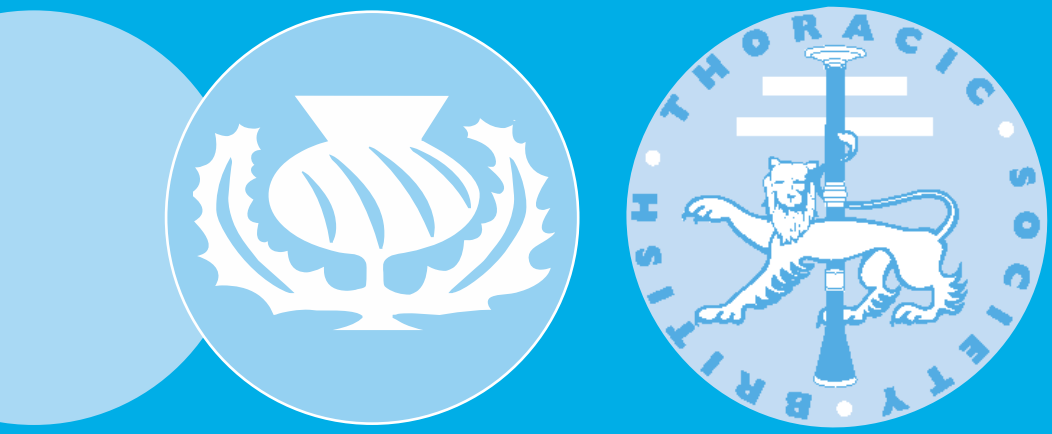
Scottish Intercollegiate Guidelines Network
The British Thoracic Society

British Guideline on the Management of Asthma

Quick Reference Guide



January 2003

KEY TO EVIDENCE STATEMENTS AND GRADES OF RECOMMENDATIONS

LEVELS OF EVIDENCE

1^{++}	High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias
1^{+}	Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
1^{-}	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2^{++}	High quality systematic reviews of case control or cohort studies High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2^{+}	Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2^{-}	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, e.g. case reports, case series
4	Expert opinion

GRADES OF RECOMMENDATION

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

A	At least one meta-analysis, systematic review of RCTs, or RCT rated as 1^{++} and directly applicable to the target population; or A body of evidence consisting principally of studies rated as 1^{+}, directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2^{++}, directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1^{++} or 1^{+}
C	A body of evidence including studies rated as 2^{+}, directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 2^{++}
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2^{+}

GOOD PRACTICE POINTS

☑	Recommended best practice based on the clinical experience of the guideline development group

Applies only to adults

Applies to children 5 - 12

Applies to children under 5

General

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DIAGNOSIS & ASSESSMENT IN ADULTS

Consider the diagnosis of asthma in patients with some or all of the following:

Symptoms (*episodic/variable*)
- wheeze
- shortness of breath
- chest tightness
- cough

Signs
- none - *common*
- wheeze - *diffuse, bilateral, expiratory (± inspiratory)*
- tachypnea

Helpful additional information
- Personal or family history of asthma or atopy *(eczema, allergic rhinitis)*
- History of worsening after use of aspirin/NSAID ingestion, use of β blockers *(including glaucoma drops)*
- Recognised triggers - pollens, dust, animals, exercise, viral infections, chemicals, irritants
- Pattern and severity of symptoms and exacerbations

Objective measurements
- >20% diurnal variation on ≥3 days in a week for two weeks on PEF diary
  or FEV_1 ≥15% (and 200 ml) increase after short acting β_2 agonist (e.g. salbutamol 400 μg by pMDI + spacer or 2.5 mg by nebuliser)
  or FEV_1 ≥15% (and 200 ml) increase after trial of steroid tablets (prednisolone 30mg/day for 14 days)
  or FEV_1 ≥15% decrease after six minutes of exercise (running)
- Histamine or methacholine challenge in difficult cases

Indications for referral for specialist opinion/further investigation*
- Diagnosis unclear or in doubt
- Unexpected clinical findings
  e.g. crackles, clubbing, cyanosis, heart failure
- Spirometry or PEFs don't fit the clinical picture
- Suspected occupational asthma
- Persistent shortness of breath
  (not episodic, or without associated wheeze)
- Unilateral or fixed wheeze
- Stridor
- Persistent chest pain or atypical features
- Weight loss
- Persistent cough and/or sputum production
- Non-resolving pneumonia

Differential diagnoses include:
- COPD
- cardiac disease
- tumour
  - laryngeal
  - tracheal
  - lung
- bronchiectasis
- foreign body
- interstitial lung disease
- pulmonary emboli
- aspiration
- vocal cord dysfunction
- hyperventilation

* Consider chest x-ray in any patient presenting atypically or with additional symptoms

DIAGNOSIS

☑	☑	Asthma should be suspected in any child with wheezing, ideally heard by a health professional on auscultation, and distinguished from upper airway noises
D	D	**Base the diagnosis of asthma in children on:** ▪ **the presence of key features and careful consideration of alternative diagnoses** (see below) ▪ **assessing the response to trials of treatment, and ongoing assessment** ▪ **repeated reassessment of the child, questioning the diagnosis if management is ineffective**
☑	☑	Record the criteria on which the diagnosis has been made

