Severe Asthma Management

Modified to avoid nebulised therapy unless life threatening

Continuous O2 sats monitoring, heart and resp rate monitoring & assessment
Oxygen Saturation ≤ 92%: **Give oxygen via nasal prongs** at 2-3 liters per minute

Superscript[numbers] - see "Asthma Notes"

Initial Assessment: Choose inhaled therapy AND proceed to next step

Life threatening asthma[1]
Resuscitation & airway management if needed

Severe Asthma

Inhaled therapy[2]
Nebulised salbutamol PLUS ipratropium
together THREE TIMES IN 1st HOUR[3]
Oxygen flow rate >6L/min
Total volume of 4 mls. No saline needed[4]

All ages		
Salbutamol 5mg/ml 10mg (2 ml)	OR	Fenoterol 1mg/ml 2mg (2 ml)
PLUS		
Ipratropium 0.25mg/ml 500ug (2 ml)		

For all patients, while inhaled therapy in progress:
Establish IV access
Oral **prednisone** 2mg/kg (max 60mg),
OR IV methylprednisolone 2 mg/kg (max 48mg)
OR IVI dexamethasone 0.6mg/kg (max 36mg)
AND
Single dose IVI $MgSO_4$ 50% solution (2mmol/ml)
0.1ml/kg (50mg/kg) (max 2g) in 20mls saline[5] over 20 minutes[6]

Inhaled therapy[2]
Multi-dosing
With **salbutamol Metered Dose Inhaler** (MDI) + spacer

REPEAT THREE TIMES IN 1st HOUR

All ages: 10 puffs
Administer 1 puff at a time via spacer allowing at least 6 breaths per puff.

Shake inhaler between each puff.

Continuous assessment.

Not Improving

Not improving but not life threatening

Good response Stable

Continuous nebulisation[7] for 1hr
Start with 6ml of either salbutamol 5mg/ml solution or fenoterol 1mg/ml solution
AND proceed directly to next step

Continue salbutamol metered dose inhaler + spacer multi-dose
(10 puffs)
up to hourly

Single dose intravenous salbutamol 15ug/kg (max 250ug) in 10mls saline[8] over 10 minutes. Review diagnosis. Consider

Not improving
CO_2 > 4.5
OR CO_2 rising.
Manage in high care or ICU setting

Salbutamol load[9] 5-10 ug/kg/min.
1mg/ml solution at 0.3-0.6ml/kg/hour for 1 hour
Then
Salbutamol infusion[10] 1-5 ug/kg/min.
1mg/ml solution at 0.06-0.3ml/kg/hour

ICU treatment[11, 12]

Notes

1. Proceed rapidly through these steps, whilst awaiting transfer to specialised facility. Be prepared to intubate and ventilate if necessary.

2. When using inhaled therapy encourage patient to breathe slowly and deeply from full exhalation to full inhalation. Facemasks are not recommended (for either nebulised therapy or spacer therapy) unless the patient is unable to breathe through their mouth alone or make a good seal with their lips.

3. If nebulization is needed this should be done in a single bed cubicle preferably with negative pressure ventilation and with staff wearing appropriate PPE for aerosol generating procedures.

4. A higher dose of active nebulisation than usual is possible with minimal air entry, as very little of the medication is reaching the lungs. Use salbutamol 5mg/ml: 10 mg (2ml) (or fenoterol 1mg/ml: 2mg; 2 ml) + Ipratropium 0.25mg/ml: 500ug (2ml) without the addition of any saline.

5. Make up to a total volume of 20mls and give through syringe driver at 60 ml/hr.

6. If IV magnesium has good effect a continuous infusion can be continued. Use $MgSO_4$ 50% solution (2mmol/ml) at 0.06ml/kg/hour (30mg/kg/hour) to keep Mg between 1.5 and 2.3 mmol/L.

7. Continuous nebulised salbutamol can be best achieved by refilling the nebuliser well using a cut feeding tube to prevent any disconnection of continuous oxygen delivery. Refill contents up to 6ml when 2ml remains.

8. Make up to a total volume of 10mls and give through syringe driver at 60 ml/hr.

9. Load children with salbutamol even if they have already received the smaller single dose IV salbutamol over 10 minutes.

10. A patient must be closely monitored during salbutamol infusion with K^+ and lactic acidosis measured 6 hourly. The infusion should be titrated to patient response.

11. High flow oxygen and CPAP are considered high risk for aerosolization of secretions that may spread SARS-Coronavirus-2 and should be avoided if possible.

12. There is no role for aminophylline outside ICU. In ICU it may occasionally have a role to prevent intubation if all other measures have failed.

13. This is not a strict protocol and should not replace the judgement of senior clinicians. These guidelines should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of each patient. Clinicians wishing to implement these guidelines should consider the local skill level available and their local area policies to assess whether modification will be required.