MMC Asthma Exacerbation Guideline

Initial Assessment
1. All patients: BP P RR O₂ Saturation Peak Flow
2. Brief history, Physical Exam (auscultation, accessory muscle use)
3. CXR if signs of PNA, PTX, or foreign body.
4. EKG if >age 50 or chest pain
5. Labs: Theophylline level if patient taking Theophylline.

Peak Flow ≥ 40%
Mild to Moderate

Peak Flow < 40%
Severe

Impending Respiratory Arrest
- Intubation
- 100% O₂
- Nebulized Albuterol/Ipratropium
- Corticosteroids
- Consider Adjunct Therapies

ED Treatment
1. Saline lock for P > 120 or RR > 24
2. Supplemental oxygen to achieve SaO₂ > 90%
3. Bronchodilator Therapy
   - Albuterol 2.5 – 5 mg Q 20 minutes via Neb x 3
   - May add ipratropium 0.5 mg Q 20 minutes via neb x 3 for severe exacerbations
   - May consider 10 – 15 mg/hr continuous albuterol neb for severe exacerbations
4. Systemic Corticosteroids
   - Prednisone 40 – 80 mg PO (60 mg in average adult) or
   - Solumedrol 125 mg IV
5. Adjunct therapies for impending respiratory failure or if poor response to treatment at 1 hour.
   - Magnesium Sulfate 2g IV
   - Heliox

Reassessment
Patients subjective Response
RR, Sat, Peak Flow

Good Response
Peak Flow > 70%
Minimal symptoms
Response sustained 60 minutes after last treatment

Incomplete Response
Peak Flow 40 – 69 %
Mild to Moderate Symptoms

Poor Response
Peak Flow < 40%
PCO₂ > 42 mm Hg
Worsening fatigue
Inability to speak
Altered mental status
Intercostal retraction

Discharge Home
1. Continue inhaled bronchodilators
2. Continue oral corticosteroids
   - Prednisone 40 – 80 mg/day for 5 – 10 d
3. Consider initiation of inhaled corticosteroid, i.e. Fluticasone
4. Patient Education
   - Review medications, including inhaler technique
   - Review action plan
   - Recommend close follow up

Consider
1. Admission to ward or OBS
2. Repeat Bronchodilators
3. Continue treatment 1-3 hours and make admit decision by 4 hours.

Admit to ICU
- Continuous Bronchodilator
- Consider adjunct therapy
- Consider intubation

This guideline was ratified by the emergency department faculty at Maine Medical Center in June 2009. It reflects our expert opinion and is not necessarily applicable to all institutions. It is intended to be a reference for clinicians caring for patients and is not intended to replace providers’ clinical judgment.

Produced by: Megan Fix, M.D.
**MMC EM Guideline Evidence**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Source</th>
<th>Classification</th>
<th>Level of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Oxygen to relieve hypoxemia</td>
<td>NAEPP 1997(^1)</td>
<td>RCTs</td>
<td>A</td>
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<tr>
<td>2 SABA to relieve airflow obstruction; ipratropium in severe exaserbations</td>
<td>NAEPP 2007(^2)</td>
<td>RCTs</td>
<td>A</td>
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<tr>
<td>3 Systemic corticosteroids to decrease inflammation</td>
<td>NAEPP 2007</td>
<td>RCTs</td>
<td>A</td>
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<tr>
<td>4 Consider adjunct treatments (IV Mag; Heliox) in severe exaservations</td>
<td>NAEPP 2007</td>
<td>RCTs limited data</td>
<td>B</td>
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<td>5 Monitoring response to therapy with serial measurements of lung function</td>
<td>NAEPP 2007</td>
<td>RCTs limited data</td>
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<tr>
<td>6 Prevent relapse by 1) referral to follow up 2) ED asthma discharge plan 3) Re</td>
<td>NAEPP 2007</td>
<td>RCTs limited data</td>
<td>B</td>
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<tr>
<td>7 In severe exaserbations PEF provides little additional info</td>
<td>NAEPP 2007</td>
<td>Panel consensus</td>
<td>D</td>
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<tr>
<td>8 Pulse oximetry indicated for pts in severe distress or PEF &lt;40</td>
<td>NAEPP 2007</td>
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<td>B</td>
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<tr>
<td>9 Levalbuterol may be used as SABA</td>
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<tr>
<td>10 PEF or FEV1 should be obtained on arrival and 30-60 min after treatment</td>
<td>NAEPP 2007</td>
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<td>11 Any FEV1 or PEF value &lt;25 percent of predicted that improves by &lt;10 perce</td>
<td>NAEPP 2007</td>
<td>Observational studies</td>
<td>C</td>
</tr>
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<td>12 The following are not recommended methylxanthines</td>
<td>NAEPP 2007</td>
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<td>13 antibiotics (unless comorbid conditions)</td>
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<td>14 chest physical therapy</td>
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<td>15 mucolytics</td>
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<td>16 sedation</td>
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<td>17 Other adjunct therapies to avoid intubation include intravenous beta2-agonists, intravenous leukotriene receptor antagonists (LTRAs), noninvasive ventilation; insufficient data are available to make recommendations regarding these possible adjunct therapies</td>
<td>NAEPP 2007</td>
<td>Panel consensus</td>
<td>D</td>
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<td>18 Patients given systemic corticosteroids should continue oral systemic corticosteroids for 3 to 10</td>
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<td>19 Consider initiating an ICS at discharge, in addition to oral systemic corticosteroids</td>
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<td>20 Oral prednisone is equivalent to IV methylprednisolone</td>
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