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
- Poor response to racemic epinephrine
- 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 in last 30 days, three in 1 year.

Croup Severity Score

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

**Hospital Admission Criteria:**

- Persistent stridor at rest AND any of the following symptoms: prominent retractions, tachypnea, agitation/restlessness, fatigue, difficulty feeding
- Significant symptoms after receiving 2 or more doses of racemic epinephrine, with interval period of observation, with return of stridor at rest (or significant symptoms)
- Hypoxemia < 90% on room air
- Inability to tolerate fluids

**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.

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**Severity Score Table**

<table>
<thead>
<tr>
<th>Mild Croup</th>
<th>Moderate Croup</th>
<th>Severe Croup</th>
<th>Impending Respiratory Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score &lt;2</td>
<td>Score 3 to 7</td>
<td>Score 8 to 11</td>
<td>Score &gt;12</td>
</tr>
</tbody>
</table>

- Single dose of PO/IM/IV dexamethasone 0.3-0.6mg/kg (MAXIMUM dose 16mg)
- *Multiple studies have shown mild croup can be treated with lower dosing of dexamethasone.

**Education regarding illness course, concerning symptoms and when to seek medical assessment.**

<table>
<thead>
<tr>
<th>Mild Croup</th>
<th>Moderate Croup</th>
<th>Severe Croup</th>
<th>Impending Respiratory Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place child in position of comfort *</td>
<td>Place child in position of comfort *</td>
<td>Place child in position of comfort.*</td>
<td>O2 via NC or mask should be administered. <strong>Hypoxemia is rare in croup and should be as a sign of impending respiratory failure.</strong> Give racemic epi neb (2.25% or 0.5ml in 2.5mL of saline).</td>
</tr>
</tbody>
</table>

**Home treatment:**

- May consider trial of racemic epinephrine (2.25% or 0.5ml in 2.5mL of saline). If racemic epi given, minimum 2 hour observation
- Repeated doses of nebulized racemic epinephrine may be needed
- Nebulized racemic epinephrine repeated doses as needed.

**Discharge home with follow up in 24-48hrs**

- Hospitalization is generally not needed, but may be warranted for persistent or worsening symptoms or if repeated doses of racemic epinephrine are needed.
- Hospital admission is warranted if < 2 hours between racemic epi nebulizers, oxygen requirement or stridor at rest.
- Contact pediatric ICU or Anesthesiology for airway stabilization and for further management. Call for transfer to tertiary care facility. Update Pediatric ENT for assistance with further management.

*Place child in parents lap during exam, minimize agitation and intervention including IV, blood draws, etc. Involve parents in placing exam, placing nasal cannula and in giving medications. Involve Child Life specialist for distractions if available.

https://www.advocatechildrenshospital.com/healthcare-professionals/peds-pathways
Croup

ENT Consultation Criteria

- ENT Inpatient Consultation for direct laryngoscopy/bronchoscopy or bedside flexible laryngoscopy if history of intubation, recurrent episodes outside normal age range (<6 months, >6 years), concern for airway anomalies, atopy or GERD.
- Consider consultation if fail to improve after 36 hours of receiving 1<sup>st</sup> steroid dose, racemic epinephrine and observation.

Discharge Criteria:

- Minimal stridor at rest. No signs or symptoms of significant respiratory distress
- Adequate oral hydration
- Over 2 hours since last racemic epinephrine
- No oxygen requirement for several hours
- Appropriate follow up for the child in the outpatient setting

References:

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