INITIAL EMERGENCY MANAGEMENT OF ACUTE ASTHMA IN CHILDREN BASED ON PRAM ASSESSMENT

**MILD** PRAM: 1-3

1. Vital signs initially & at discharge
2. Assess SaO2 Room Air ≥95%
3. Initial Salbutamol, if needed
4. Complete oral steroids
5. If PRAM ≤3 discharge

**MODERATE** PRAM: 4-7

1. Vital signs initially & at discharge
2. Keep SaO2 ≥94% (or ≥92% if needed)
3. Salbutamol and Ipratropium bromide Q 20 min for 3 times
4. Systemic steroids after first Bronchodilator
5. If PRAM ≤3 discharge

**SEVERE** PRAM: 8-12

1. Vital signs Q 20 min until improvement
2. Initial Salbutamol, if needed
3. Salbutamol + Ipratropium bromide Q 20 min for 3 times
4. Systemic steroid after first Bronchodilator
5. Consider PICU for Admission

**DISCHARGE PLAN**

- Salbutamol 0.1 mg/kg via MDI/spacer, 3 puffs, via nebulizer
- Ipratropium 250 mcg, via MDI/spacer 2 puffs, via nebulizer
- Oral steroid to complete the course
- Inhaled steroids till next clinic visit
- Salbutamol Q 4-6 hours
- If PRAM ≤3 discharge

**SOURCES:**
Source: Annals of Thoracic Medicine 2019; Volume:14, Issue:1

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**ABBREVIATION:**
- PRAM: Pediatric Respiratory Assessment Measure
- SaO2: Oxygen Saturation
- PICU: Pediatric Intensive Care Unit
- MDI: Metered Dose Inhaler
- PRN: As required
- AV: Arterial Blood Gas
- CXR: Chest X-Ray
- WBC: White Blood Cells
- mg: Milligrams
- mcg: Micrograms
- %: Percent
- PRN: As required
**TABLE 1: THE TEST FOR RESPIRATORY AND ASTHMA CONTROL IN KIDS (TRACK) FOR CHILDREN < 5 YEARS OF AGE**

<table>
<thead>
<tr>
<th>Step</th>
<th>Question</th>
<th>score</th>
<th>○</th>
<th>□</th>
<th>▪</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>How is your child’s asthma today?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>How much of a problem is your child’s asthma when you run, exercise, or play sports?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>Do you cough because of your child’s asthma?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>During the past 3 months, how often did you need to treat your child’s breathing problems with quick-relief medications?</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>During the last 4 weeks, how many days did your child have any daytime asthma symptoms?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>During the last 4 weeks, how many days did your child wheeze during the day because of asthma?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>During the last 4 weeks, how many days did your child wake up during the night because of asthma?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 2: THE CHILDHOOD ASTHMA CONTROL TEST (C-ACT) FOR KIDS 4-12 YEARS OF AGE**

<table>
<thead>
<tr>
<th>Step</th>
<th>Question</th>
<th>Score</th>
<th>○</th>
<th>□</th>
<th>▪</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>How was your asthma scored?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>How many times per week did your asthma symptoms affect your child’s ability to do things in your home?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Do you wake up in the middle of the night because of your asthma?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>How bad were your asthma symptoms during the day?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>During the past 4 weeks, how many days did your child have any nighttime asthma symptoms?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUPPLEMENTS**

- **Step 1 (Low dose ICS):**
  - Salbutamol (if needed)
  - Alternative: Leukotriene modifier

- **Step 2 (Low dose ICS + Leukotriene modifier):**
  - Salbutamol (if needed)
  - Refer to Specialist

- **Step 3 (Medium - high dose ICS + LABA + Leukotriene modifier):**
  - Salbutamol (if needed)
  - Refer to Specialist

**ABBRIVIATION:**

- **ICS:** Inhaled Corticosteroids
- **LABA:** Long Acting β2-Agonist
- **PRN:** As Needed
- **PCP:** Primary Care Provider
- **Asthma:** Asthma Education
- **Evaluate compliance:**
- **SaO2:** Oxygen Saturation
- **IV:** Intravenous
- **CXR:** Chest X-Ray
- **RES:** Respiratory Symptom Score
- **QoL:** Quality of Life
- **TOTAL SCOR**E: 0-39

**TRACK Score < 80** Indicates Uncontrolled Asthma

**C-ACT Score < 19** Indicates Uncontrolled Asthma

**REFERENCES:**

- **American Thoracic Society:** Guidelines for the Diagnosis and Management of Asthma
- **National Asthma Education and Prevention Program:** Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma
- **World Health Organization:** Global Initiative for Asthma (GINA)

**Table 3: Selection of inhaler device in children**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Technique</th>
<th>Spacer + Mask</th>
<th>Spacer + Mouthpiece</th>
<th>Nebulizer + Mouthpiece</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6 months</td>
<td>Technique</td>
<td>Mask + spacer</td>
<td>Mask + mouthpiece</td>
<td>Nebulizer + mouthpiece</td>
</tr>
<tr>
<td>6-12 months</td>
<td>Technique</td>
<td>Mask + spacer</td>
<td>Mask + mouthpiece</td>
<td>Nebulizer + mouthpiece</td>
</tr>
</tbody>
</table>

**ABBRIEVATION:**

- **ASTHMA:** Asthma
- **CXR:** Chest X-Ray
- **O2:** Oxygen Saturation
- **PRN:** As Needed
- **ROOM:** Room Air
- **SaO2:** Oxygen Saturation