ALTERNATIVE DIAGNOSES IN WHEEZY CHILDREN

Clinical clue	Possible diagnosis
Perinatal and family history	
▪ symptoms present from birth or perinatal lung problem	▪ cystic fibrosis; chronic lung disease; ciliary dyskinesia; developmental anomaly
▪ family history of unusual chest disease	▪ cystic fibrosis; developmental anomaly; neuromuscular disorder
▪ severe upper respiratory tract disease	▪ defect of host defence
Symptoms & Signs	
▪ persistent wet cough	▪ cystic fibrosis;recurrent aspiration; host defence disorder
▪ excessive vomiting or posseting	▪ reflux (±aspiration)
▪ dysphagia	▪ swallowing problems (±aspiration)
▪ abnormal voice or cry	▪ laryngeal problem
▪ focal signs in the chest	▪ developmental disease; postviral syndrome; bronchiectasis; tuberculosis
▪ inspiratory stridor as well as wheeze	▪ central airway or laryngeal disorder
▪ failure to thrive	▪ cystic fibrosis; host defence defect; gastroesophageal reflux
Investigations	
▪ focal or persistent radiological changes	▪ developmental disorder; postinfective disorder; recurrent aspiration; inhaled foreign body; bronchiectasis, tuberculosis

Applies only to adults | Applies to children 5 - 12 | Applies to children under 5 | General

PHARMACOLOGICAL MANAGEMENT

Aims of pharmacological management:

1. **control symptoms,** including nocturnal symptoms and exercise-induced asthma
2. **prevent exacerbations**
3. **achieve best possible pulmonary function**
4. **minimise side effects**

THE STEPWISE APPROACH

1. **Start treatment at the step most appropriate to initial severity**
2. **Achieve early control**
3. **Maintain control by:**
   - ↑ **stepping up treatment as necessary**
   - ↓ **stepping down when control is good**

All doses of inhaled steroids in this section refer to beclomethasone (BDP) given via a metered dose inhaler (pMDI). Adjustment may be necessary for fluticasone and for devices.

STEPPING DOWN

☑

- Regular review of patients as treatment is stepped down is important. When deciding which drug to step down first and at what rate, the severity of asthma, the side effects of the treatment, the beneficial effect achieved, and the patient's preference should all be taken into account
- Patients should be maintained at the lowest possible dose of inhaled steroid. Reduction in inhaled steroid dose should be slow as patients deteriorate at different rates. Reductions should be considered every three months, decreasing the dose by approximately 25-50% each time

EXERCISE-INDUCED ASTHMA

☑ For most patients exercise-induced asthma is an expression of poorly controlled asthma and regular treatment including inhaled steroids should be reviewed.

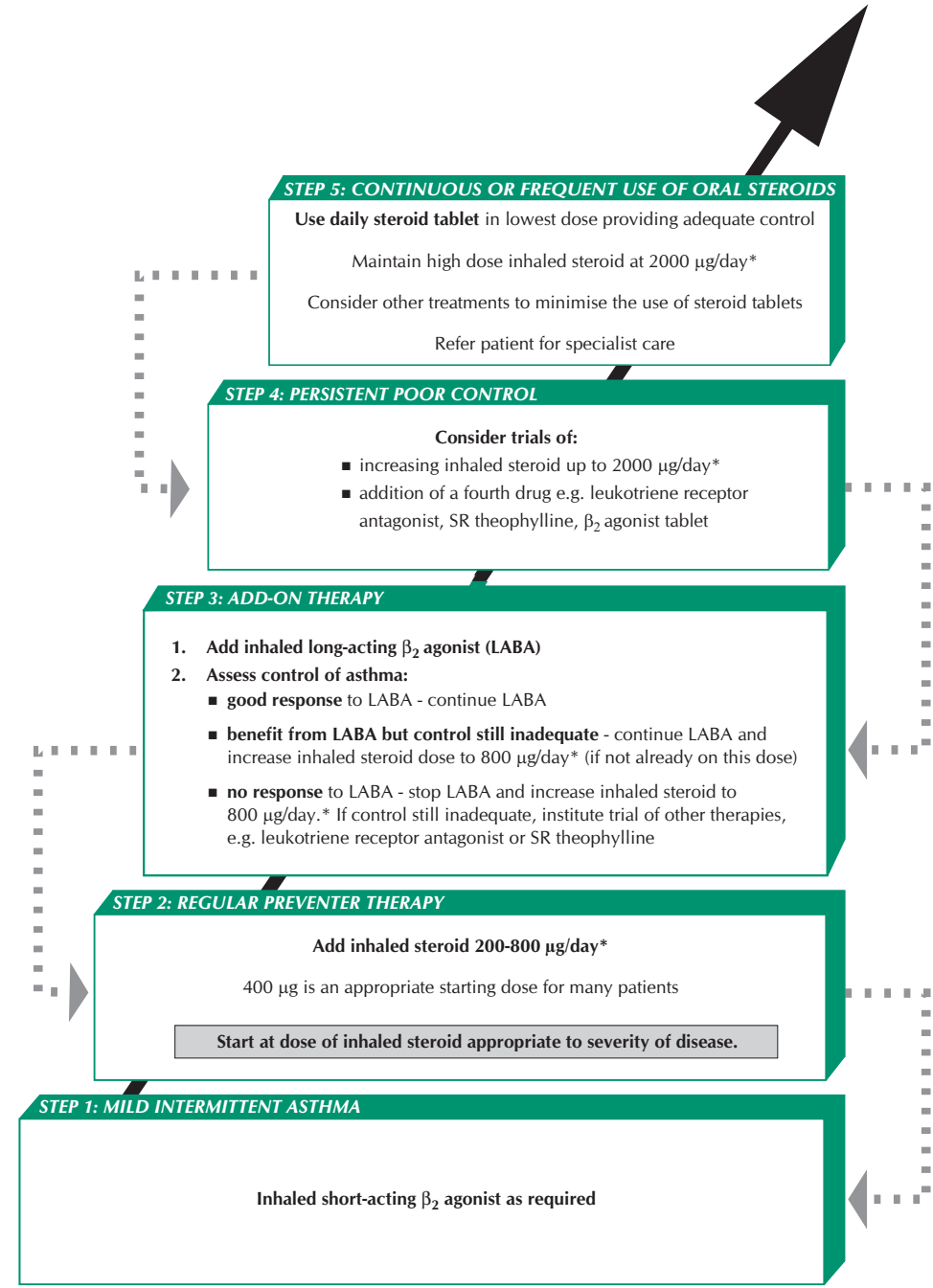
C A C A C / C A C A C

If exercise is a specific problem, in patients taking inhaled steroids who are otherwise well controlled, consider the following therapies:

