Primary objectives for asthma

- A practice register of patients with active asthma
- Diagnosis confirmed if possible by peak flow or spirometric variability
- Optimisation of wellbeing and control
- Safer early attack management
- Appropriate medication use including good inhaler technique
- Annual review
- Annual influenza immunization
- Smoking cessation advice
- Improved information and action plans for patients and carers
- Audit performance towards these objectives

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Aim of guideline

This summary guideline is designed to be used by primary care and outpatient services to improve the identification and management of patients with asthma.

It includes the clinical information and data collection framework required by practices for the quality framework of the new General Practitioner contract.

The guideline is based on the 2003 evidence based guidelines by Scottish Intercollegiate Guidelines Network (SIGN) and British Thoracic Society (BTS) www.brit-thoracic.org.uk/sign/index.htm Refer to these for further detail, including useful advice about education and self management, and for information about management of children under five.
Prevalence & natural history

Prevalence is debatable as there is no single agreed definition of asthma. Reported wheeze and asthma diagnosis have increased in the last twenty years. The National Asthma Campaign audit in 2001 estimated that 1 in 13 adults and 1 in 8 children were currently receiving asthma treatment. Many of these remain symptomatic with disrupted sleep, and miss work or school. Hospital admissions have declined since the early nineties as has overall mortality, but about 1500 UK deaths a year are certified as due to asthma, including 25 children and 500 under 65 year olds.

Risk Factors

Atopic or asthmatic family/personal history; maternal smoking.

Triggers

Common triggers include dust, smoke, viruses, pollen, exercise; animals, climate inversion with pollution, drugs. DRUGS: Avoid betablockers orally or eye drops; Less common triggers include NSAIDS and aspirin (associated with nasal polyps); heroin / opiates can cause bronchospasm.

Diagnosis

Positive diagnosis of asthma is suggested by clinical history and examination, corroborated if possible by lung function test changes in over 7 year olds. Beware other causes of symptoms and signs. Good response to treatment is useful. Review diagnosis particularly if poor response.

Common symptoms are:
- Wheeze
- Shortness of breath
- Chest tightness
- Cough (NB cough alone is unlikely to be asthma without other suggestive clinical features)

And are often
- Variable
- Intermittent
- Worse at night
- Provoked by triggers

Signs
- Often absent unless in an exacerbation
- Record wheeze when heard
- Tachypnoea
- Hyperinflation may be present

Diagnosis with peak flow meter or spirometry

Peak expiratory flow rate (PEFR) and forced expiratory volume in one second (FEV1) are reduced in obstructive airways disease. Variability in lung function measure is characteristic of asthma and diagnosis is in doubt if it cannot be shown. Lung function may be normal between exacerbations. Many older patients may have a mixed picture of COPD and asthma.

Usually variability in adults in PEFR is at least 20% and 60 l/min or by Spirometry 15%FEV1 and at least 200ml. In children it may be lower.

Variability may be observed spontaneously over time (peak flow chart available from FHS stationary supplies, peak flow meters available on FP10s for home monitoring).

Variability can be formally tested:
- Observe increase after short acting beta, agonist
- Or after 30mg prednisolone daily for 14 days
- Or observe decrease after exercise

Some people with asthma do not show this variability if poorly or very well controlled or in remission. Under some circumstances, people without asthma can show variability.

Try to arrange an objective test of this kind before or early on in treatment. Record height to predict function.

Investigate further and / or refer if diagnosis in doubt, occupational asthma or unexpected findings. Children can be referred for auto allergen and other testing to respiratory paediatricians.
Asthma Management

To work, a partnership needs to be built between those involved - ie the person with asthma / family / carer / schools / nurses / doctors / community pharmacist etc.

A management plan should include the following elements:

- Early and appropriate diagnosis
- Reduce risk factors
- Manage stable asthma
- Manage exacerbations

Written personalised self management plans improve control, especially for people with moderate to severe asthma, (see National Asthma campaign website page 6).

Non-drug management

There is evidence for:

- Promotion of breast feeding - equivocal in prevention
- Avoidance of parental smoking before and after birth
- Smoking cessation
- Weight reduction for better control
- Psychological and social disruption associated with poor control in adults and children, which is almost always due to poor treatment adherence. Schools can support children if staff are suitably trained.

House dust mite avoidance measures are generally useless.

Drug management

NB Review of treatment adherence, inhaler technique and device suitability and acceptability are essential, especially when symptoms persist.

Aims

- Symptom control day and night and on exercise
- Prevent exacerbations
- Attain optimal achievable lung function
- Minimise side effects
- Not to miss school/normal life activities.

Stepwise approach - see table

- Achieve early control at appropriate step
- Step up when need be and down when control is good
- Review regularly with frequency related to severity
- Maintain on lowest effective dose of inhaled steroids.

