

WHEEZING/ ASTHMA EXACERBATION

Definition: Acute asthma exacerbations or "asthma attacks" are episodes of progressive increase in shortness of breath, cough, wheezing, or chest tightness, or some combination of these symptoms.
Respiratory distress is common.

Inclusion Criteria

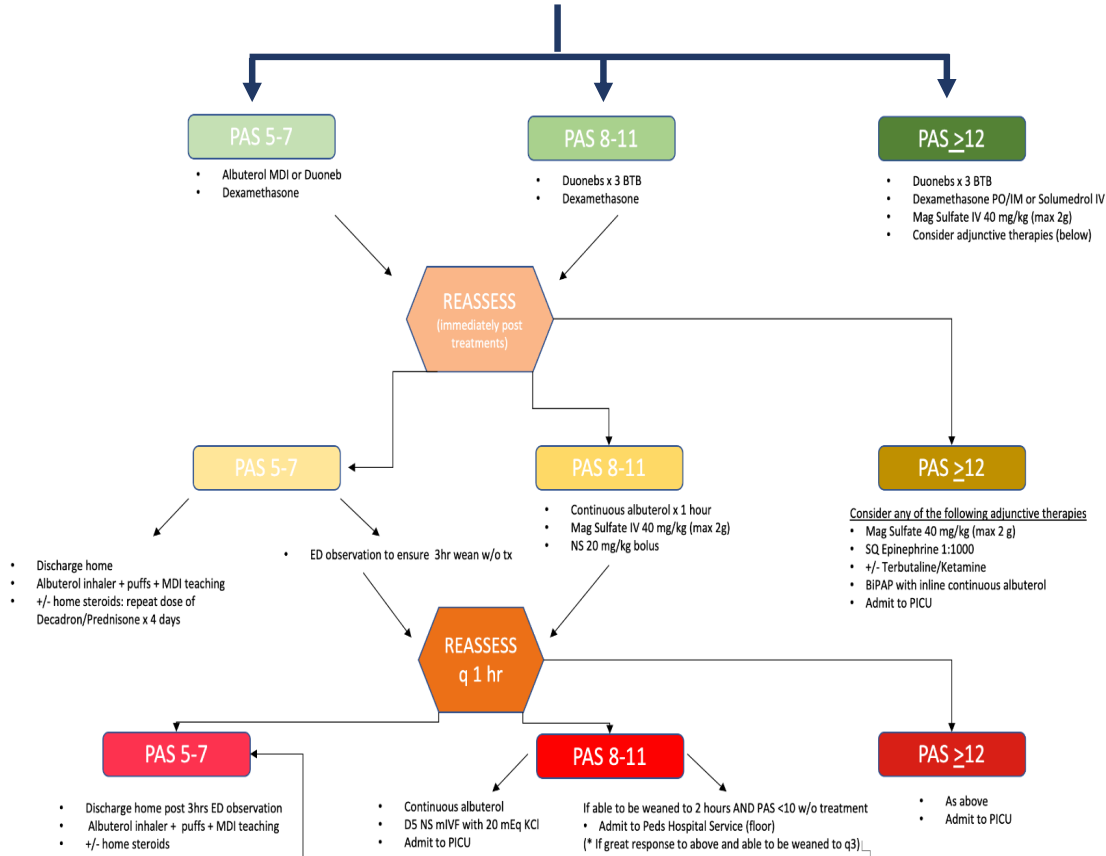
- ≥ 2 years of age child with:
- Acute wheezing
OR
- Cough AND a history of:
 - Asthma
OR
 - episodic airflow obstruction (recurrent cough and/or wheeze that can be at least partially reversible with bronchodilators)

Exclusion Criteria

- Chronic lung disease
- Bronchiolitis
- Bacterial pneumonia
- Neurological disorders
- Immunodeficiency diseases
- Cardiac hx/Heart failure
- Foreign body
- Croup
- Vocal cord dysfunction

Calculate Pediatric Asthma Score (PAS)

| Score | 1 | 2 | 3 |
|---------------------|--|--|---|
| Respiratory rate | | | |
| 2 to 3 yr | ≤ 34 | 35 to 39 | ≥ 40 |
| 4 to 5 yr | ≤ 30 | 31 to 35 | ≥ 36 |
| 6 to 12 yr | ≤ 26 | 27 to 30 | ≥ 31 |
| Older than 12 yr | ≤ 23 | 24 to 27 | ≥ 28 |
| Oxygen requirements | $> 90\%$ on room air | 85%-90% on room air | $< 85\%$ on room air |
| Auscultation | Normal breath sounds or end-expiratory wheeze only | Expiratory wheezing | Inspiratory and expiratory wheezing or diminished breath sounds |
| Retractions | \leq One site | Two sites | \geq Three sites |
| Dyspnea | Speaks in sentences, coos and babbles | Speaks in partial sentences, short cry | Speaks in single words/short phrases/grunting |



Exacerbation Medication Dosing

Albuterol Intermittent

≤ 10 kg: 4 puffs MDI or 2.5 mg of albuterol
10-20 kg: 6 puffs MDI or 5 mg of albuterol
 ≥ 20 kg: 8 puffs MDI or 5 mg of albuterol

Continuous Albuterol Concentrate

< 20 kg: 7.5-10 mg/hour of cont' albuterol
 ≥ 20 kg: 10-20 mg/hour of cont' albuterol
[consider maintenance IVF D5 NS with 20mEq KCl]

