Emergency Department Guideline
Croup

Inclusion criteria:
- Hoarseness
- Barky Cough
- Inspiratory Stridor
- Non Toxic Appearance
- Common Age Group 6m-6y (others as appropriate)

Triage considerations:
- If severe stridor or retractions at rest, cyanotic/pale, hypoxic, obtunded or lethargic notify ED physician and transfer patient to resuscitation room and start immediate airway management, humidified oxygen, epinephrine
- If stridor or significant retractions at rest notify ED physician of patient arrival and start racemic epinephrine
- Calculate and document Croup Score before first racemic epinephrine neb and after each racemic epinephrine neb
- Contact Isolation Precautions
- Vitals, Weight, Temperature, Continuous O2 sat
- Humidified O2 to keep O2 > 92%
- NPO if respiratory rate > 60

Laboratory studies:
- Rarely indicated
- In critical illness, consider VBG

Imaging:
- Rarely indicated
- Consider CXR or neck plain films if concern for foreign body, other obstruction

Medications/interventions:
- Dexamethasone (all patients, mild to severe)
  - 0.6 mg/kg PO (preferred), IM, or IV; max 12 mg
  - May give IV form orally for improved palatability

**Croup Score**

<table>
<thead>
<tr>
<th>Stridor</th>
<th>Retraction</th>
<th>Air Entry</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = None</td>
<td>0 = None</td>
<td>0 = Normal</td>
<td>0 = Normal</td>
</tr>
<tr>
<td>1 = Only with Agitation</td>
<td>1 = Mild</td>
<td>1 = Mild Decrease</td>
<td>3 = Cyanosis</td>
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<tr>
<td>2 = Mild at Rest</td>
<td>2 = Moderate</td>
<td>2 = Moderate Decrease</td>
<td></td>
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<tr>
<td>3 = Severe</td>
<td>3 = Severe</td>
<td>3 = Marked Decrease</td>
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</tbody>
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Mild <5
Moderate 5-7
Severe 8+
• Nebulized racemic epinephrine – use in stridor at rest and/or croup score ≥ 5
  o 2.25% solution, 0.05 ml/kg/dose, max 0.5 ml, diluted to 3 ml in normal saline
  o Use caution in tetralogy of fallot, ventricular outlet obstructions, or tachycardia
  o Observe for at least 2 hours after dose given (see discharge criteria)
• Heliox
  o Consider 70-80% heliox if ongoing distress not improving with racemic epi alone; data are mixed. Arrange transfer to intensive care.
• If endotracheal intubation required:
  o ENT consult if available
  o Use ETT ½ - 1 size smaller than age-based estimate

Consultations:
• ENT in severe or atypical croup

Reassessments:
• Repeat croup score after nebulized therapy, and q1h during observation
• Continuous pulse ox

Differential diagnosis:
• Epiglottitis
• Bacterial Tracheitis
• Foreign Body
• Trauma
• Growth (abscess, tumor, vascular, etc.)
• Allergic Reaction
• Spasmodic Croup
• Airway Anomaly
• Acute Angioedema
• Laryngeal Diphtheria

Discharge or Admission criteria:
• Discharge to home
  o No stridor at rest
  o Minimal or no retractions
  o Pulse ox ≥ 93% on RA
  o Tolerating PO intake
  o Reliable caretaker, able to return if necessary
  o Required 0 or 1 racemic epi neb in ED
  o If received racemic epi, observe for at least 2 hours prior to discharge
• Admit to inpatient floor
  o Recurrence of stridor within 2 hour observation period, requiring second dose of racemic epi
  o Ongoing stridor at rest or other distress not improving with racemic epi
  o Poor PO intake/dehydration
  o Concerns about caretaker’s ability to assess situation or return if needed
  o Strongly consider in age < 6 months
• Admit to PICU
  o Severe croup poorly responsive to racemic epi
  o Worsening condition despite epi and dexamethasone
  o Use of heliox
  o Signs of impending respiratory failure, including declining consciousness, severe distress, desaturation

Quality measures:
• Moderate to severe croup (croup score ≥ 5): administration of racemic epi and dexamethasone in first 10 minutes after arrival to ED
• If racemic epi is given, observation period of at least 2 hours with documented reassessment
This UMMCH Guideline addresses only key points of care for the specific population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Guideline does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgments regarding the priority of any specific procedure or course of action.

Croup
Division of Pediatric Emergency Medicine
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