≥ 18 month old patient presents with asthma symptoms (wheezing, cough, SOB, increased WOB)

Initiate Caregiver Initiated Protocol (CIP)
- Place on oxygen for SpO₂ < 90%
- Obtain Baseline CRS

CRS Score and Assessment

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

CRS 0-2
- 6 Puffs of Albuterol MDI
- Repeat CRS post treatment
  if clinically improved or no change, consider Fast Track; if condition worsens patient to main ED

CRS 3-5
- Continuous Albuterol Nebulizer
- Add 1 mg ipratropium bromide if cough score > 0
- Give steroids X1 dose
- Continuous HR and SpO₂
- Repeat CRS 45-60 min Post treatment

CRS 6-8
- Continuous Albuterol Nebulizer with 1 mg ipratropium bromide
- Give steroids X1 dose
- Continuous HR and SpO₂
- Repeat CRS 30 min Post treatment

Caregiver Initiated Protocol
- Contact Physician
- Consider continuous Albuterol nebulizer with 1mg Ipratropium Bromide
- Establish IV access
- Use heated/humidified oxygen between aerosols
- Make NPO

CRS ≥ 9
- Give steroids
- Give Magnesium Sulfate IV
- Consider Heliox
- Consider HFNC / NPPV
- Consider IV Fluids
- Consider Ketamine IV
- Consider blood gas
- Reassess CRS 30 min post treatment

Clinically Improved?

Give Steroids X1 if not already given

CRS?

CRS 0-2
- 4 Puffs of Albuterol MDI
- Repeat CRS 15 min post completion

CRS 3-5
- Give Intermittent Albuterol Nebulizer with PEP
- Repeat CRS 45-60 min post completion with SpO₂

CRS 6-8
- Continuous Albuterol Nebulizer
- Consider Heliox
- Establish IV Access
- Give Magnesium Sulfate if not already given
- Start maintenance IV fluids or fluid bolus
- Make NPO
- Repeat CRS 30 min Post treatment

Discharge Criteria met?

Discharge

CRS ≤ 3?

YES

Discharge

NO

NO

Admit to Hospital

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

Developed through the efforts of Children’s Healthcare of Atlanta and its physicians in the interest of advancing pediatric healthcare. This pathway is a general guideline and does not represent a professional care standard governing providers’ obligation to patients. Care is revised to meet the individual patient’s needs. © 2013 Children’s Healthcare of Atlanta, Inc.
### Medication Dosing

#### Respiratory Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosing Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Albuterol Metered Dose Inhaler (MDI):</strong> 90mcg/puff</td>
<td>- 4-6 puffs with spacer per guideline</td>
</tr>
<tr>
<td><strong>Albuterol Continuous nebs:</strong></td>
<td>- &lt;15 kg use 7.5mg/hr</td>
</tr>
<tr>
<td></td>
<td>- ≥15 kg use 15mg/hr</td>
</tr>
<tr>
<td><strong>Albuterol Intermittent PEP nebulizers:</strong></td>
<td>- &lt;15 kg: 2.5mg of albuterol and 5 cm H₂O&lt;br&gt;- 15-18 kg: 5mg of albuterol and 8 cm H₂O&lt;br&gt;- 18-25 kg: 5mg of albuterol and 10 cm H₂O&lt;br&gt;- ≥25 kg: 5mg of albuterol and 12 cm H₂O</td>
</tr>
<tr>
<td><strong>Ipratropium bromide Dosing:</strong></td>
<td>1mg via continuous nebulizer</td>
</tr>
</tbody>
</table>

#### Steroid Dosing

<table>
<thead>
<tr>
<th>Steroid Dosing</th>
<th>Dosing Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dexamethasone PO:</strong> (Dosing based on 0.6 mg/kg PO per dose (max dose 16mg))</td>
<td>- 12 to &lt;15kg: dispense 8mg (packet of 2 tablets)&lt;br&gt;- 15 to &lt;25kg: dispense 12mg (packet of 3 tablets)&lt;br&gt;- ≥25kg: dispense 16mg (packet of 4 tablets)&lt;br&gt;  - Do not give if patient has had a dose in the past 24 hours&lt;br&gt;  - Give steroids PO unless patient is vomiting&lt;br&gt;  - Consider steroid taper if the patient has had 2 courses of steroids in the past 60 days</td>
</tr>
<tr>
<td><strong>Methylprednisolone IV:</strong> 2mg/kg x1(max dose 60mg) if CRS ≥9 or not tolerating po</td>
<td></td>
</tr>
<tr>
<td><strong>Dexamethasone IM</strong> dosing: 0.6mg/kg (max dose 16 mg)</td>
<td></td>
</tr>
</tbody>
</table>

#### Additional Medications (CRS > 6)

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosing Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Magnesium Sulfate IV</strong> 50mg/kg over 20min (Max dose 2grams)</td>
<td></td>
</tr>
<tr>
<td><strong>Ketamine IV 0.5-1mg/kg</strong> IV x1; continuous infusion 5mcg/kg/min</td>
<td></td>
</tr>
</tbody>
</table>

### Adjunct Therapies

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosing Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epinephrine (1:1000)</strong> 0.01mg/kg IM (Max dose 0.5 mg)</td>
<td>(Max dose 0.5 mg)</td>
</tr>
<tr>
<td><strong>Terbutaline:</strong> 0.005- 0.01mg/kg SQ</td>
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</tr>
<tr>
<td><strong>Budesonide 1.5-2mg via nebulizer</strong></td>
<td></td>
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<tr>
<td><strong>End Tidal CO₂ monitoring</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Discharge

#### Discharge Criteria

- CRS ≤3
- Breathing easy with good air exchange
- SpO₂>90% on room air consistently
- Able to maintain O₂ sats, RR, WOB, through feeding/activity
- Family able to manage patient at home

#### 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 times 2 days and q4 hours prn cough/wheezing/symptoms
- **Inhaled steroids**
  - QVAR 40 mcg/puff - 2 puffs twice a day OR
  - Flovent 44 mcg/puff - 2 puffs twice a day x1 canister with no refills
- **Oral Steroid:** Dexamethasone po x1 24 hours after first dose
  - 12 to <15kg: dispense 8mg (packet of 2 tablets)
  - 15 to <25kg: dispense 12mg (packet of 3 tablets)
  - ≥25kg: dispense 16mg (packet of 4 tablets)
  - Consider steroid taper if the patient has had 2 courses of steroids in the past 60 days

#### Risk Screen (Consider Observation and 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
- Failure of outpatient therapy (already on q 4 hour nebs or oral steroids >48 hours)
- Direct exposure to tobacco smoke

#### Consider Case Management and/or 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

#### Admission Criteria

- CRS ≥ 4 after response to 2nd hour of treatment
- O₂ requirement to keep SpO₂ > 90%
- Clinical Hypoxia
- Unable to manage patient at home

#### Consider PICU If:

- Acute Respiratory Failure
- CRS≥9
- FiO₂ ≥50%
- Initiation of NPPV/ HFNC (refer to high flow guideline)
- PEWS ≥5 (after ED care team discussion)