep up-to-date with continued professional development.</li> <li>• Must have access to a current copy of the BNF and to comply with its recommendations. <a href="http://www.bnf.org/bnf/bnf/current/104945.htm">http://www.bnf.org/bnf/bnf/current/104945.htm</a></li> <li>• Must keep informed of current best practice and have knowledge of BTS/SIGN asthma guidelines <a href="http://www.sign.ac.uk/guidelines/fulltext/101/index.html">http://www.sign.ac.uk/guidelines/fulltext/101/index.html</a></li> <li>• To reinforce and update knowledge and skills in this area of practice, with particular reference to changes and national directives.</li> <li>• Regular approved anaphylaxis training</li> </ul>

**Referral arrangements and audit trail:**

Referral arrangements	<ul style="list-style-type: none"> <li>• Monitor response within 15-30 minutes after administration of short-acting bronchodilator. If any signs of acute asthma persist refer to GP and call 999</li> <li>• If no signs of acute asthma remaining, refer patient to GP or advise the patient to make an emergency appointment with GP for within 24hrs.</li> </ul> <p><b>* IMPORTANT NOTE:</b> It is <b>imperative</b> that patients (or their guardians) are made aware that prednisolone is required as an ongoing treatment for several days and that the patient will need to be reviewed by an authorised prescriber within 24 hours to ensure continuity of treatment.</p> <p>Advise patient to call 999 if symptoms worsen at home</p>
Records / audit trail	<ul style="list-style-type: none"> <li>• Confirm details are recorded on practice computer records system including: <ul style="list-style-type: none"> <li>▪ Patient's name, address, date of birth and consent given</li> <li>▪ Diagnosis</li> <li>▪ Record dose and form administered (batch details if locally required)</li> <li>▪ Advice given to patient (including side effects)</li> <li>▪ Signature/name of staff who administered or supplied the medication, and also, if relevant, signature/name of staff who removed/discontinued the treatment</li> <li>▪ Details of any adverse drug reaction and actions taken including documentation in the patient's medical record</li> <li>▪ Referral arrangements (including self-care)</li> </ul> </li> </ul>

**Referral arrangements and audit trail:**

References, resources and notes	<p><b>Notes:</b>  SPC – Summary of Product Characteristics  BNF – British National Formulary  BTS SIGN Guideline for the Management of Asthma, updated June 2009</p> <p><b>References</b>  <b>British Thoracic Society/SIGN guidelines</b>  <a href="http://www.sign.ac.uk/guidelines/fulltext/101/index.html">http://www.sign.ac.uk/guidelines/fulltext/101/index.html</a>  <b>PCRS-UK Acute Asthma Protocol</b>  <a href="http://www.pcrs-uk.org/resources/protocol04_acuteasthma_final_webversion.pdf">http://www.pcrs-uk.org/resources/protocol04_acuteasthma_final_webversion.pdf</a>  <b>PCRS-UK PGD - The administration of salbutamol in acute asthma in primary care</b>  <a href="http://www.pcrs-uk.org/resources/pgd02_adminsalb_final_webversion.pdf">http://www.pcrs-uk.org/resources/pgd02_adminsalb_final_webversion.pdf</a></p>
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# Read codes

## Diagnosis codes

### A

Addison's disease	C1541
Allergic rhinitis (hay fever)	H172.
Anaemia – B12 deficiency (not pernicious)	D011.
Anaemia – folate deficiency	D012.
Anaemia – haemolytic	D1...
Anaemia – iron deficiency (IDA)	D00..
Anaemia – pernicious	D010.
Anxiety state	Eu411
Anxiety with depression	Eu412
Asbestosis with pleural plaque disease	H410.
Asbestosis	H41..
Asperger's syndrome	Eu845
Asthma – acute attack	H333.
Asthma – extrinsic	H330.
Asthma – intrinsic	H331
Asthma	H33..

### B

B12 deficiency anaemia (not pernicious)	D011.
Birth asphyxia	Q21z.
Bronchiectasis	H34...
Bronchiolitis – RSV positive	H0615
Bronchiolitis	H061.
Bronchitis – acute	H060.
Bronchopneumonia	H25..

**C**

Chronic obstructive pulmonary disease (COPD) mild	H36..
Chronic obstructive pulmonary disease (COPD) moderate	H37..
Chronic obstructive pulmonary disease (COPD) severe	H38..
Cushing's syndrome	C150.