- leukotriene receptor antagonists
- long-acting β_2 agonists
- cromones
- oral β_2 agonists
- theophyllines

A A ☑ Immediately prior to exercise, inhaled short-acting β_2 agonists are the drug of choice

SUMMARY OF STEPWISE MANAGEMENT IN ADULTS



* BDP or equivalent

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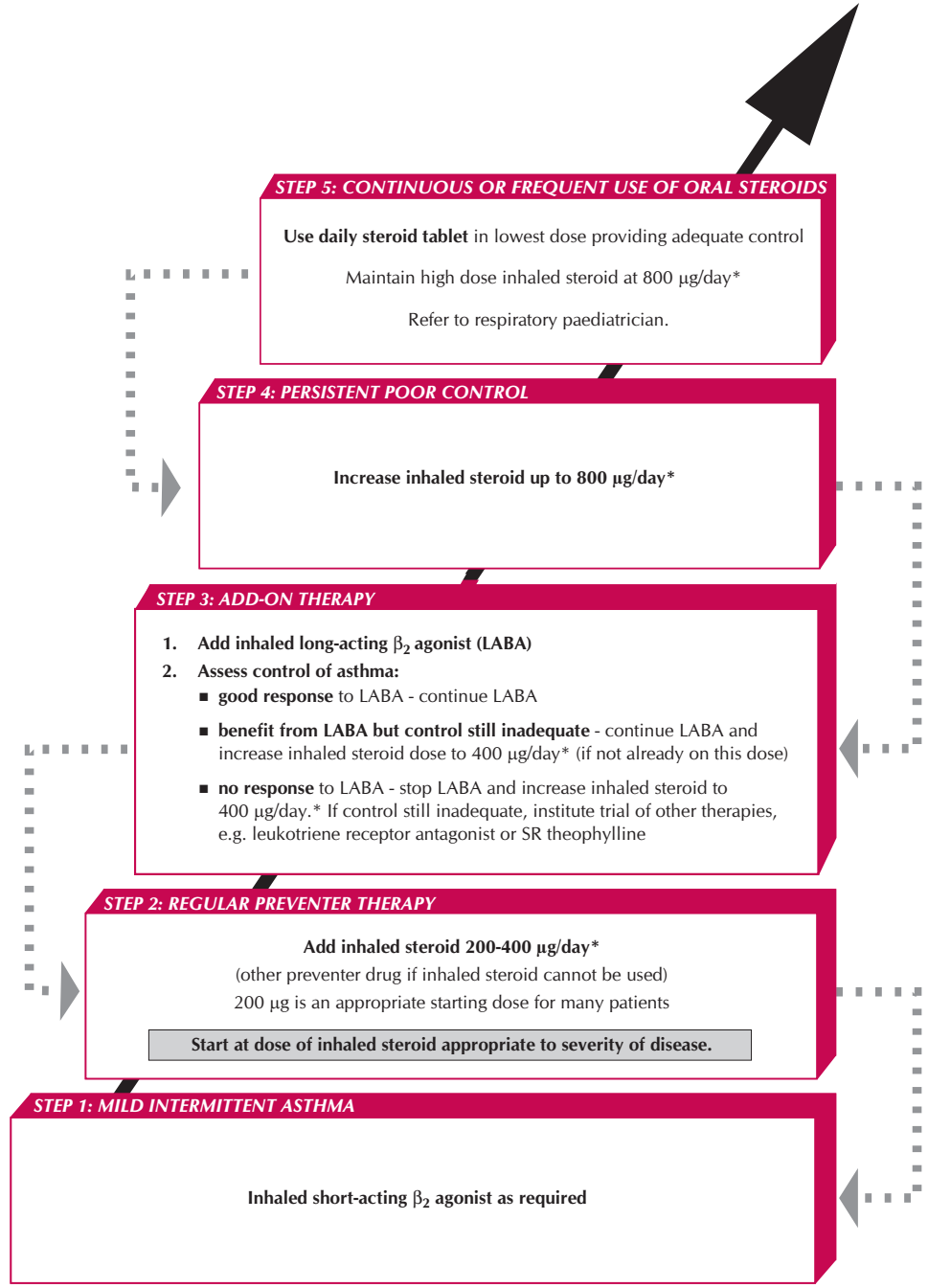
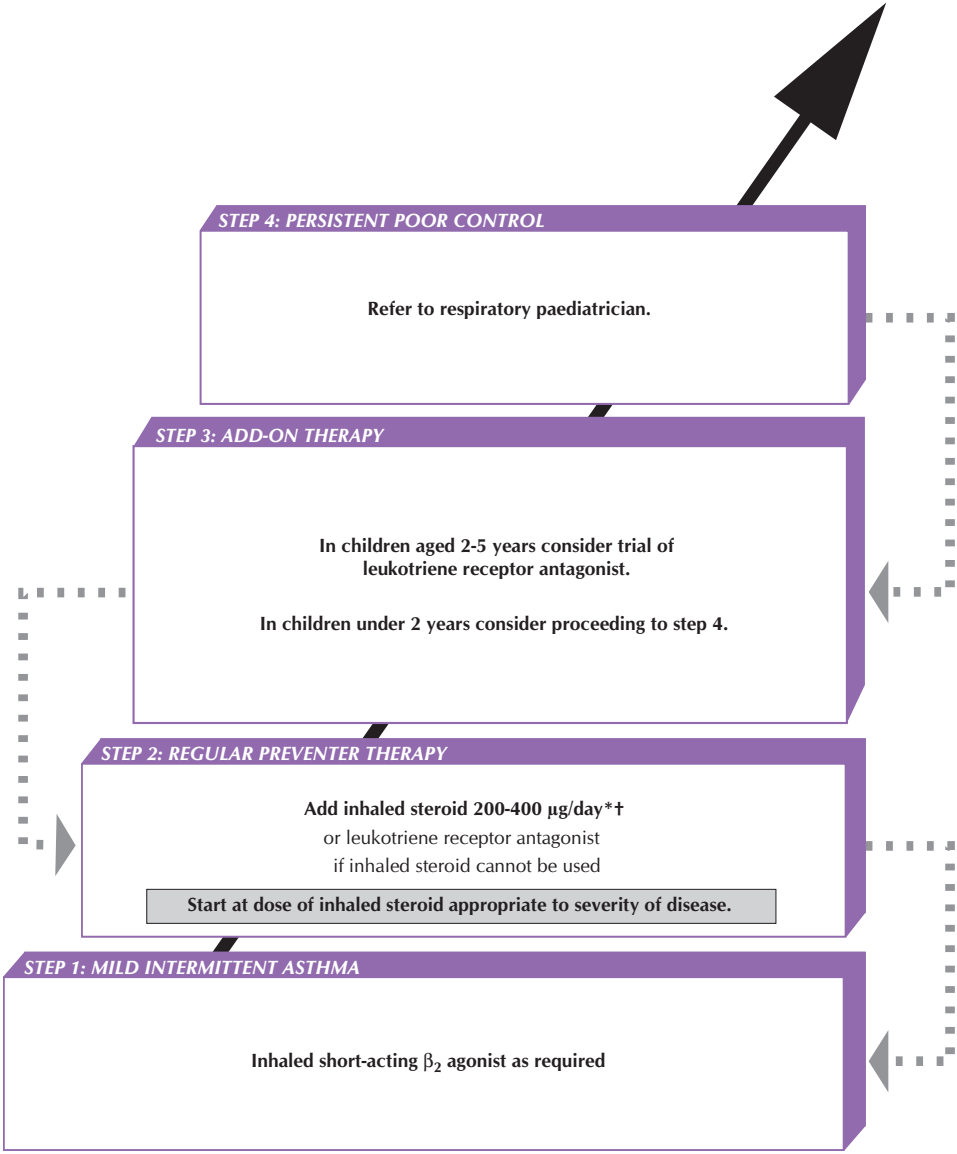
SUMMARY OF STEPWISE MANAGEMENT IN CHILDREN AGED 5-12



