

Asthma Pathway: ED Management

Inclusion: ≥ 18 months old, presents with asthma symptoms, otherwise healthy, in acute asthma exacerbation

Exclusion: Transfer from outside hospital with asthma treatment already started

June 2024

Edited March 2026



Presents with asthma symptoms: wheezing, cough, SOB, increased WOB

Initiate Caregiver Initiated Protocol (CIP)

- Place on oxygen for SpO₂ <90%
- Obtain Baseline CRS

Purple shaded area represents
**CAREGIVER INITIATED
PROTOCOL FOR
ASTHMA #5-24**

Literature shows CXR is **not** routinely indicated in the care of acute asthma exacerbation

CRS Score and Assessment

CRS 0-2

- 6 puffs of Albuterol MDI
- Repeat CRS post treatment

CRS 3-5 (if NO Albuterol given in last 6 hours)

- If No Albuterol in last 6 hrs:
- Albuterol via intermittent nebulizer
 - 0.5 mg Ipratropium Bromide via intermittent nebulizer
 - Give steroids x1 dose¹
 - Continuous HR and SpO₂ monitoring
 - Repeat CRS 15-30 min post treatment

CRS 3-5 (if Albuterol given in last 6 hours) OR CRS 6-8

- Albuterol via continuous nebulizer with 1 mg Ipratropium Bromide
- Give steroids x1 dose¹
- Continuous HR and SpO₂ monitoring
- Repeat CRS 30-45 min post treatment

CRS ≥9

Caregiver Initiated Protocol

- Begin Albuterol via continuous nebulizer with 1 mg Ipratropium Bromide
- Give Steroids¹
- Establish IV access
- Continuous HR and SpO₂ monitoring
- Use heated/humidified oxygen between aerosols
- Make NPO
- Contact provider for further orders

Off CIP- Physician Only

- Give Magnesium Sulfate IV
- Consider IV fluids
- Consider Ketamine IV
- Consider blood gas
- Consider Budesonide
- Repeat CRS post treatment

Stable for Discharge?

Give steroids x1¹

Clinically Improved?

HFNC not supported by evidence for mild to moderate asthma. Maximize bronchodilators first.
HFNC by provider order only.

Yes AND CRS ≤ 4

No or CRS ≥ 5

CRS 0-2

- CRS 3-4**
- Give Albuterol via intermittent nebulizer (with or without PEP) OR Albuterol MDI 6-8 puffs
 - Repeat CRS 30 min post treatment with SpO₂

- Albuterol via continuous nebulizer (with 1 mg Ipratropium Bromide if not already given)
- Establish IV access as appropriate
- Consider Magnesium Sulfate, if not already given
- Consider maintenance IV fluids or fluid bolus as appropriate
- Continue to monitor & reassess CRS 45-60 minutes post treatment

YES

Discharge Criteria met²?

CRS 0-2?

- Continuous Albuterol nebulizer (up to 2)
- Consider Magnesium Sulfate (if not already given)
- Reassess 30 min post treatment:
 - If improving AND CRS 3-4: Admit to floor
 - If not improving OR CRS ≥5: Order continuous Albuterol, and consider ICU admission (if going to PICU, order 6 hour continuous Albuterol nebulizer)
- Ongoing reassessment and CRS Q1hour. If condition changes (better or worse), notify provider.

2 Discharge Criteria

- CRS 0-2
- Easy work of breathing with good air exchange
- SpO₂ >90% on room air consistently
- Able to maintain O₂ sats, RR, WOB during feeding/ activity
- Family verbalizes ability to manage patient at home

Discharge^{2,3}

- Ensure spacer teaching as appropriate

- Treatment as appropriate for patient condition
- Ongoing reassessment

4 Admission Criteria

Consider admission to the hospital if:

- CRS ≥3 despite adequate therapy
- O₂ requirement to keep SpO₂ > 90%

Consider PICU admission if:

- Acute Respiratory Failure
- Persistent moderate or severe work of breathing, or not improving adequately
- FiO₂ ≥50%
- Initiation of NPPV/ HFNC (see [High Flow Nasal Cannula Standard Work](#))

This pathway is based on evidence available at the time of publication as well as expert consensus of clinicians at Children's Healthcare of Atlanta and has been approved by the Medical Staff at Children's.