Steroids

- There is little evidence that doses below 800 micrograms (mcg) beclomethasone or budesonide or 400 mcg fluticasone cause any short term detrimental effects in adults, however the possibility of long term side effects on the bone have been raised.
- In children doses above 400 mcg beclomethasone or budesonide, 200 mcg fluticasone a day are sometimes associated with systemic side effects including short term growth suppression and adrenal suppression.
- Trials of other treatments such as long acting beta2 agonists (LABA e.g. eformoterol, salmeterol) should be undertaken before increasing the doses of inhaled steroids above 800 mcg (400 mcg fluticasone) a day in adults and 400 mcg (200 mcg fluticasone) a day in children.
- Specialist help is advisable for step 5 (long term oral steroids or in children up to 12 years old taking 800mcg beclomethasone or >400mcg fluticasone daily).

Non-drug management

- Manage allergic rhinitis appropriately

Exercise-induced asthma

- Possible poor control - review regular treatment
- If on inhaled steroids try other drugs e.g. LABA, leukotriene receptor agonists, oral agonists,
- Try short acting beta2 agonists pre exercise

Asthma and pregnancy

Prepregnancy: counsel importance of control and medication safety

Pregnancy: 35% get worse; poor control is dangerous to fetus and mother; close monitoring and refer if appropriate

Medication: beta2 agonists, inhaled and oral steroids and theophyllines (check levels) as in non pregnant state, but avoid commencing leukotriene receptor antagonists

Inhaler devices and information

Use needs to be explained, shown and observed before regular use, and reassessed at structured review.

Remember clinical risk of infection: use disposable items or patient's own devices.

Beta2 agonists via metered dose inhaler (MDI) and spacer should be given to children and adults with mild to moderate exacerbations. This is an effective way of delivering bronchodilator and steroid medication at all ages, working as well or better than dry powder inhalers, though some may prefer the latter. Spacers should be replaced at least every 12 months, washed not more than monthly, compatible with the MDI, administered by repeated single doses.

In the absence of any evidence supporting any particular order for trying devices, choice should depend on patient preference and cost.

There is no difference in efficacy in giving inhaled steroid and long acting beta2 agonists in combination or in separate inhalers.
Summary guidelines

Table: Stepwise management of asthma in adults and children 5-12

- Long term asthma management - review regularly and aim for lowest appropriate step
- Inhaled steroid doses here are of budesonide and beclomethasone. Fluticasone provides equal clinical activity to these agents at half the dose; the evidence that it causes fewer side effects is limited.
- It is useful to code inactive asthma (no symptoms in last year) as STEP 0.

**STEP 1 - MILD INTERMITTANT ASTHMA**
- Inhaled short-acting beta2 agonist as required.

**STEP 2 - Regular preventer therapy**
- Add inhaled steroid (200-800mcg/day adult 200-400mcg/day child - or other preventer drug if inhaled steroid cannot be used).
- **Start at dose of inhaled steroid appropriate to severity of disease.** This will often be 400mcg for adults and 200mcg for children daily.

**STEP 3 - Add-on therapy**
1. Add inhaled long-acting beta2 agonist (LABA) e.g. salmeterol, eformoterol
2. Assess control of asthma:
   - Good response to LABA - continue it
   - Benefit from LABA but inadequate control - continue LABA and increase inhaled steroid up to 800mcg if not already there (children to 400mcg/day)
   - No response to LABA - stop LABA, increase inhaled steroid to 800/400mcg/day. If control still inadequate trial of other therapies e.g. leukotriene receptor antagonist or SR theophylline.

**STEP 4 - Persistant poor control**
- Adults: try increasing inhaled steroid to 2000mcg per day or adding fourth drug eg leukotriene receptor antagonist, SR theophylline, beta2 agonist
- Child: Increase to 800mcg/day inhaled steroid

**STEP 5 - Continuous or frequent use of oral steroids - SEVERE ASTHMA**
- Use lowest dose providing adequate care
- Maintain high dose inhaled steroid (2000mcg/day adult 800mcg/day child)
- Refer to chest physician/respiratory paediatrician
- In adults consider other treatment to minimise steroids.

Management of acute asthma (including asthma 'attacks')

**Assessment for risk and severity:**

Be aware of patients with severe asthma, (eg previous ventilation, near fatal asthma, previous admission especially in the last year or multiple A and E attendance, brittle asthma, multiple medication). Be particularly aware of patients with other risk factors, e.g. non compliance, DNAs and self discharge, denial, psychiatric illness, alcohol or drug abuse, severe stress, abuse, isolation, severe poverty, obesity, learning difficulties, communications problems.

Long term specialist supervision is important for patients who have had near fatal asthma.

**Initial clinical assessment**
- **Moderate:** increasing symptoms PEFR 50-75% predicted no severe features
- **Acute severe:** any one of PEFR 33-50% predicted or best, respiratory rate 25+, (>30 children >5) heart rate 110 + (>120 children>5), cannot complete sentences in one breath.