*** BDP or equivalent**

SUMMARY OF STEPWISE MANAGEMENT IN CHILDREN UNDER 5



*** BDP or equivalent**
† Higher nominal doses may be required if drug delivery is difficult

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INHALER DEVICES

TECHNIQUE & TRAINING

B	Prescribe inhalers only after patients have received training in the use of the device and have demonstrated satisfactory technique

β2 AGONIST DELIVERY

ACUTE ASTHMA

A	A	Children ≥2 years and adults with mild and moderate exacerbations of asthma should be treated by pMDI + spacer with doses titrated according to clinical response

STABLE ASTHMA

A	A	For the delivery of inhaled β2 agonists pMDI ± spacer is as effective as any other hand held inhaler, but adult patients may prefer a dry powder inhaler (DPI)

INHALED STEROIDS FOR STABLE ASTHMA

A	In adults, a pMDI ± spacer is as effective as any DPI
A	In children aged 5-12 years, pMDI + spacer is as effective as any DPI

CFC VS. HFA PROPELLANT INHALERS

☑	HFA - BDP pMDI (Qvar) may be substituted for CFC - BDP pMDI at 1:2 dosing but should incorporate a period of close monitoring to ensure adequate control. This ratio may not apply to reformulated HFA - BDP pMDIs
A	▪ Salbutamol can be substituted at 1:1 dosing ▪ Fluticasone can be substituted at 1:1 dosing when used at a dose of 200 µg per day

PRESCRIBING DEVICES

☑	▪ The choice of device may be determined by the choice of drug ▪ If the patient is unable to use a device satisfactorily, an alternative should be found ▪ The patient should have their ability to use an inhaler device assessed by a competent health care professional ▪ The medication needs to be titrated against clinical response to ensure optimum efficacy ▪ Reassess inhaler technique as part of structured clinical review

INHALER DEVICES IN CHILDREN UNDER 5

In children aged between 0-5 years little or no evidence is available on which to make evidence-based recommendations.

☑	In children aged 0-5 years, pMDI and spacer are the preferred method of delivery of β2 agonists or inhaled steroids. A face mask is required until the child can breathe reproducibly using the spacer mouthpiece. Where this is ineffective a nebuliser may be required

NON-PHARMACOLOGICAL MANAGEMENT

There is increasing interest in factors, which, if avoided, might facilitate the management of asthma and which may have the potential to modify fundamental causes of asthma. However, evidence of efficacy is lacking for many approaches and more studies are required.

