CHRONIC CHILDHOOD ASTHMA

The goal of treatment is a normal life

Make the Diagnosis

Diagnose asthma if there is a recurrent expiratory wheeze and/or a cough, responsive to a bronchodilator

Features supporting the diagnosis are
1) The cough is worse at night or on exercise
2) A personal or family history of atopy
3) Seasonal variation in symptoms

Differential Diagnosis
If a recurrent or persistent wheeze and NO clear response to bronchodilators, consider:
1) Gastro-oesophageal reflux / upper GIT dysmotility / aspiration syndromes (infants)
2) Tuberculosis with nodal compression of bronchi (toddlers)
3) Foreign body (usually a unilateral wheeze)

Investigations

Asthma is a clinical diagnosis. Special tests are usually not necessary or helpful, and may be very expensive.

Chest X-ray
It is probably OK to do a CXR at first presentation to exclude other causes of an ongoing wheeze / cough:
1) If no hyperinflation, reconsider diagnosis (Subclinical chronic reactive airways disease may have atelectasis and small lungs)
2) Watch out for TB
3) Look for narrowing of bronchi e.g. by lymph nodes

Peak expiratory flow (in children older than 5 years)
A 10% improvement 10 minutes after an inhaled bronchodilator strongly suggests asthma (you can use exercise to decrease peak flow before giving the bronchodilator).

Classify severity at presentation (regular or intermittent symptoms)
Use common sense when using the table. When in doubt assign a patient to the most severe grade in which any feature occurs. Asthma severity can vary with time. Thus regular assessment is necessary (at least every 3 months).

<table>
<thead>
<tr>
<th>Category</th>
<th>Intermittent</th>
<th>Persistent</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>Day-time symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 2 / week</td>
<td>2</td>
<td></td>
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<tr>
<td>≥ 2 / week</td>
<td></td>
<td></td>
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<tr>
<td>Night-time symptoms</td>
<td></td>
<td></td>
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<tr>
<td>≤ 1 / month</td>
<td>2</td>
<td></td>
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<tr>
<td>&gt; 1 / month</td>
<td></td>
<td></td>
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<tr>
<td>*PEF (% predicted)</td>
<td></td>
<td></td>
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<tr>
<td>≥ 80%</td>
<td></td>
<td></td>
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<tr>
<td>&lt; 80%</td>
<td></td>
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<tr>
<td>Previous Admissions</td>
<td></td>
<td></td>
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<tr>
<td>No admission</td>
<td></td>
<td></td>
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<tr>
<td>1 previous</td>
<td></td>
<td></td>
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<tr>
<td>ICU admission or &gt; 1</td>
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</tbody>
</table>

If unsure of the grading use a diary to record symptoms and/or peak expiratory flow (*PEF: see table at end for normal values), and reassess after 4 weeks.

Work out a decent management plan

Know the Goals
THE goal is a NORMAL LIFE, which includes:
- Regular school attendance
- Participation in sport
- Restful sleep
- Normal growth
- Avoidance of hospital admission
- Minimum number of acute attacks
**Decide on a management strategy**

*Use the above table and the SACAWG 2000 guideline. Start treatment according to your severity assessment.*

1) **All categories get a “reliever”:**
- Short-acting β₂ stimulant, AND
- Environment control (see below), AND
- Education, the goal being self-management

2) **Categories 2-4 also get a “preventer”:**
- **Mild** persistent: low dose inhaled steroid
- **Moderate** persistent: medium dose inhaled steroid
- **Severe** persistent: high dose inhaled steroid

**Know how to manage exacerbations of symptoms**
PREDNISONE 2mg/kg 24H (maximum dose 40mg) should be given in the early morning for 5 days, in the following circumstances:
- Exacerbation lasting longer than 1 day
- Patient already on anti-inflammatory treatment (cromoglycate or inhaled steroids)
- A previous short course of steroids in the last 3 months
- Poor response to bronchodilators
- Severe obstruction on arrival

