Pediatric asthma pathway – Emergency Department

Created: August 2017 | Updated: July 2026 | Next Review: July 2029
Updated by: A. Kenneally, PharmD; S. Holmstrom, MD; N. Krupp, MD; C. Flora, PharmD | Reviewed by: Riley Hospital for Children – Pharmacy, Emergency Medicine & Pulmonology

Children **2 years** or older **WITH** a history of asthma, reactive airway disease, or episodic symptoms of airflow obstruction (recurrent cough and/or wheeze) or at MD discretion

NOT intended for: Children less than 2 years old, first time episode, co-morbid conditions including, but not limited to: chronic lung disease, cystic fibrosis, cardiac disease, bronchiolitis, croup/stridor, aspiration, neurological disorders

TRIAGE or PRIMARY RN

Document Pediatric Asthma Score (PAS) along with triage assessment

Administer dexamethasone (0.6mg/kg, max 12mg) as soon as possible

PAS 5 – 7 Mild

1. Bedside assessment
2. Albuterol MDI vs albuterol-ipratropium neb x1

1. Additional therapies per MD discretion
2. RT/RN check PAS every 1 hour

PAS 5 – 7

PAS 8 – 11

PAS 8 – 11 Moderate

1. ED RN notify attending doctor
2. Continuous monitor and pulse ox
3. Order STAT per PowerPlan
   - Albuterol-ipratropium nebs x 3
   - Dexamethasone if not already given
   - O_2 as needed to goal sat >90%
   - Consider IV magnesium with 0.9% NaCl bolus

PAS ≥ 12 Severe

1. If at OSH call Transfer Center MYRiley
2. ED RN notify attending doctor
3. Continuous monitor, pulse ox, place IV
4. **Order STAT** per PowerPlan
   - Albuterol-ipratropium nebs x 3
   - IV MethylPREDNISolone if steroids not already given
   - IV magnesium sulfate with 0.9% NaCl bolus
5. **Consider**
   - IM epinephrine (anaphylaxis dosing)
   - O_2 as needed to goal sat >90%
   - Consider NIPPV

PAS 5 – 7

RN/RT check PAS within 30 mins of treatment

PAS ≥ 8 (If at OSH, call Transfer center if not already done)

Discharge criteria:

1. PAS 5 – 7
2. SpO2 > 90% on RA
3. Observation time since treatment prior to discharge:
   Never had PAS >7: > 1 hr
   Any PAS >8: > 2 hrs

Discharge plan:

- ☐ MD/staff member explain medications
- ☐ Prescribe albuterol (4 – 6 puffs no more frequent than q4h)*
- ☐ Prescribe corticosteroids, if needed (consider for pts with poor control, higher severity of disease, per provider discretion)
- ☐ Dispense or prescribe spacer
- ☐ **RT/RN train in MDI and spacer use**
- ☐ If **NOT** currently prescribed inhaled steroid AND hospitalization/ED visit/prednisone within 6 months: fluticasone 44 mCg HFA, 2 puffs BID
- ☐ Consider Pulmonary Referral if any of: hospitalization in last 6 months, 3rd ED visit in last 12 months, or other concerns

Initial PAS 8 – 11 → Any repeat PAS 8 – 11

- Consider need for continuous albuterol (10 mg/hr) versus spacing albuterol
- Consider need for IV magnesium with 0.9% NaCl bolus

Initial PAS ≥ 12 → Any repeat PAS 8 – 11

1. Continuous albuterol (start 10 mg/hr)
2. IV magnesium with 0.9% NaCl bolus, if not already given

Initial PAS ≥ 8 → Any repeat PAS ≥ 12

1. Continuous albuterol (start 10 mg/hr)
2. IV magnesium with 0.9% NaCl bolus, if not already given
3. Consider:
   - NIPPV/BIPAP
   - IM epinephrine if not already given
   - IV terbutaline or aminophylline
4. Discuss admission with PICU

PAS 5 – 7 ← RN/RT check PAS every hour → **PAS ≥ 8**

Admit criteria: Admit per hospital policy. See below for admit criteria by unit at Riley Children's Hospital

Riley CDU	Riley Floor	Riley ICU
Nasal flow <2L	Nasal flow ≤ 4L (peds cannula) or 6L (adult cannula)	Nasal flow above floor limits OR Bipap
No NIPPV	No NIPPV	NIPPV FiO2 ≥50%
Normal mental status	Normal mental status	Altered mental status
Age >1 year	Intermittent or continuous* albuterol	Respiratory muscle fatigue
Stable on Q3hr albuterol	PAS 5 – 11	PAS ≥ 12

If transferring from an OSH, patients on continuous albuterol will go to the Riley ED.

