Asthma Management Guideline

Children < 18 years with established or suspected asthma[a] presenting with a respiratory complaint *(see exclusion criteria)*[b]

↓

Place patient in patient gown on continuous cardiac monitoring and SpO2

Administer supplemental O2 for O2 saturations <92%

↓

Obtain Pediatric Respiratory Assessment Score[1]

RT or MD to chart Respiratory Assessment Score in patient's chart

Pediatric Respiratory Assessment Score

		Score			
		0	**1**	**2**	**3**
Breath Sounds		Good aeration	Coarse crackles or rhonchi, end-expiratory wheeze	Expiratory wheezes	Inspiratory and expiratory wheezes, diminished breath sounds
Respiratory Pattern		Normal respirations, normal feeding	1 of These: Conversational dyspnea, poor feeding, agitation	2 of These: Conversational dyspnea, poor feeding, agitation	Dyspnea at rest, grunting, stops feeding, drowsy or confused
Respiratory Rate (Based on Age)	< 2 months	Up to 50 bpm	51-60	61-70	>70
	2 to 12 months	Up to 40 bpm	41-50	51-60	>60
	1 to 5 years	Up to 30 bpm	31-35	36-40	>40
	> 5 years	Up to 20 bpm	21-25	26-30	>30
Retractions		None, normal breathing pattern	1 location	2 locations (includes nasal flaring for infants)	>2 locations or accessory muscle use or nasal flaring or head bobbing
Oxygen/SpO2		≥98% on room air	95-97% on room air	90-94% on room air	<90% or requiring oxygen

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Initial Score 0 hour

0-3 (Mild)
- Give bronchodilator as needed
- Consider oral steroid[c]
- D/c home with follow up instructions[g] & ED return precautions[h]

4-7 (Moderate)
- Give Duonebs
  - Or -
  Albuterol + Ipratropium MDI
  <10kg: 4 puffs each
  10-20kg: 6 puffs each
  >20kg: 8 puffs each
  x 3 treatments
  each 20 min apart
- Give oral steroid[c]

> 8 (Severe/Critical)
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2nd Score 1 hour

0-3 (Mild)
- Observe and obtain 3rd score at 2 hours

4-7 (Moderate)
- Observe and obtain 3rd score at 2 hours if showing improvement with low/moderate score (4-5)
  - Or -
  Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
  given over 1 hour[d]
  if minimal/no improvement with high/moderate score (6-7)
- If giving Continuous Albuterol, consider Mag Sulfate + IVF bolus

> 8 (Severe/Critical)
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3rd Score 2 hours

0-3 (Mild)
- Consider admission criteria[d]
  vs
  D/c home with follow up instructions[g] & ED return precautions[h]

4-7 (Moderate)
- D/c Continuous Albuterol[d] and obtain hourly scores if showing improvement
  +
  Give q2 Albuterol Neb
  <20kg: 2.5mg neb
  >20kg: 5mg neb
  if tolerating q2 treatments
  - Or -
  If no improvement/worsening, Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
  +
  Mag Sulfate/IVF bolus if not already given
- Admit to Peds vs PICU[e]

> 8 (Severe/Critical)
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Initial Score 0 hour

8-11 (Severe)

- Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
  + 1.5mg ipratropium bromide given over 1 hour[d]
- Consider Mag Sulfate + IVF bolus
- Give oral prednisone/prednisolone or IV methylpred [c]

12-15 (Critical)

- Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
  + 1.5mg ipratropium bromide given over 1 hour[d]
- Give Mag Sulfate + IVF bolus
- Give IV methylpred
- Consider IM epinephrine[f]

2nd Score 1 hour

< 8 (Mild/Moderate)

- Continuous Albuterol if high/moderate score (6-7)
  - Or –
  D/c Continuous Albuterol[d] and obtain 3rd score at 2 hours if showing improvement with low/moderate score (4-5)

8-11 (Severe)

- Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
- Give Mag Sulfate + IVF bolus if not already given
- Obtain portable CXR

12-15 (Critical)

- Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
- Obtain portable CXR
- Consider PPV
- Admit to PICU

3rd Score 2 hours

< 8 (Mild/Moderate)

- D/c Continuous Albuterol[d] and obtain hourly scores if showing improvement
  +
  Give q2 Albuterol Neb
  <20kg: 2.5mg neb
  >20kg: 5mg neb
  if tolerating q2 treatments
  - Or -
  Continuous Albuterol if minimal/no improvement and high/moderate score
- Admit to Peds vs PICU[e]