**D**

Depression – postnatal (PND)	Eu530
Depression – with anxiety	Eu412
Depression	Eu32.

**E**

Eczema – infantile	M112.
Eczema	M111.
Extrinsic allergic alveolitis	H35zo

**F**

Folate deficiency anaemia	D012.
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**H**

Hay fever (allergic rhinitis)	H172.
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**M**

Manic depression (bipolar affective disorder)	Eu31.
Mesothelioma	BBPX.

**P**

Pertussis (whooping cough) (bordetella)	A33..
Pleural plaque disease (see also asbestosis)	H410.
Pneumonia – atypical	H28..
Pneumonia – basal	H261.
Pneumonia – congenital	Q310.
Pneumonia – lobar	H260.
Pneumonia – viral	H20..
Pneumonia	H2...
Pneumothorax	H52..
Polyp – nasal	H11..



**R**

Reflux – gastro-oesophageal (GOR)	J10y4
Respiratory acidosis	C3621
Respiratory alkalosis	C3631
Respiratory distress syndrome (RDS)	Q30..

**S**

Sinusitis – acute	H01..
Sinusitis – chronic	H13..
Sinusitis – recurrent	H135.

**U**

Upper respiratory tract infection (URTI) – recurrent	H054.
Upper respiratory tract infection (URTI)	H05z.

**W**

Whooping cough (bordetella pertussis)	A33..
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## Monitoring codes

### General monitoring

Height	229..
Weight	22A..
Body mass index	22K..
Smoking status codes	
Cigarette smoker	137P.
Cigar smoker	137J.
Pipe smoker	137H.
Passive smoker	137I.
Rolls own	137M
Ex-smoker, cigarettes	137S.
Ex-smoker, cigars	137O.
Ex-smoker, pipe	137N.
Smoking cessation advice	8CAL
Dietary history	1F...
Exercise	138..
Health education	8CA4..
Smoking	6791.
Diet	6799.
Exercise	6798.
Occupation	0....

## Asthma

### Symptoms

Cough	171..
Night cough present	1717.
Night cough absent	1718.
Wheezing	1737.
Nocturnal cough/wheeze	173B.
Asthma limiting activities	663P.
Asthma not limiting activities	663Q.
Asthma disturbing sleep	663N.
Asthma not disturbing sleep	663O.
Exercise induced asthma	173A.

### Indicators

Peak flow	3395.
Peak flow (PEFR) using EN13826 device	339o.
Predicted peak flow	339H.
Best peak flow	339D.
Spirometry	5882.
Spirometry reversibility negative	33G0.
Spirometry reversibility positive	33G1.
FEV1	3397.
FEV1/FVC	339M.

### Treatment

Asthma prophylaxis used	663W.
Inhaled steroid use	663g.
Oral steroids started	663F.
Steroid dose inhaled daily	663Y.
Bronchodilators used a maximum once daily	663M.
Bronchodilators used more than once daily	663L.
Nebuliser therapy	8674.
Oral steroids started	663F.
Spacer device in use	663l.

### Monitoring

Asthma monitoring	663..
Initial asthma assessment	6631.
Follow-up asthma assessment	6632.
Asthma monitoring by nurse	66YQ.
Asthma monitoring by doctor	66YR.
Asthma annual review	66YJ.
Asthma – currently dormant	663h.
Asthma – currently active	663j.
Asthma resolved	21262
Asthma monitoring refused	90J2.
Respiratory disease treatment started	663C.
Respiratory disease treatment changed	663B.

Respiratory disease treatment stopped	663D.
Inhaler technique good	663H.
Inhaler technique poor	663I.
Inhaler technique observed	6637.
Inhaler technique shown	6636.
Asthma leaflet given	8CE2.
Asthma management plan given	663U.

### Other useful codes

Family history of asthma	12D2.
Referral to chest physician	8H4C.
Referral to paediatrician	8H42.
Seen in chest clinic	9N1b.
Seen in paediatric clinic	9N1V.
Emergency admission, asthma	8H2P.
Acute exacerbation of asthma	H333.
Referral to Palliative Care service	8H7G.
Multidisciplinary case conference	3874.

### Coronary heart disease primary prevention

Referral to stop smoking clinic	8HTK.
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### Secondary prevention

#### Treatment

Adverse reaction to B-blockers	TJC6.
Beta blocker contraindicated	8126.
Medication review done	8B3V.
Other useful codes	
Referral to stop smoking clinic	8HTK.