Atrovent

500 mcg

Magnesium Sulfate

40mg/kg (max 2g) over 20min
[monitor/bolus for iatrogenic hypotension]

Steroids

Dexamethasone 0.6mg/kg; 16mg max
Solumedrol 2mg/kg load

Discharge Plan

Determine Asthma Severity: intermittent, mild vs moderate vs severe persistent*
Admin Albuterol Inhaler with spacer and provide MDI teaching
Review use of Albuterol Inhaler q4 hours until re-evaluation w/in 48hrs
Prescribe repeat dexamethasone 0.6mg/kg (max 16mg) dose in 24hrs x1
Consider initiating controller medication**
Review respiratory distress symptoms not responding to rescue inhaler for which to return to ED

CLASSIFYING ASTHMA SEVERITY & INITIATING THERAPY

NIH National Asthma Education and Prevention Program Expert Panel. Guidelines for the diagnosis and management of asthma.

| | Intermittent | Mild Persistent | Moderate Persistent | Severe Persistent |
|-----------------------------|--------------------------------------|---|--|---|
| Symptoms | ≤2 days/week | >2 days/week | Daily | Throughout the day |
| Nighttime awakenings | 0 (≤4 years) ≤2x/month (≥5 years) | 1-2x/month (≤4 years) 3-4x/month (≥5 years) | 3-4x/month (≤4 years) >1x/week (≥5 years) | > 1x/week (≤4 years) Often 7x/week (≥5 years) |
| SABA use | ≤2 days/week | >2 days/week | Daily | Several times/day |
| Activity limitation | None | Minor | Some | Extreme |
| Oral steroid usage | 0-1x/year | ≥2x in 6 months or ≥4x/year (≤4 years) ≥2x/year (≥5 years) | | |
| Recommended therapy | SABA PRN | Low-dose ICS | Medium-dose ICS or Low-dose ICS + LTRA or Low-dose ICS + LABA* *only if already prescribed by PCP or pulmonologist | Previous medications plus Subspecialist referral |

| | Intermittent Asthma | Management of Persistent Asthma in Individuals Ages 0–4 Years | | | | |
|--------------------|---|---|------------------------------------|---|---|--|
| Treatment | STEP 1 | STEP 2 | STEP 3 | STEP 4 | STEP 5 | STEP 6 |
| Preferred | PRN SABA and At the start of RTI: Add short course daily ICS▲ | Daily low-dose ICS and PRN SABA | Daily medium-dose ICS and PRN SABA | Daily medium-dose ICS-LABA and PRN SABA | Daily high-dose ICS-LABA and PRN SABA | Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA |
| Alternative | | Daily montelukast* or Cromolyn,* and PRN SABA | | Daily medium-dose ICS + montelukast* and PRN SABA | Daily high-dose ICS + montelukast* and PRN SABA | Daily high-dose ICS + montelukast* + oral systemic corticosteroid and PRN SABA |

| | Intermittent Asthma | Management of Persistent Asthma in Individuals Ages 5–11 Years | | | | |
|--------------------|---------------------|---|---|---|--|--|
| Treatment | STEP 1 | STEP 2 | STEP 3 | STEP 4 | STEP 5 | STEP 6 |
| Preferred | PRN SABA | Daily low-dose ICS and PRN SABA | Daily and PRN combination low-dose ICS-formoterol▲ | Daily and PRN combination medium-dose ICS-formoterol▲ | Daily high-dose ICS-LABA and PRN SABA | Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA |
| Alternative | | Daily LTRA,* or Cromolyn,* or Nedocromil,* or Theophylline,* and PRN SABA | Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LTRA,* or daily low-dose ICS + Theophylline,* and PRN SABA | Daily medium-dose ICS-LABA and PRN SABA or Daily medium-dose ICS + LTRA* or daily medium-dose ICS + Theophylline,* and PRN SABA | Daily high-dose ICS + LTRA* or daily high-dose ICS + Theophylline,* and PRN SABA | Daily high-dose ICS + LTRA* + oral systemic corticosteroid or daily high-dose ICS + Theophylline* + oral systemic corticosteroid, and PRN SABA |

| | Intermittent Asthma | Management of Persistent Asthma in Individuals Ages 12+ Years | | | | |
|--------------------|---------------------|---|--|--|--|---|
| Treatment | STEP 1 | STEP 2 | STEP 3 | STEP 4 | STEP 5 | STEP 6 [■] |
| Preferred | PRN SABA | Daily low-dose ICS and PRN SABA or PRN concomitant ICS and SABA▲ | Daily and PRN combination low-dose ICS-formoterol▲ | Daily and PRN combination medium-dose ICS-formoterol▲ | Daily medium-high dose ICS-LABA + LAMA and PRN SABA▲ | Daily high-dose ICS-LABA + oral systemic corticosteroids + PRN SABA |
| Alternative | | Daily LTRA* and PRN SABA or Cromolyn,* or Nedocromil,* or Zileuton,* or Theophylline,* and PRN SABA | Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LAMA,▲ or daily low-dose ICS + LTRA,* and PRN SABA or Daily low-dose ICS + Theophylline* or Zileuton,* and PRN SABA | Daily medium-dose ICS-LABA or daily medium-dose ICS + LAMA, and PRN SABA▲ or Daily medium-dose ICS + LTRA,* or daily medium-dose ICS + Theophylline,* or daily medium-dose ICS + Zileuton,* and PRN SABA | Daily medium-high dose ICS-LABA or daily high-dose ICS + LTRA,* and PRN SABA | |

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