8-11 (Severe)

- Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
  - Or -
  Give 1st q2 Albuterol Neb
  <20kg: 2.5mg neb
  >20kg: 5mg neb
  If tolerating q2 treatments
- Admit to Peds vs PICU[e]

12-15 (Critical)

- Continuous Albuterol
  <10kg: 10mg
  10-20kg: 15mg
  >20kg: 20mg
- Obtain portable CXR if not already done
- Consider BiPAP
- Admit to PICU

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Footnotes:

a. Suspect asthma in children with a history of repeated wheezing in the setting of viral illnesses, prior improvement in symptoms with bronchodilator, history of atopy, family history of asthma

b. Exclusion criteria: adults >18 years of age, tracheostomy dependent, chronic underlying lung disease (i.e. cystic fibrosis, bronchiectasis), cardiac disease, confirmed or suspected airway abnormality (i.e. airway foreign body, vocal cord dysfunction)

c. Oral dexamethasone is generally preferred over prednisolone for pediatric ED asthma exacerbations due to better compliance, reduced vomiting, and similar efficacy. A 1–2 dose, 36–72 hour course of dexamethasone (0.3–0.6 mg/kg) is noninferior to a 3–5 day course of prednisolone (1-2 mg/kg/day), with lower rates of medication-related vomiting and fewer relapses.[3] Prednisolone/prednisone or IV methylpred is preferred by MU Pediatric Pulmonology for pulmonology patients, particularly those requiring admission.

d. Heated high flow nasal cannula (HHFNC) may be considered for administration of continuous albuterol, but should be discontinued at the time that treatment with continuous albuterol is finished, if tolerated by the patient. See separate HHFNC policy.[4]

e. Admission criteria: Children requiring albuterol more frequently than every 4 hours, requiring supplemental O2, HHFNC, or IV hydration should be admitted:
   i. Pediatric floor admission: tolerating albuterol q2 hours or less frequent, up to 2L/kg (max 20L) HHFNC, up to 50% FiO2
   ii. PICU admission: requiring continuous albuterol, >2L/kg or >20L HHFNC, >50% FiO2

f. IM epinephrine [0.01 mg/kg (0.01 mL/kg of 1:1000 solution [1 mg/mL]) every 20 minutes for up to three doses, max dose 0.5 mg] can be considered as an adjunct therapy for severe status asthmaticus.[5]

g. Follow Up Instructions:
   i. Recommend and/or schedule follow up with PCP within 1-3 days
   ii. If **referring to Pediatric Pulmonology** for follow up:
      i. If placing **Ambulatory Referral order**:
         i. Place referral to Pediatric Pulmonary and that goes to Lisa Hunter, Pulmonary Patient Navigator
         ii. If patient needs to be seen in next 1-2 weeks due to severity of their asthma, also send Power Chart message to Pediatric Pulmonary on call
         iii. Please add in comment section brief reasoning for referral for appropriate triage
      ii. If placing **Follow Up Child Health order:**
         i. Send Power Chart message to Lisa Hunter for scheduling
         ii. If patient needs to be seen within 1-2 weeks, also CC the message to Pediatric Pulmonary on call

h. ED Return Precautions: increasing respiratory distress or hypoxemia despite scheduled bronchodilator [+/-PRN combined inhaled corticosteroid/long-acting beta agonist inhaler], inability to tolerate q4 hour bronchodilator, inability to maintain oral hydration

References:

1. MU Emergency Department – Pediatric Asthma – Nurse Initiated Protocol, 2026. https://muhealth.policytech.com/dotNet/documents/?docid=72780&app=pt&source=browse
2. MU Women's and Children's Hospital – Pediatric Bronchodilator Administration Protocol, 2025. https://muhealth.policytech.com/dotNet/documents/?docid=38167&app=pt&source=browse
3. Sayre et. al. "Is dexamethasone an effective alternative to oral prednisone in the treatment of pediatric asthma exacerbations?" Hosp Pediatr. 2014 May;4(3): 172-80.
4. MU Emergency Department - Pediatric Heated High-Flow Nasal Cannula and Vapotherm Initiation – Protocol, 2026. file:///Users/mbb/Downloads/HFNC%20policy.pdf
5. Baggott et. al. "Epinephrine (adrenaline) compared to selective beta-2-agonist in adults or children with acute asthma: a systematic review and meta-analysis." Thorax. 2022 Jun;77(6):563-572.