Prospects for the Primary Prevention of Asthma

	Research Findings	Recommendation
Allergen avoidance	Trials under way	Insufficient evidence to make a recommendation
Breastfeeding	Evidence of protective benefit in relation to early life wheezing	A Breastfeeding should be encouraged
Modified milk formulae	Studies insufficient for making a recommendation regarding asthma (as opposed to eczema)	No recommendation
Dietary modifications	Trials under way	Insufficient evidence to make a recommendation
Immunotherapy	Trials performed and under way	Insufficient evidence to make a recommendation
Microbial exposure	Trials of several different microbial interventions under way	Insufficient evidence to make a recommendation
Smoking during pregnancy and in the early neonatal period	Studies suggest an association between maternal smoking and an increased risk of infant wheeze	B Parents and parents-to-be who smoke should be advised of the many adverse effects of smoking on their children

Prospects for the Secondary Prevention of Asthma

	Research Findings	Recommendation
Allergen avoidance	May be helpful in reducing severity of existing disease	Insufficient evidence to make a recommendation
Air pollution	Studies suggest an association between air pollution and aggravation of existing asthma	Further research is needed. People with asthma should have access to information about pollutant levels
House dust mites	Reducing levels of house dust mite may help but there is no evidence that single interventions reduce levels sufficiently to help those with asthma	✓ In committed families, multiple approaches to reduce exposure to house dust mite may help
Pets	There are no controlled trials on the benefits of removing pets from the home. If you haven't got a cat, and you've got asthma, you probably shouldn't get one	✓ Removal of pets from the home is recommended when individuals with asthma have an allergy to the pet
Smoking	Exposure to tobacco smoke in the home contributes to severity of childhood asthma. Smoking as a teenager increases the risk of persisting asthma	✓ Smoking cessation should be encouraged
Immunotherapy	Beneficial effects in allergic asthma demonstrated in defined populations.	Not possible to assess place in current therapy

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Complementary and alternative medicines

	Research Findings	Recommendation
Acupuncture	Trials suggest that some people gain small benefits	Insufficient evidence to make a recommendation
Buteyko technique	Small equivocal benefits have been shown in some subjects in two trials	Further research needed before recommendation can be made
Chiropractic	No benefit from this treatment in the management of asthma	No benefits shown
Family therapy	Limited studies suggest possible benefit in some subjects	✓ In difficult childhood asthma, there may be a role for family therapy as an adjunct to pharmacotherapy
Herbal and traditional Chinese Medicines	Trials report variable benefits	The quality of the trials and the population likely to benefit is not clear enough at present to make any recommendation
Homeopathy	Published studies and reviews suggest minor benefits for some	Insufficient evidence to make a recommendation
Hypnosis	Trials suggest that some susceptible subjects may gain small benefits	Larger blinded trials are needed before a recommendation can be made
Ionisers	A study suggests the use of ionisers may contribute to nocturnal coughing. No evidence of benefit.	No evidence of benefit and a suggestion of adverse effect
Physical exercise therapy	Studies suggest that such interventions make one fitter, but there is no effect on asthma	No evidence of specific benefit

Dietary manipulation

	Research Findings	Recommendation
Fish oils and fatty acid	Studies suggest negative effects	No recommendation for use
Mineral supplementation	Limited intervention studies suggest either negligible or minimal effects	No recommendation can be made at present
Weight reduction	One study suggests improved asthma control in obese patients	C Weight control for obese asthma patients is recommended

Other interventions

	Research Findings	Recommendation
High altitude and speleotherapy	Trials and a review suggest short term benefit of small magnitude	Longer term studies are needed before any recommendation can be made
Treatment of gastro-oesophageal reflux in asthma	Studies and a review suggest benefit on reflux but not on asthma	Treatment of gastro-oesophageal reflux cannot be predicted to have a beneficial effect on asthma control

MANAGEMENT OF ACUTE ASTHMA IN ADULTS

ASSESSMENT OF SEVERE ASTHMA

B Health care professionals must be aware that patients with severe asthma and one or more adverse psychosocial factors *(psychiatric illness, alcohol or drug abuse, denial, unemployment, etc)* are at risk of death

☑
- Keep patients who have had near fatal asthma or brittle asthma under specialist supervision indefinitely
- A respiratory specialist should follow up patients admitted with severe asthma for at least one year after the admission

INITIAL ASSESSMENT

MODERATE EXACERBATION

- increasing symptoms
- PEF >50-75% best or predicted
- no features of acute severe asthma

ACUTE SEVERE

Any one of:
- PEF 33-50% best or predicted
- respiratory rate ≥25/min
- heart rate ≥110/min
- inability to complete sentences in one breath

LIFE THREATENING

In a patient with severe asthma any one of:
- PEF <33% best or predicted
- SpO_2 <92%
- PaO_2 <8 kPa
- normal $PaCO_2$ (4.6-6.0 kPa)
- silent chest
- cyanosis
- feeble respiratory effort
- bradycardia, dysrhythmia, hypotension
- exhaustion, confusion, coma

NEAR FATAL

Raised $PaCO_2$ and/or requiring mechanical ventilation with raised inflation pressures

Clinical features	Severe breathlessness (including too breathless to complete sentences in one breath), tachypnea, tachycardia, silent chest, cyanosis or collapse *None of these singly or together is specific and their absence does not exclude a severe attack*
PEF or FEV_1	PEF or FEV_1 are useful and valid measures of airway calibre. PEF expressed as a % of the patient's previous best value is most useful clinically. In the absence of this, PEF as a % of predicted is a rough guide
Pulse oximetry	Oxygen saturation (SpO_2) measured by pulse oximetry determines the adequacy of oxygen therapy and the need for arterial blood gas (ABG). The aim of oxygen therapy is to maintain SpO_2 ≥92%
Blood gases (ABG)	Patients with SpO_2<92% or other features of life threatening asthma require ABG measurement
Chest x-ray	Chest x-ray is not routinely recommended in the absence of: - suspected pneumomediastinum or pneumothorax - suspected consolidation - life threatening asthma - failure to respond to treatment satisfactorily - requirement for ventilation

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MANAGEMENT OF ACUTE ASTHMA IN ADULTS

CRITERIA FOR ADMISSION

B Admit patients with any feature of
- a life threatening or near fatal attack
- severe attack persisting after initial treatment

