ACUTE SEVERE ASTHMA

Immediate Management

Oxygen

In acute severe asthma, hypoxia kills. Oxygen is the priority. Give 100% O₂ by face mask (5 l/min). If available use a pulse oximeter to determine oxygen saturation. Aim for oxygen saturation of >93%.

Severity assessment

An initial assessment of severity on arrival of the child and prior to nebulisation is essential for planning ongoing management:

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEFR (% predicted)</td>
<td>&gt;80%</td>
<td>60-80%</td>
<td>&lt;60%</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>&lt;40</td>
<td>&gt;40</td>
<td>&gt;40</td>
</tr>
<tr>
<td>Pulsus paradoxus</td>
<td>Not palpable</td>
<td>Not palpable</td>
<td>Palpable</td>
</tr>
<tr>
<td>Wheezing</td>
<td>Expiratory</td>
<td>Expiratory &amp; Inspiratory</td>
<td>Soft breath sounds</td>
</tr>
<tr>
<td>Speech</td>
<td>Normal</td>
<td>Normal</td>
<td>Impaired</td>
</tr>
<tr>
<td>Feeding</td>
<td>Normal</td>
<td>Impaired</td>
<td>Impaired</td>
</tr>
</tbody>
</table>

- Place in the most severe category in which there are 2 or more features.
- Peak expiratory flow rate (PEFR) is the most important measurement in children over 5 years. Under 5 years the respiratory rate is the most helpful single measurement. A rate of more than 40/min is cause for concern.
- All children classified as SEVERE on arrival should be admitted, regardless of response.

Bronchodilator

1) Under 6 years, or very distressed

SALBUTAMOL 8mg/ml (Venteze) or FENOTEROL 1mg/ml (Berotec) 2ml in 2ml normal saline by nebulisation. Use a flow rate of 5 l/min and ensure the nebuliser is working properly.

AND
IPRATROPIUM BROMIDE (Atrovent), one dose only, 1ml in 1ml saline.

2) Over 6 years, not very distressed, and able to use spacer

FENOTEROL (Berotec) or SALBUTAMOL (Venteze) by metered dose inhaler. USE A SPACER. Give 5 puffs into the spacer allowing the child to breathe normally for 5 breaths between each puff.

AND
IPRATROPIUM BROMIDE (Atrovent). Administer as for salbutamol/fenoterol but one dose only

REPEAT fenoterol or salbutamol after 20 minutes if no response, but do NOT repeat ipratropium.

Steroids

- PREDNISONE 2 mg/Kg orally stat (max dose 40 mg). If vomiting, use dexamathasone 0,3 mg/Kg IM or IV.

Adrenaline & Intravenous Salbutamol

CALL FOR HELP

Patients in extremis with a very severe attack should be given 0,01 ml/kg adrenaline 1:1000 subcutaneously immediately, and salbutamol (15 ug/Kg IV over10-15 minutes) if unable to use a nebuliser.
After nebulisation or MDI, assess response…

<table>
<thead>
<tr>
<th>RESPONSE</th>
<th>NO RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>PEF (%) (predicted)</td>
<td>70-90%</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>&lt;40</td>
</tr>
<tr>
<td>Pulsus paradoxus</td>
<td>&lt;10 mmHg</td>
</tr>
<tr>
<td>Wheezing</td>
<td>Expiratory</td>
</tr>
<tr>
<td>Speech</td>
<td>Normal</td>
</tr>
</tbody>
</table>

- Place in the most severe category in which there are 2 or more features.

Then, depending on response…

If Good Response (i.e. “mild” for 1 hr after treatment):
1. Continue steroids for 5 days if:
   - poor control >1 day before presentation
   - more than 1 dose bronchodilator needed
2. Review current management.
3. Discharge on appropriate medication. Ensure adequate follow-up. (See “Follow Up” below)

If Poor Response (i.e. “moderate” or “severe” after 2 doses of bronchodilator 20 minutes apart):
- MODERATE: admit to high care
- SEVERE: admit to high care

In Ward:
1. OXYGEN via face mask (5 l/min) or nasal catheter (2 l/min) plus saturation monitoring
2. BRONCHODILATOR by nebulisation using SALBUTAMOL or FENOTEROL 1-6 hourly and IPRATROPIUM BROMIDE (ATROVENT) 6 hourly. Frequency of nebulisation should be reviewed often. The goal is to return the child to future home maintenance therapy as quickly as possible
3. PREDNISONE 2 mg/kg/day (max. dose 40 mg), daily mane
4. MONITOR AND CHART PEAK EXPIRATORY FLOW RATE (age 5-6 years and above) before and after each nebulisation
5. MAINTAIN HYDRATION by encouraging to drink according to thirst. IV fluids are unnecessary unless vomiting or clinically dehydrated

Unnecessary:
- Chest X-rays and antibiotics are not necessary as a routine in an acute attack. Do a chest X-ray if you suspect a pneumothorax.

Dangerous:
- Sedatives
- Intravenous theophylline

Before Discharge

An attack of acute severe asthma indicates failure of maintenance management. Therefore:

1. Review the causes and possible precipitating factors, and intervene where feasible
2. Adjust maintenance drug management if necessary
3. Ensure the patient/parents understand the aims and details of management
4. Discuss with the patient/parents a plan for managing future emergencies
5. Steroid dependent patients should be seen by the paediatrician before discharge
6. Discharge on maintenance medication, including prednisone 2 mg/kg/day (max. dose 40 mg) for up to 14 days if necessary, then stop (unless on maintenance steroids)

Follow-Up
All patients who have been admitted should be followed up at the Asthma Clinic until home maintenance therapy is well established. Once this is achieved consideration can be given to referring patients for Level 1 follow up.