**Life threatening:** any one of PEFR<33% best or predicted, silent chest, cyanosis, feeble respiratory effort, bradycardia, dysrhythmia, exhaustion, confusion, coma.
**Near fatal attack:** raised PaCO2 or requiring ventilation
NB pulse oximetry if available can help assessment (see SIGN and BTS website, page 1)

**Arrange immediate hospital transfer if life threatening / near fatal attack.**

**Consider admission for acute severe asthma if no response to treatment.**

**Admit if previous near fatal asthma, or if deteriorating.**

**Low threshold if afternoon or evening attack, previous severe asthma, social / psychological circumstances warrant it.**
Treatment

- **High dose bronchodilators - assess response** (clinical / peak flow rate)

- **Mild to moderate attacks:** For children first line treatment short acting beta_2_ agonists via large spacer and MDI. Transfer to hospital if no improvement with 10 puffs. Adults can use MDI and spacer or nebuliser. Severe attacks: 40-60% oxygen-driven nebulised bronchodilator is recommended if possible, with preoxygenation to avoid paradoxical response to bronchodilator.

- **Steroids**

  - **Give early in attack**
    
    Dose: Adults: prednisolone 40-50mg daily in one dose for at least 5 days or until recovery
    Children: 5 years 30-40mg daily for at least 3 days or until recovery. Children 1 to 5 years 20mg
    Admit if life threatening or if severe attack persists after treatment (e.g. PEFR an hour later <75% predicted)

- **Routine prescription of antibiotics is NOT indicated for acute asthma even if sputum present.**

Follow-up

People who have had attacks, whether admitted or not, are at increased risk. Arrange follow-up and structured review. People admitted with severe asthma should have specialist chest physician review as well as being identified and followed up promptly in primary care. Asthma liaison nurses can play a useful role.

Organisation and delivery of care

- **Practices should maintain asthma registers**
- **Clinicians should receive regular training and audit provision of care regularly.** The reception team should also receive training in safe asthma management e.g. response to emergency calls and repeat prescriptions.
- **Information from hospitals and out of hours services alert practices to attacks, practices need to note these for follow up.**
- **Routine clinical review e.g. by asthma trained nurse, general practitioner or pharmacist improves outcomes.**
- **Practices need to agree protocols for follow up, acute attacks and routine review to include: who is responsible and how people with asthma will be contacted. Consider school holiday reviews for children. Active asthma routine review should be at least annually and more frequently with increasing severity.**

Review

- **Should be structured using a standardised recording system (see template and guide) to improve outcome**
- **Measure height and centiles in children**
- **Use peak flow meter**

Advise on smoking

Review medication

Promote self management: tailored asthma action plans can improve outcome as part of a structured educational discussion with the patient / carer, especially for step 3 and upwards. (e.g. http://www.asthma.org.uk/about/pdf/creditcard.pdf)

- **Check and record symptoms using Royal College of Physicians (RCP) three questions morbidity check list for last week / month (page 16 of SIGN / BTS guidelines see page 1 for website):**
  1. Have you had difficulty in sleeping because of your asthma symptoms (including cough)? (beware other respiratory causes of sleep disturbance, e.g. cough alone not responding to asthma treatment, obstructive sleep apnoea)
  2. Have you had your usual asthma symptoms during the day (cough, wheeze, chest tightness or breathlessness)?
  3. Has your asthma interfered with your usual activities e.g. housework, work, school?

Structured patient education is useful.

- **Many groups are at particular risk of adverse asthma outcome. This includes poorer socioeconomic groups, ethnic minorities, adolescents and young adults presenting as emergencies rather than for review, the elderly, the seriously mentally ill and those with other communication problems such as learning difficulties. Plan to account for this.**

Target care at risk groups and arrange recall (consider systems and team work within it to identify risk e.g. repeat prescription issue, hospital discharge summaries). At risk groups are those with:

- Frequent attacks - steroid courses / unscheduled exacerbations / emergency nebulisations / A&E attendances / admissions
- Regular symptoms / children with frequent respiratory consultations
- Moderate or severe asthma step 3 or above

Concordance and compliance - simple verbal and written instructions, pharmacist involvement, and prescription counting help. Consider advocacy.

The Department of Health recommends annual influenza vaccine, which is monitored as a quality target for 16 year olds and over in the GP Contract, and a pneumococcal vaccine for all those with chronic lung disease, although there is as yet limited research evidence from randomised controlled trials to confirm effectiveness.
Patient information

1. People with asthma and carers can contact the National Asthma Campaign
   a. Information and care plans available from: http://www.asthma.org.uk
   b. The Asthma Helpline: 0845 701 0203 ‘advice that’s right for you’ Monday to Friday 9am to 5pm

2. Patient information is available from PRODIGY guidelines on GP computer systems

3. People who want advice on stopping smoking can:
   a. Contact general practice or pharmacy
   b. Phone NHS Smoking Helpline 0800 169 0169 (Counsellors there 10am to 11pm)
   c. Phone NHS Asian Tobacco Helplines
      All lines open Tuesday 1pm - 9pm Answerphone out of hours.
      Urdu 0800 169 0881
      Punjabi 0800 169 0882
      Hindi 0800 169 0883
      Gujarati 0800 169 0884
      Bengali 0800 169 0885
   d. Visit www.givingupsmoking.org.uk
      www.quit.org.uk for info.

Fast-track Summary Guideline Approval

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