C Patients whose peak flow is greater than 75% best or predicted one hour after initial treatment may be discharged from A&E, unless there are other reasons why admission may be appropriate

TREATMENT OF ACUTE ASTHMA

OXYGEN

C ▪ Give high flow oxygen to all patients with acute severe asthma

A ▪ Nebulised β_2 agonist bronchodilators should be driven by oxygen (hospital, ambulance and primary care)

C ▪ The non-availablity of supplemental oxygen should not prevent nebulised therapy being given if indicated

STEROID THERAPY

A Give systemic steroids in adequate doses in all cases

☑ Continue prednisolone 40-50 mg daily for at least five days or until recovery

OTHER THERAPIES

A Consider a single dose of IV magnesium sulphate (1.2-2 g IV infusion over 20 mins) for patients with:
- acute severe asthma without a good initial response to inhaled bronchodilator therapy
- life threatening or near fatal asthma

☑ IV Magnesium sulphate should only be used following consultation with senior medical staff

B Routine prescription of antibiotics is not recommended

β_2 AGONIST BRONCHODILATORS

A Administer high dose inhaled β_2 agonists as first line agents and administer as early as possible. Outside hospital high dose β_2 agonist bronchodilators may be delivered via large volume spacer or nebuliser

☑ In acute asthma with life threatening features the nebulised route (oxygen-driven) is recommended

A In severe asthma (PEF or $FEV_1 < 50\%$ best or predicted) and asthma that is poorly responsive to an initial bolus dose of β_2 agonist, consider continuous nebulisation

IPRATROPIUM BROMIDE

A Nebulised ipratropium bromide (0.5 mg 4-6 hourly) should be added to β_2 agonist treatment for patients with acute severe or life-threatening asthma or those with a poor initial response to β_2 agonist therapy

REFERRAL TO INTENSIVE CARE

Refer any patient:
- requiring ventilatory support
- with acute severe or life threatening asthma, failing to respond to therapy, evidenced by:
  - deteriorating PEF
  - persisting or worsening hypoxia
  - hypercapnia
  - ABG analysis showing ↓ pH or ↑ H^+
  - exhaustion, feeble respiration
  - drowsiness, confusion
  - coma or respiratory arrest

MANAGEMENT OF ACUTE ASTHMA IN CHILDREN AGED OVER 2 YEARS

ACUTE SEVERE

- Can't complete sentences in one breath or too breathless to talk or feed
- Pulse >120 (>5 years) or >130 (2 to 5 years)
- Respiration >30 breaths/min (>5 years) or >50 (2 to 5 years)

LIFE THREATENING

- Hypotension
- Exhaustion
- Confusion
- Coma
- Silent chest
- Cyanosis
- Poor respiratory effort

CRITERIA FOR ADMISSION

A Transfer children with severe or life threatening asthma urgently to hospital to receive frequent doses of nebulised β_2 agonists (2.5-5 mg salbutamol or 5-10 mg terbutaline)

☑
- Children with acute asthma in primary care who have not improved after receiving up to 10 puffs of β_2 agonist should be referred to hospital. Further doses of bronchodilator should be given as necessary whilst awaiting transfer
- Treat children transported to hospital by ambulance with oxygen and nebulised β_2 agonists during the journey

B Consider intensive inpatient treatment for children with SpO_2 <92% on air after initial bronchodilator treatment

☑
- Attempt to measure PEF or FEV_1 in all children aged >5 years

The following clinical signs should be recorded:

- **Pulse rate -** increasing tachycardia generally denotes worsening asthma; a fall in heart rate in life threatening asthma is a pre-terminal event
- **Respiratory rate and degree of breathlessness -** i.e. too breathless to complete sentences in one breath or to feed
- **Use of accessory muscles of respiration -** best noted by palpation of neck muscles
- **Amount of wheezing -** which might become biphasic or less apparent with increasing airways obstruction
- **Degree of agitation and conscious level -** always give calm reassurance

N.B. Clinical signs correlate poorly with the severity of airways obstruction. Some children with acute asthma do not appear distressed.

TREATMENT OF ACUTE ASTHMA

OXYGEN

☑ Children with life threatening asthma or SpO_2 <92% should receive high flow oxygen via a tight fitting face mask or nasal cannula at sufficient flow rates to achieve normal saturations

β_2 AGONIST BRONCHODILATORS

A
- Inhaled β_2 agonists are the first line treatment
- A pMDI and spacer are the preferred option in mild to moderate asthma

B Individualise drug dosing according to severity and the patient's response

B The early addition of a bolus dose of IV salbutamol (15 µg/kg) can be an effective adjunct to treatment in severe cases

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MANAGEMENT OF ACUTE ASTHMA IN CHILDREN AGED OVER 2 YEARS

STEROID THERAPY

A	Give prednisolone early in the treatment of acute asthma attacks
☑	▪ 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. Those already receiving maintenance steroid tablets should receive 2 mg/kg prednisolone up to a maximum dose of 60 mg ▪ Repeat the dose of prednisolone in children who vomit and consider IV steroids ▪ Treatment up to three days is usually sufficient, but tailor length of course to the number of days necessary to bring about recovery

OTHER THERAPIES

A	If symptoms are refractory to initial β2 agonist treatment, add nebulised ipratropium bromide (250 µg/dose mixed with the β2 agonist solution)
☑	Repeated doses of ipratropium bromide should be given early to treat children poorly responsive to β2 agonists
A C	▪ Aminophylline is not recommended in children with mild to moderate acute asthma ▪ Consider aminophylline in an HDU or PICU setting for children with severe or life threatening bronchospasm unresponsive to maximal doses of bronchodilators and systemic steroids
☑	Do not give antibiotics routinely in the management of acute childhood asthma