If patient current on SMART therapy (ICS-formoterol as controller and reliever), follow below for post ED care:

Continue use of ICS- formoterol as reliever

Discharge with maximum dosing:

- Age 4 – 11 yrs: 2 puffs q6h (max 8 puffs per day)
- Age 12+ yrs: 2 puffs q4h (max 12 puffs per day)

Do not prescribe albuterol in addition

Oral steroids per standard dosing

2020 Focused Updates to the Asthma Management Guidelines: At-a-Glance Guide | NHLBI, NIH

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Pediatric Asthma Score (PAS) – Sum all components

Component	1	2	3
Respiratory rate 2 to 3 years 4 to 5 years 6 to 12 years older than 12 years	 34 or less 30 or less 26 or less 23 or less	 35 to 39 31 to 35 27 to 30 24 to 27	 40 or greater 36 or greater 31 or greater 28 or greater
Oxygen saturation	Greater than 94% on room air	90% to 94% on room air or greater than 94% on supplemental O_2	Less than 94% on supplemental O_2
Auscultation	Normal breath sounds or end-expiratory wheeze only that does not clear with coughing AND good air exchange	Expiratory wheezing that does not clear with coughing OR fair-diminished air exchange	Diminished breath sounds, or inspiratory and expiratory wheezing that does not clear with coughing OR poor air exchange/near silent chest
Retractions (suprasternal, supraclavicular, intercostal, subcostal)	None	One to two sites	Three or more sites
Dyspnea	Speaks in sentences, coos and babbles	Speaks in partial sentences, short cry	Speaks in single words, short phrases, or grunting

Medication	Dose	Other/Comments
Continuous albuterol INH	10 mg/hr (Max: 15 mg/hr)	▪ Consider increase to 15 mg/hr for patients with higher PAS or those who do not improve/ stabilize after the first hour on 10 mg/hr
Albuterol/ipratropium INH	2.5mg-0.5mg neb given x1 or Q5min x3 doses	
Dexamethasone	0.6 mg/kg/dose (Max: 12 mg)	▪ For ease of administration, can have patient orally take the IV solution (smaller volume, available in ADC) or tablets ▪ If PO access unavailable, can give IM
Methylprednisolone IV	2 mg/kg/dose (Max: 60 mg)	
Prednisone/prednisolone PO	2 mg/kg/dose (Max: 60mg) daily x5 days	
Magnesium IV	50 mg/kg/dose (Max: 2000 mg)	▪ Administer over 30 minutes for bronchodilation ▪ Administer with 20 mL/kg (max: 1 L) 0.9% NaCl bolus over 1 hour to prevent hypotension
Epinephrine IM	0.01 mg/kg/dose (Max: 0.5 mg)	
Aminophylline IV *(preferred over Terbutaline at Riley PICU)*	Load: 5 mg/kg/dose once Begin continuous infusion at 0.5-1 mg/kg/hr (dosing based on age, hepatic and cardiovascular function, and smoking status). Consult pharmacist.	▪ Level obtained after 12– 24 hours on continuous infusion for adjustments
Terbutaline IV	Consider 4-10 mCg/kg IV bolus prior to infusion initiation Begin continuous infusion at 0.5 mCg/kg/min Titrate by 0.1-0.2 mCg/kg/min Q30min PRN Max: 10 mCg/kg/min	

References:
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Riley Children's Health
Indiana University Health

CONTACT RILEY CHILDREN'S HEALTH

Calling from an ED or inpatient setting? **Call the IU Health Transfer Center for transfer or consult at 877.247.1177.**

Calling from an outpatient setting? **Call MyRiley at 1.844.697.4539.**