### Mental health

#### History and examination

Symptoms	1B1..
Anxiousness	1B13.
Agitated	1B16.

Depressed	1B17.
Inadequate	1B18.
Suicidal	1B19.
Memory loss – amnesia	1B1A.
Cannot sleep – insomnia	1B1B.
Hallucinations	1B1E.
Rambling	1B1F.
Excess crying	1B1I.
Emotional problems	1B1J.
Frightened	1B1H.
Lonely	1B1K.
Stress related problems	1B1L.
Poor self esteem	1B1N.
Harmful thoughts	1BD..
Flight of ideas	1BG..
Delusions	1BH..
Mood swings	1BO..
Blunted affect	1BI..
<b>Social History</b>	
<b>Housing</b>	
Housing lack	13D..
Inadequate housing	13E..
Housing dependency scale	13F..
<b>Awaiting housing/re-housing</b>	
<b>Employment</b>	
Occupation	0....
Early retirement	13J4.
Medically retired	13J6.
Unemployed	13J7.
Unfit for work	13JJ.
<b>Mental state examination</b>	<b>28...</b>
O/E – disorientated	284..
Neurotic condition – insight	285..
Neurotic condition – no insight	286..
Confabulation	28D..

Cognitive decline	28E..
Forgetful	28G..
Easily distractible	28B..
Depression screen	6891.
Depression anxiety stress score	3888Z
Disability assessment – mental	3A..
Memory – own age	3A1..
Memory – present time	3A2..
Memory – present place	3A3..
Memory – present year	3A4..
Memory – date of birth	3A5..
Memory – month	3A6..
Memory – important event	3A7..
Memory – important person	3A8..
Memory – address	3A9..
Memory – countdown	3AA..
Behaviour assessment	3AB..

### Management and Monitoring

#### Psychotherapy

Behavioural psychology	8G10.
Cognitive psychotherapy	8G11.
Psychodynamic psychotherapy	8G12.
Family therapy	8G21.
Group psychotherapy	8G51.
Antiphobic psychotherapy	8G52.
Anxiety management	8G94.
Child guidance	8GD..
Care programme approach levels	8CG..
Mental health personal health plan	8CR7.
Level 1	8CG0.
Level 2	8CG1.
Level 3	8CG2.

**Risk factors**

Family history of mental disorder	128..
Senile dementia	1281.
Alcoholism	1282.
Drug dependence	1283.
Schizophrenia	1284.
Mental retardation	1286.
Manic depression	1287.
Anxiety state	1288.
Suicide	1289.

**Other useful codes**

Admit psychiatric emergency	8H23.
Admit psychogeriatric emergency	8H2L.
Non-urgent psychiatric admission	8H38.
Non-urgent psychogeriatric admission	8H3Q.
Psychiatric referral	8H49.
Psychiatric self-referral	8HJ3.
Referral to psychologist	8H7T.
Referral to CPN	8H7B.
Referral to social worker	8H75.
Referral to psychogeriatrician	8H4D.
Private referral to psychiatrist	8HV0.
Private referral to psychogeriatrician	8HVS.
Seen in psychiatric clinic	9N1T.
Seen in psychogeriatric clinic	9N0B.
Seen in psychology clinic	9N1M.
Seen in child psychology clinic	9NOT.
Seen by CPN	9N2A.
Psychiatric D.V. requested	8HK9.
Psychiatric D.V. done	8HL9.
Psychogeriatric D.V. requested	8HKC.
Psychogeriatric D.V. done	8HLC.

### Procedure codes

Bronchoscopy	744B.
Lung transplant	7450.
Nasal polypectomy	74060

### Exception codes

Nicotine replacement therapy refused	8139
Spirometry testing declined	813b
Influenza vaccine declined	90X5

### Allergy or adverse reaction

Aspirin allergy	14LK
Influenza vaccine allergy	14LJ
Pneumococcal vaccine allergy	14LR
Adverse reaction to Beta blockers	TJC6
Adverse reaction to Salicylates	TJ53

### Medication contra-indicated

Aspirin prophylactic contra-indicated	8I24
Beta blocker contraindicated	8I26
Influenza vaccine contraindicated	8I2F
Pneumococcal vaccination contraindicated	8I2E
Nasal polypectomy	74060