MANAGEMENT OF ACUTE ASTHMA IN CHILDREN AGED UNDER 2 YEARS

- The assessment of acute asthma in early childhood can be difficult
- Intermittent wheezing attacks are usually due to viral infection
- The differential diagnosis of symptoms includes:
  - aspiration pneumonitis
  - pneumonia
  - bronchiolitis
  - tracheomalacia
  - complications of underlying conditions such as congenital anomalies and cystic fibrosis
- Prematurity and low birth weight are risk factors for recurrent wheezing

TREATMENT OF ACUTE ASTHMA

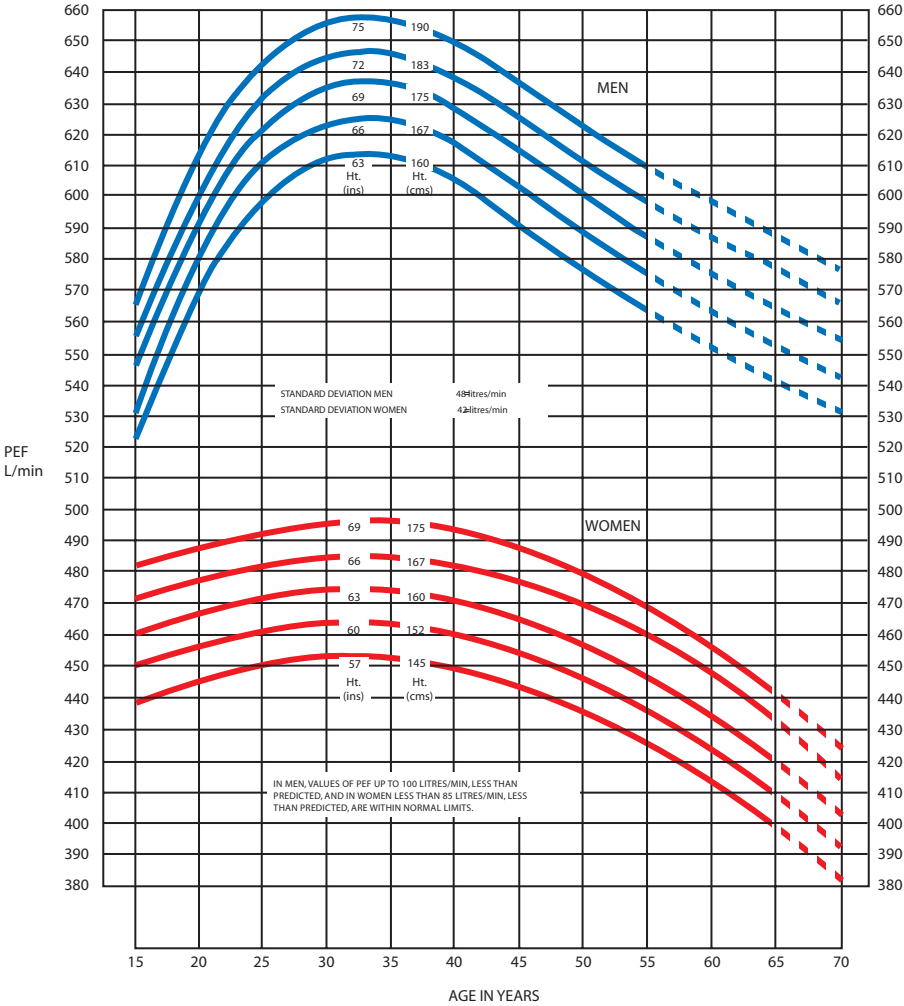
β2 AGONIST BRONCHODILATORS

B	Oral β2 agonists are not recommended for acute asthma in infants
A	For mild to moderate acute asthma, a pMDI with spacer is the optimal drug delivery device

STEROID THERAPY

B	Consider systemic steroids in infants early in the management of moderate to severe episodes of acute asthma in the hospital setting
☑	Steroid tablet therapy (10mg of soluble prednisolone for up to three days) is the preferred preparation
B	Consider inhaled ipratropium bromide in combination with an inhaled β2 agonist for more severe symptoms

Peak expiratory flow in normal adults



Nunn AJ, Gregg I. New regression equations for predicting peak expiratory flow in adults. BMJ 1989;298:1068-70.

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ASTHMA IN PREGNANCY

Several physiological changes occur during pregnancy which could worsen or improve asthma
Pregnancy can affect the course of asthma and asthma can affect pregnancy outcomes

D Offer pre-pregnancy counselling to women with asthma regarding the importance and safety of continuing their asthma medications during pregnancy to ensure good asthma control

C Monitor pregnant women with asthma closely so that any change in course can be matched with an appropriate change in therapy

☑ Advise women who smoke about the dangers for themselves and their babies and give appropriate support to stop smoking

DRUG THERAPY IN PREGNANCY

C
- Use β_2 agonists as normal
- Use inhaled steroids as normal
- Use oral and intravenous theophyllines as normal

C Use steroid tablets as normal when indicated for severe asthma. Steroid tablets should never be withheld because of pregnancy

D Do not commence leukotriene antagonists during pregnancy. They may be continued in women who have demonstrated, prior to pregnancy, significant improvement not achievable with other medications

ACUTE ASTHMA IN PREGNANCY

C Give drug therapy for acute asthma as for the non-pregnant patient

D
- Acute severe asthma in pregnancy is an emergency and should be treated vigorously in hospital
- Deliver oxygen immediately to maintain saturation above 95%

☑
- Continuous fetal monitoring is recommended for acute severe asthma
- For women with poorly controlled asthma there should be close liaison between the Respiratory Physician and Obstetrician

MANAGEMENT DURING LABOUR

C
D
- If anaesthesia is required, regional blockade is preferable to general anaesthesia
- Use prostaglandin F2α with extreme caution because of the risk of inducing bronchoconstriction

