MANAGEMENT OF ACUTE ASTHMA IN CHILDREN AGED 2 YEARS AND OVER

ACUTE SEVERE

SpO_2 <92% PEF 33-50% best or predicted

- Can't complete sentences in one breath or too breathless to talk or feed
- Heart rate >125 (>5 years) or >140 (2-5 years)
- Respiratory rate >30 breaths/min (>5 years) or >40 (2-5 years)

LIFE-THREATENING

SpO_2 <92% PEF <33% best or predicted

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

CRITERIA FOR ADMISSION

✓	Increase β_2 agonist dose by giving one puff every 30-60 seconds, according to response, up to a maximum of ten puffs
✓	Parents/carers of children with an acute asthma attack at home and symptoms not controlled by up to 10 puffs of salbutamol via pMDI and spacer, should seek urgent medical attention.
✓	If symptoms are severe additional doses of bronchodilator should be given as needed whilst awaiting medical attention.
✓	Paramedics attending to children with an acute asthma attack should administer nebulised salbutamol, using a nebuliser driven by oxygen if symptoms are severe, whilst transferring the child to the emergency department.
✓	Children with severe or life-threatening asthma should be transferred to hospital urgently
B	**Consider intensive inpatient treatment of children with SpO_2 <92% in air after initial bronchodilator treatment.**

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 – ie 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

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

INITIAL TREATMENT OF ACUTE ASTHMA

OXYGEN

✓	Children with life-threatening asthma or SpO_2 <94% should receive high flow oxygen via a tight fitting face mask or nasal cannula at sufficient flow rates to achieve normal saturations of 94–98%.

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BRONCHODILATORS

A	**Inhaled β_2 agonists are the first line treatment for acute asthma.**
A	**A pMDI + spacer is the preferred option in children with mild to moderate asthma.**
B	**Individualise drug dosing according to severity and adjust according to the patient's response.**
A	**If symptoms are refractory to initial β_2 agonist treatment, add ipratropium bromide** (250 micrograms/dose mixed with the nebulised β_2 agonist solution).
✓	Repeated doses of ipratropium bromide should be given early to treat children who are poorly responsive to β_2 agonists.
C	**Consider adding 150 mg magnesium sulphate to each nebulised salbutamol and ipratropium in the first hour in children with a short duration of acute severe asthma symptoms presenting with an oxygen saturation less than 92%.**
✓	Discontinue long-acting β_2 agonists when short-acting β_2 agonists are required more often than four hourly.

STEROID THERAPY

A	**Give oral steroids early in the treatment of acute asthma attacks.**
✓	• Use a dose of 20 mg prednisolone for children aged 2–5 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 intravenous steroids in those who are unable to retain orally ingested medication. • Treatment for up to three days is usually sufficient, but the length of course should be tailored to the number of days necessary to bring about recovery. Tapering is unnecessary unless the course of steroids exceeds 14 days.

SECOND LINE TREATMENT OF ACUTE ASTHMA

B	**Consider early addition of a single bolus dose of intravenous salbutamol** (15 micrograms/kg over 10 minutes) **in a severe asthma attack where the patient has not responded to initial inhaled therapy.**
A	**Aminophylline is not recommended in children with mild to moderate acute asthma.**
B	**Consider aminophylline for children with severe or life-threatening asthma unresponsive to maximal doses of bronchodilators and steroids.**

IV magnesium sulphate is a safe treatment for acute asthma although its place in management is not yet established.