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Children's
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Medications

Respiratory Medications

Albuterol Metered Dose Inhaler (MDI): 90 mcg/puff

- 4-6 puffs with spacer per guideline

Albuterol via continuous nebulizer:

- <15 kg use 7.5 mg/hr
- ≥ 15 kg use 15 mg/hr

Albuterol via Intermittent PEP nebulizer:

- <15 kg: 2.5 mg Albuterol and 5 cm H₂O
- 15-18 kg: 5 mg Albuterol and 8 cm H₂O
- 18-25 kg: 5 mg Albuterol and 10 cm H₂O
- >25 kg: 5 mg Albuterol and 12 cm H₂O

Ipratropium Bromide:

- 0.5 mg via intermittent nebulizer
- 1 mg via continuous nebulizer, given over one hour

Budesonide 1.5 mg via continuous nebulizer (per provider discretion)

¹ Steroid Dosing

Dexamethasone: 0.6 mg/kg PO (Max dose 16 mg)

- <12 kg: *Per physician discretion only.* Consider Dexamethasone 4 mg QD **or** Prednisolone 1-2 mg/kg/day (QD or BID)
- 12 to <15 kg: 8 mg (packet of 2 tablets)
- 15 to <25 kg: 12 mg (packet of 3 tablets)
- ≥ 25 kg: 16 mg (packet of 4 tablets)
 - Do not give if patient had in past 24 hours
 - Give steroids PO unless patient is vomiting
 - Consider steroid taper if patient had 2 courses of steroids in past 60 days

Dexamethasone IM Dosing: 0.6 mg/kg (Max dose 16 mg)

Methylprednisolone IV: 2 mg/kg x1 (Max dose 60 mg) if CRS >9 or not tolerating PO

Additional Medications (CRS > 6)

Magnesium Sulfate 50 mg/kg IV over 20 min (Max dose 2 grams)

Ketamine 0.5-1 mg/kg IV x1; continuous infusion 0.3mg/kg/hr

Adjunct Therapies

May consider Ipratropium Bromide 0.5 mg for cough (if not already given)

Epinephrine (Concentration 1mg/mL) 0.01 mg/kg IM (Max dose 0.5 mg)

Terbutaline: 0.005- 0.01 mg/kg SQ

End Tidal CO₂ monitoring

Discharge

Discharge Risk Assessment

Risk Screen: (Consider Observation and/or discussion with PCP/ Specialist)

- Hospitalized two or more times in past 6 months, history of ICU/intubation
- >3 ED visits in past 6 months
- 2 or more canisters of Albuterol in past 6 months
- Failed outpatient therapy (already on Q4 nebs or oral steroids >48 hours)
- Direct exposure to tobacco smoke

Consider Subspecialty Referral if:

- Hospitalized two or more times in past year
- >3 ED visits in past 12 months
- 2 or more courses of oral steroids in past 2 months
- 2 or more canisters of Albuterol in past 6 months

³ Discharge Orders

- Follow up with PCP/ Subspecialist
- Education (watch asthma video if given continuous treatment)
- Asthma Management Plan (Asthma Basics)

Discharge Medications:

- Albuterol MDI with spacer
 - 4 puffs QID for 2 days then Q4 hours PRN cough/wheeze
- Inhaled steroids (as appropriate):
 - Fluticasone propionate (Flovent)
 - 44 mcg/puff - 2 puffs BID for **0-3 years old**
 - Budesonide/Formoterol (Symbicort or Breyna):
 - 80/4.5 - 1 puff BID + PRN (max 8 total puffs/day) for **4-11 years old**
 - 160/4.5 - 1 puff BID + PRN (max 12 total puffs/day) for **≥ 12 years old**
 - Mometasone/Formoterol (Dulera):
 - 100/5 - 1 puff BID + PRN (max 8 total puffs/day) for **4-11 years old**
 - 200/5 - 1 puff BID + PRN (max 12 total puffs/day) for **≥ 12 years old**
- Budesonide/Formoterol (Symbicort or Breyna) is preferred for patients ≥ 4 years old if on insurance formulary.**
- Oral Steroid: Dexamethasone PO x1 24 hours after first dose
 - **<12 kg:** Provide prescription for Dexamethasone 4 mg x1 **or** Prednisolone 1-2 mg/kg/day (QD or BID) for 3-5 days
 - **12 to <15 kg:** dispense 8 mg (packet of 2 tablets)
 - **15 to <25 kg:** dispense 12 mg (packet of 3 tablets)
 - **≥ 25 kg:** dispense 16 mg (packet of 4 tablets)
 - Consider steroid taper if patient had 2 courses of steroids in past 60 days

Definitions

CRS: Clinical Respiratory Score

MDI: Metered Dose Inhaler

HFNC: High Flow Nasal Cannula

NPPV: Non-invasive Positive Pressure (BiPAP/CPAP)

PEP: Positive Expiratory Pressure