☑
- Advise women:
  - that acute asthma is rare in labour
  - to continue their usual asthma medications in labour
- Women receiving steroid tablets at a dose exceeding prednisolone 7.5 mg per day for $>$ 2 weeks prior to delivery should receive parenteral hydrocortisone 100 mg 6-8 hourly during labour
- In the absence of acute severe asthma, reserve caesarean section for the usual obstetric indications

DRUG THERAPY IN BREASTFEEDING MOTHERS

C
- Encourage women with asthma to breast feed
- Use asthma medications as normal during lactation

ORGANISATION AND DELIVERY OF CARE

ROUTINE CARE

SHARED CARE

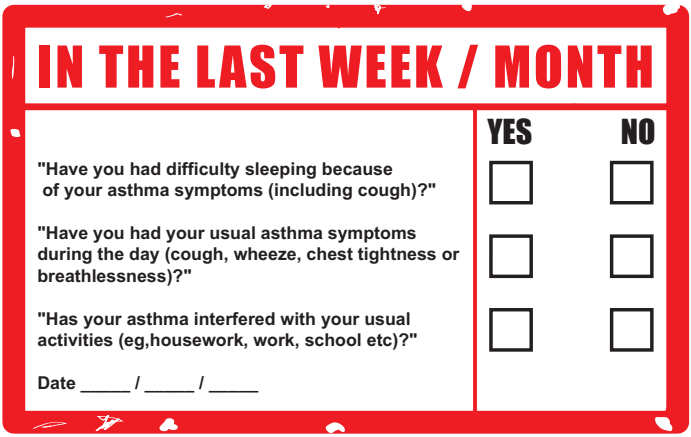
A	Offer a customised asthma action plan to all people with asthma
D	Health professionals who provide asthma care should have heightened awareness of the complex needs of ethnic minorities, socially disadvantaged groups, and those with communication difficulties

STRUCTURED REVIEW

C	▪ In primary care, people with asthma should be reviewed regularly by a nurse with training in asthma management ▪ General practices should maintain a list of people with asthma ▪ Clinical review should be structured and utilise a standard recording system
B	Feedback of information to clinicians should link individual patients with recommendations from guidelines

AUDIT TOOLS

RCP 3 QUESTIONS



- Applies to all patients with asthma aged 16 and over.
  - Only use after diagnosis has been established.

ACUTE EXACERBATIONS

C	Manage hospital inpatients in specialist rather than general units
B	Discharge from hospital or the emergency department should be a planned, supervised event, but may safely take place as soon as clinical improvement is apparent

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PATIENT EDUCATION

ASTHMA ACTION PLANS

Written personalised action plans as part of self-management education have been shown to improve health outcomes for people with asthma

SELF-MANAGEMENT IN PRACTICE

The 'Be in Control' asthma action plan from the National Asthma Campaign can be downloaded direct from the their website:
www.asthma.org.uk/control
It can also be obtained by contacting the organisation directly (0845 7 01 02 03)

☑
- Hospital admission is an opportunity to review self-management skills. No patient should leave hospital without a written asthma action plan
- An acute consultation offers the opportunity to determine what action the patient has already taken to deal with the exacerbation. Their self-management strategy may be reinforced or refined and the need for consolidation at a routine follow up considered
- A consultation for an upper respiratory tract infection, or other known trigger, is an opportunity to rehearse self-management in the event of their asthma deteriorating
- Brief simple education linked to patient goals is most likely to be acceptable to patients

A
- Offer self-management education, including written asthma action plans focusing on individual needs, to all patients with asthma, particularly those admitted to hospital

B
- Introduce asthma action plans as part of a structured educational discussion

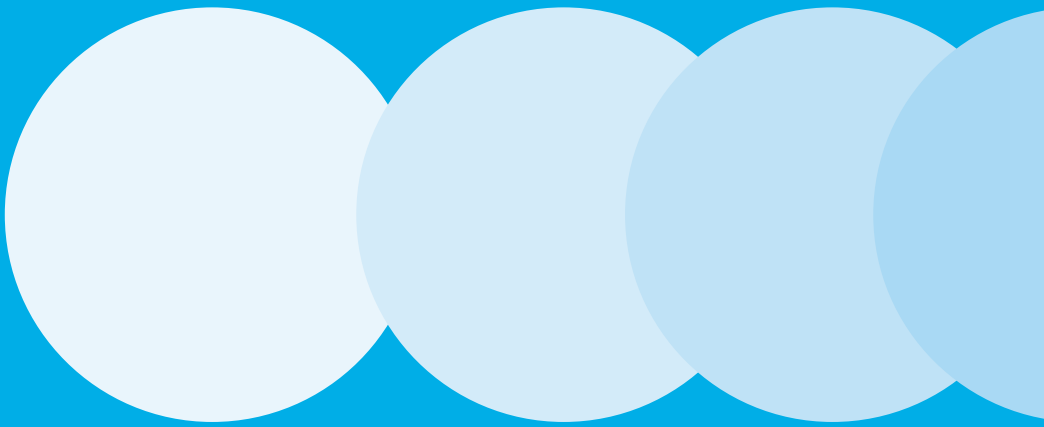
CONCORDANCE AND COMPLIANCE

☑ Provide simple, verbal and written instructions and information on treatment for patients and carers

☑ Prescription counting is a useful index of compliance

PRACTICAL TIPS FOR IMPROVING COMPLIANCE

- **Ask open-ended questions like "If we could make one thing better for your asthma what would it be?" This may help to elicit a more patient-centred agenda**
- **Make it clear you are listening and responding to the patient's concerns and goals**
- **Reinforce practical information and negotiated treatment plans with written instruction**
- **Consider reminder strategies**
- **Recall patients who miss appointments**



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