

Pediatric Asthma Emergency Management Plan

This plan is to be used for all acutely symptomatic asthma exacerbations.

Steps include:

1. Rapid categorization of severity based on presenting signs and symptoms.
2. Time based management dependent on severity.
3. Disposition based on response to prompt therapy.

The following tables will assist and guide assessment, treatment, and disposition decisions as well as define inpatient treatment options and potential drug toxicities.

Acute Asthma Severity Table

Signs and Symptoms	CATEGORY			
	Mild	Moderate	Severe	Imminent Respiratory Failure
Respiratory Rate	30% above mean	30-50% above mean	>50% above mean	>50% above mean, or very slow
Alertness	Normal	Usually agitated	Agitated	Drowsy, Confused
Dyspnea	Mild	Moderate	Severe	Severe
Color	Good	Pale	May be cyanotic	Cyanotic
Accessory muscle use	Mild	Moderate	Severe	Pardoxical thoracoabdominal movements
Auscultation	End-expiratory wheeze	Inspiratory and Expiratory wheezing	Inaudible wheezing	Inaudible wheezing, minimal breath sounds
PEFR (% of Predicted)	70-90%	50-70%	<50%	<20%
Air movement	Good	Fair	Poor	Poor/Absent
PaCO₂	< 35 mmHg	< 40 mmHg	> 40mm Hg	> 40mm Hg

(adapted from Guidelines for the Diagnosis and Management of Asthma, National Heart, Lung, and Blood Institute, NIH, Bethesda, Md., 9/1991. P.105., and VHA\DoD CPG 1996)

Acute Asthma Treatment Guide

Time Frame	Category (Distress)			
	Mild-Moderate		Severe	
Presentation	Vitals, Pulse Ox, Brief Hx and PE, with Supplemental O₂ given for Sat ≤ 90%, preferably keeping Sats ≥ 94%		Vitals, Pulse Ox, Brief Hx and PE, with Supplemental O₂ given for Sat ≤ 90%, preferably keeping Sats ≥ 94%	
+10 to +20 minutes	Immediate β-agonist (Albuterol)		Immediate β-agonist	
	MDI with Spacer 4-8 puffs, reassess and repeat q10-20 minutes	Albuterol nebulized 2.5-5 mg reassess and repeat q10-20 minutes	Albuterol Nebulized 2.5-5 mg, reassess and repeat q10-20 minutes, repeat back-to-back if necessary	Terbutaline SQ .01mg/kg if unresponsive to Albuterol or not moving air, may repeat in 15 minutes, max dose .4mg
	Consider adding Ipratropium to subsequent neb .25-.5 mg		Add Ipratropium to subsequent nebs .25-.5 mg	
+30 minutes	Consider steroids		Steroids	
	Oral Prednisone 2mg/kg if tolerating P.O.	Solumedrol IV or IM 2mg/kg if unable to tolerate P.O.	Solumedrol IV 2-4 mg/kg IV and reassess	
+ 60 minutes	Consider MgSO₄ 30-70 mg/kg over 20 minutes and reassess		MgSO₄ 30-70 mg/kg over 20 minutes and reassess, and continue nebs as necessary	
+120 to +240	Patient may be discharged home if clinically improved with Sat ≥ 94%, and reliable follow-up established		Admit if not improved	
			Ward ?	PICU ?

Asthma Inpatient Management Plan

Admit to hospital if patient cannot take P.O. meds and fluids, maintain Saturation $\geq 94\%$ on room air, or requires bronchodilators more frequent than every 3-4 hours, or for concern of rapid deterioration	
Ward	PICU
If Sat $\geq 94\%$ on $\leq 50\%$ FIO ₂ , requires $\leq q2-3^\circ$ Albuterol prn (MDI with Spacer or nebulized)	If remains in distress use Albuterol continuously .5mg/kg/hr (range 10-40 mg/hr) with O ₂ to keep Sat $\geq 94\%$ (Always use humidified O ₂)
Use Prednisone 2 mg/kg/day or Solumedrol 2-4 mg/kg/day $\div q6^\circ$	Use Terbutaline drip as adjunct , bolus with 10mcg /kg over 10 minutes the run drip .1mcg/kg/min titering q 15-30 min, up to max of 4 mcg/kg/min
Consider Ipratropium neb 0.25-0.5 mg q 4-6 $^\circ$	Use Solumedrol 4 mg/kg/day $\div q6^\circ$
Consider MgSO₄ 25-50mg/kg IV q6 $^\circ$	Ipratropium neb 0.25-0.5 mg q 4-6 $^\circ$
Consider temporary NPO status with maintenance IVF's if in distress	Consider MgSO₄ 25-50mg/kg IV q6 $^\circ$
Discharge patient to home if clinically improved with Sat $\geq 94\%$, and reliable follow-up established	Consider temporary NPO status with maintenance IVF's if in distress, especially if intubation a possibility
	Other Options include:
	Heliox 70:30
	Consider Theophylline 6-7mg/kg bolus followed by drip Must follow levels 30min post bolus and 12-24hr after initiation of drip
	Ketamine sedation .5-1mg/kg/dose
	Inhaled anesthetics

Asthma Medication Toxicity Profile

Medication	Toxicity
Albuterol	Tachycardia, hypokalemia, tremors
Ipratropium	Dry mouth, Tachycardia, Dry secretions
Terbutaline	Tachycardia, arrhythmias, hypokalemia, muscle twitching, ↑ muscle CPK
Steroids	Hyperglycemia, gastritis, CNS stimulation, hypertension, immune suppression
Magnesium	Hypotension, weakness, Nausea, Flushing
Theophylline	Tachycardia, nausea, ventricular dysrhythmias, tremors, seizures
Ketamine	Potent sialogogue, respiratory depression, emergence phenomena, tachyphylaxis
Heliox	Theoretical risk of atelectasis
Inhaled anesthetics	Hypotension, apnea, myocardial depression