Figure 1. Approach to Mild and Moderate Asthmatic Exacerbation in Children

Initial assessment: History, physical examination (auscultation, use of accessory muscles, heart rate, respiratory rate, O2 saturation).

Mild and moderate cases (For clinical assessment, see Box 1 in text)

- Humidified oxygen (through face mask) at 6 L/min
- Nebulization: Salbutamol (0.15mg/kg or 0.03 ml/kg of respirator solution containing 5mg/ml) every 20 min; 3 times within 1 h
- Budesonide 800 µg/dose every 20 min 3 times
- Oral/systemic steroids: if patient has recently been on oral/systemic steroids OR, if no response.

Oral:
- T. Prednisolone 2mg/kg/day in one dose (max. 60 mg) followed by 1mg/kg/day for 3 days OR

IV:
- Hydrocortisone 10mg/kg initial dose; followed by 2-4 mg/kg/dose q 6 hourly

Repeat assessment – after every nebulization by a nurse/doctor and after 3 nebulizations by the treating doctor. RR, HR, pulsus paradoxus, O2 saturation, chest X-ray (if: fever, first episode of asthma to rule out other causes, to look for barotraumas) and other tests as needed

Good response
- No distress
- Response sustained 60 min after the last treatment
- No dyspnea
- No wheeze
- SpO2>95%
- No Pulsus paradoxus

Incomplete response
- Some response after initial therapy but may still have breathlessness and wheezing, though less.
- Moderate dyspnea
- Persistence of wheeze
- SpO2 91-94%
- Pulsus paradoxus 10-15mm Hg

Poor response
- HR increase, RR increase/no change
- Dyspnea-persistent
- Auscultation: decreased air entry
- Accessory muscles severe usage
- O2 Saturation <91%
- Pulsus paradoxus >15mm Hg

Patient can be discharged
- Continue inhaled β2 agonists at home
- Complete the course of steroids if initiated (total 5 days)
- Patient education
- Review in OPD at 48 h and after 5 days

Admit to hospital
- Oxygen
- Inhaled β2 agonist (0.3mg/kg/h) continuously + anticholinergic
- Systemic steroid
- Consider IV Magnesium Sulphate
- Monitor O2 saturation, pulsus paradoxus

Repeat assessment (at 1 h)

Good response
- Keep under observation for at least 24 hours
- Plan for discharge

Incomplete/poor response within 1 h
- Admit to intensive care unit

- Inhaled salbutamol continuously (0.3mg/kg/h)
- Continue magnesium sulfate
- IV terbutaline 10 µg /kg loading dose followed by continuous infusion (0.1 µg/kg/min). Can be hiked every 30 min by 0.1-0.2 µg /kg/min. (Maximum dose up to 10 µg /kg/min) OR IV salbutamol
- Consider intravenous aminophylline (5mg/kg loading over 20 min followed by 0.9mg/kg/h infusion; omit if already received theophylline derivatives)
- Watch for side effects like tachycardia/hypokalemia/ECG changes etc.,
- Consider noninvasive ventilation if no improvement.

Repeat assessment

Modified from Grover et.al. 6