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
Stridor
0 = None
1 = Audible with stethoscope (at rest)
2 = Audible without stethoscope (at rest)

Retraction:
0 = None
1 = Mild
2 = Moderate
3 = Severe

Air Entry:
0 = Normal
1 = Decreased
2 = Severely decreased

Cyanosis:
0 = None
4 = With agitation
5 = At rest

Level of consciousness:
0 = Normal
5 = Altered

Mild ≤ 2
Moderate 3-7
Severe 8+
- Nebulized racemic epinephrine – use in stridor at rest and/or croup score ≥ 3
  - 2.25% solution, 0.05 ml/kg/dose, max 0.5 ml, diluted to 3 ml in normal saline
  - Use caution in tetralogy of fallot, ventricular outlet obstructions, or tachycardia
  - Observe for at least 2 hours after dose given (see discharge criteria)
- Heliox
  - 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:
  - ENT consult if available
  - 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
  - No stridor at rest
  - Minimal or no retractions
  - Pulse ox ≥ 93% on RA
  - Tolerating PO intake
  - Reliable caretaker, able to return if necessary
  - Required 0 or 1 racemic epi neb in ED
  - If received racemic epi, observe for at least 2 hours prior to discharge
- Admit to inpatient floor
  - Recurrence of stridor within 2 hour observation period, requiring second dose of racemic epi
  - Ongoing stridor at rest or other distress not improving with racemic epi
  - Poor PO intake/dehydration
  - Concerns about caretaker’s ability to assess situation or return if needed
  - 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 ≥ 3): 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
Pt. with:
- Hoarseness
- Barky Cough
- Stridor
- Non-toxic appearance
- Most 6 mo-6yrs

Triage:
Severe respiratory distress or other critical illness

Stridor at rest noted at any time

- Racemic epi neb
- Decadron
- Notify MD

MD H&P

Stridor at rest or croup score ≥ 3

History consistent with croup, no stridor at rest or other signs of distress

- Consider alternative diagnoses

No

Observe in ED for at least 2 hours. Stridor at rest recurs?

- Discharge if criteria met

No

- 2nd racemic epi neb
- Admit to hospital
- Consider PICU if severe distress, poor response to epi

Yes

- Racemic epi neb
- Decadron
- Notify MD

Disposition
PICU if:
- Intubated
- Poor response to epi nebs with ongoing distress
- Using heliox
- Other critical illness or instability

Inpatient if:
- Requires 2 or more epi nebs
- Inability to maintain hydration
- Concerns about family ability to return if worsening

Disposition
Discharge if:
- Mild croup with no racemic epi required or
- Good response to one epi neb, no recurrence in 2 hours
- Pulse ox ≥93%
- No stridor at rest
- Minimal or no retractions
- Maintaining hydration
- Family able to return if symptoms worsen