Croup

Inclusion Criteria:
Previously healthy children aged 6 months to 6 years with signs and symptoms of viral illness with associated barky cough and inspiratory stridor

Exclusion Criteria:
Alternative diagnosis should be considered if:
- Toxic Appearance: Pallor, lethargic, acute/abrupt onset and unimmunized status should prompt consideration for bacterial tracheitis / epiglottitis
- Drooling or difficulty swallowing (FB, retropharyngeal abscess)
- Expiratory wheezing
- Known previous history: Laryngo/ tracheomalacia, or previously diagnosed vascular ring/sling/ tracheoesophageal fistula
- Prior non-elective intubation in past 6 months, or prolonged intubation
- Recurrent episodes, two episodes in last 30 days, three episodes in 1 year.

Croup Severity Score

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Score</th>
<th>Score</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Entry</td>
<td>Normal (0)</td>
<td>Decreased (1)</td>
<td>Markedly Decreased (2)</td>
<td></td>
</tr>
<tr>
<td>Chest Wall Retractions</td>
<td>None (0)</td>
<td>Mild (1)</td>
<td>Moderate (2)</td>
<td>Severe (3)</td>
</tr>
<tr>
<td>Cyanosis</td>
<td>None (0)</td>
<td>With Agitation (4)</td>
<td>At Rest (5)</td>
<td></td>
</tr>
<tr>
<td>Level of Consciousness</td>
<td>Normal (0)</td>
<td>Disoriented (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stridor</td>
<td>None (0)</td>
<td>With Agitation (1)</td>
<td>At Rest (2)</td>
<td></td>
</tr>
</tbody>
</table>

Generally, lab testing, viral testing, and X-Ray (chest and/or lateral neck) do not alter or change outcomes in typical croup.
ED Discharge Criteria

- Receives 1 dose of dexamethasone
- ≥ 3 hours since last racemic epinephrine treatment (if received)
- ≤ 2 racemic epinephrine within 4 hours
- Mild or improved croup symptoms
  - Minimal/improved or no stridor – refer to scoring
  - Minimal/improved or no suprasternal or intercostal retractions at rest – refer to above scoring
- Able to talk and feed without difficulty
- No supplemental oxygen or hydration requirement

Inpatient Admission Considerations (does not substitute for clinical judgment)

- Receives ≥ 3 racemic epinephrine or requires racemic epinephrine more frequently than Q2 hours x 2 doses in the ED and/or
- Persistent stridor at rest, respiratory distress, tachypnea or
- Inadequate hydration or
- Need for supplemental oxygen or
- Concern for alternative diagnosis
Croup

Does not exceed floor care limitations:

- Floor can administer racemic epinephrine Q2hours; Floor cannot start heliox or positive pressure ventilation.
- If a child is unable to go more than 2 hours between racemic epi nebs, needs hourly treatments/assessments, or fails to respond to interventions, should consider ICU level of care.

Inpatient Clinical Recommendations

- There is no indication for cool mist humidified oxygen therapy for the hospital treatment of croup.
- Most children show rapid improvement with racemic epinephrine, failure to respond should prompt consideration of alternative diagnosis.
- Lab testing, viral testing, neck imaging does not alter the management of croup.
- No indication for home racemic epinephrine nebulizer treatments.
- No strong indication for repeat doses of steroids at time of discharge except croup associated with COVID-19. Those patients may need repeat dosing of steroids within 24-48 hours.

ENT Consultation Criteria

- ENT Inpatient Consultation for direct laryngoscopy/bronchoscopy or bedside flexible laryngoscopy if history of intubation, recurrent episodes outside normal age range (<6months, >6 years), concern for airway anomalies, atopy or GERD.
- Consider consultation if fail to improve after 36hrs hours of receiving first steroid dose, racemic epinephrine and observation.

Inpatient Discharge Criteria:

- Minimal stridor at rest. No signs or symptoms of significant respiratory distress
- Adequate oral hydration
- Greater than 4-6 hours since last racemic epinephrine
- No oxygen requirement for several hours
- Appropriate follow up for the child in the outpatient setting
Croup

References:
17. Croup Clinical Pathways Referenced: Children’s Hospital of Colorado, Phoenix Children’s Hospital, Seattle Children’s Hospital, Children’s Hospital of Philadelphia