**What about Exercise Induced Asthma?**
Just before exercise use: inhaled beta-2 agonist OR Cromoglycate

**Where should asthma patients be managed?**

**Level 3: (Specialist)**
- REFER for diagnostic assessment if there is recurrent wheeze not responding to a bronchodilator

**Level 2: (Dedicated Asthma Clinic)**
- SEVERE asthma (including patients requiring more than 400ug beclomethasone per day)
- MODERATE asthma, needing stabilisation

**Level 1: (General outpatients/ Clinical nurse practitioner)**
- MODERATE asthma, stabilised on cromoglycate or beclomethasone
- MILD asthma (i.e. adequate control on intermittent bronchodilators)

**At each visit, you must assess and document (Cool ICE):**

- **Classification:** make sure this is correct, and documented
- **Inhaler technique:** making sure the MDI’s are used correctly is a VERY important part of management. Ask the child to bring their MDI’s and spacers to each follow up, to DEMONSTRATE to you their technique
- **Comprehension:** make sure that the child and caregiver understand which is the preventer and which the reliever
- **Environment:** make sure that the family is aware how to modify the home environment (see below)

**Know and avoid important environmental triggers**

1) Cigarette smoke should not be allowed in the home or car
2) House dust control measures, when practical
   - Plastic mattress and pillow covers - if a pillow cover is not available, wash pillow in hot water
   - Avoid bunk beds
   - Dust with damp cloth
   - Remove loose bedroom carpets
   - Wash blankets in hot water (>70° C)
   - Preservatives e.g. sulphur dioxide in fruit drinks
   - Pets
   - Must not to sleep in the bedroom
   - Discourage dogs and cats

**Indications of Inadequate Control**
- disturbed sleep (as a result of a wheeze or cough)
- frequent absence from school
- not participating in sport and exercise
**Unnecessary Therapy**
- Antibiotics (unless bacterial super-infection is strongly suspected)
- Cough syrups
- Mucolytics
- Ionisers
- Breathing exercises
- Use physiotherapy only where there is lobar collapse

**Dangerous Therapy**
- Rectal aminophylline
- Immunotherapy (desensitisation)
- Tranquillisers

**Spacers**

**YOU must make sure that the child uses the MDI + a spacer PROPERLY**

Spacers are necessary for children of 7 years and under, and are preferable in all children, especially on long-term therapy. They can be used in place of a nebuliser EXCEPT IF THE CHILD NEEDS OXYGEN.

Proper instruction in the use of spinhalers and spacers is essential. Give written illustrated instructions.

**Remember, a spacer supplied by one manufacturer may not fit the MDI of another manufacturer**

**5 years and under**
1) Use the spacer (a 500ml coke bottle is a good substitute) with a paper or polystyrene cup
2) Shake the inhaler
3) Gently press the inhaler into the inhaler holder
4) Keeping the spacer level, release the prescribed number of puffs of the drug into the spacer
5) As quickly as possible place the face mask gently but securely over the baby’s nose and mouth (hold the spacer at an angle comfortable for you and the baby)
6) Keep the mask in place for 5-10 breaths (about 15 secs)
7) Repeat the procedure with a second drug, if prescribed

**Over 5 years**
1) Use the spacer without a mask
2) Shake the inhaler
3) Insert the inhaler into the opening in the spacer
4) Have the child place its lips around the mouthpiece and breath quietly
5) Keeping the spacer level, release the prescribed number of puffs of the drug into the spacer
6) Keeping the lips around the mouthpiece have the child breathe normally for 4-5 breaths
7) Repeat the procedure with a second drug, if prescribed

**Peak expiratory flow**

Read off the predicted rate from the table below, using the patient’s height. This measurement is more sensitive and objective than clinical assessment (in children > 5 years).

<table>
<thead>
<tr>
<th>HEIGHT (CM)</th>
<th>PEF (L/MIN)</th>
<th>80%</th>
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</thead>
<tbody>
<tr>
<td>100</td>
<td>110</td>
<td>88</td>
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<tr>
<td>105</td>
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<tr>
<td>175</td>
<td>497</td>
<td>398</td>
</tr>
</tbody>
</table>

**Do not use PEF during acute attacks to classify patients for chronic management**