Croup (ED) Management Pathway

Evidence Based Outcome Center

EXCLUSION CRITERIA

Toxic appearance
Symptoms or history suggestive of an alternate diagnosis
Known upper airway abnormalities
Hypotonia or neuromuscular disorder
Complex medical co-morbidities

GUIDELINE INCLUSION CRITERIA

- Age 6 months to 6 years
- Previously healthy patient presenting with signs/symptoms consistent with viral croup
  - Barky cough
  - Hoarse voice
  - Stridor
  - Moderate respiratory distress

No → Manage off pathway

Evaluate patient history and Differential Diagnosis [3]
Routine radiographs are NOT indicated (exceptions) [2]
Serum workup is NOT indicated for viral croup
Minimize patient agitation as this may worsen respiratory distress

Assess respiratory status/Severity

Mild Croup
(Westley croup score ≤2)
- *Occasional barky cough*
- *No audible stridor at rest*
- *No to mild coarse stridor*
- *Stridor only during activity*

Moderate/Severe Croup
(Westley croup score 3 to ≥8)
- *Frequent barky cough*
- *Mild-severe retractions*
- *Audible stridor at rest*
- *Fussy – inconsolable*

Signs of Impending Respiratory Failure
(Westley croup score ≥12)
- *Hypoxemia/cyanosis*
- *Listless*
- *Poor aeration*
- *Stridor decreased or absent*
- *Severe stridor*
- *Abnormal mental status/confused*

- Consider Heliox
- Administer racemic epinephrine or L-epinephrine via nebulizer
- Consider IM epi 1:1000 0.1mg/kg up to 0.5mg*
- Give single dose of **dexamethasone** IV or IM
- If concern for impending respiratory failure, consult anesthesia and prepare for intubation
- Admit/transfer to PICU

(*Consider IM when severe respiratory distress obstructs adequate inhalation of nebulized medication)

Dexamethasone
0.6 mg/kg PO x 1 dose (max 16mg)

Improved Response? → No

- Minimize agitation during eval/treatment
- Administer **dexamethasone** orally (if able), or IV (if patient has IV access), or IM
- Give **racemic epinephrine** or L-epinephrine (if stridor observed at rest)
- Observe patient in the ED for 2 hours

Stridor at rest improved response after 30 minutes?
Yes → Patient meets discharge Criteria?
No → Repeat dose of nebulized racemic epinephrine
- Observe patient in the ED for 2 hours

Stridor at rest improved response?
Yes → Patient meets discharge Criteria?
No → Consider hospital admission if:
- Repeated doses of racemic epinephrine are needed for respiratory distress
- Continue moderate respiratory distress
  - Stridor at rest
  - Signs of excessive work of breathing
- If patient has recurrent episodes of agitation or lethargy contact PICU

Improved Response? → Yes
Patient meets discharge Criteria? → Yes → Discharge [1]
Patient meets discharge Criteria? → No → Reassess for further care

Discharge Criteria:
- Child has no symptoms or signs of moderate or severe airway obstruction
- No stridor at rest, intercostal retraction or other signs of increased work of breathing
- Noticeable improvement after at least 2 hours of observation after 1 dose of dexamethasone
- No other indications for hospitalization [1]

Medication Dosages:
- Dexamethasone 0.6 mg/kg oral or IM (maximum 16 mg)
- Racemic epinephrine 2.24%, 0.05mL/kg) (max 0.5 mL) in 3 mL NS via nebulizer

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Imaging for Croup: (Exceptions)
Radiographic confirmation of acute laryngotracheitis is not required in the vast majority of children with croup. Radiographic evaluation of the chest and/or upper trachea is indicated if:
- The course is atypical and/or the diagnosis is in question
- The child has severe symptoms and does not respond as expected to therapeutic interventions
- There is suspicion for an inhaled or swallowed foreign body
- The child has recurrent episodes of croup

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Differential Diagnosis of stridor:
- Angioedema
- Bacterial tracheitis is suspect if high fever, toxic appearance and poor response to epinephrine.
- Epiglottitis is suspect if sudden onset of symptoms with high fever, absence of 'bark cough', dysphagia, drooling, anxious in appearance and sitting forward.
- Consider other causes of stridor:
- Foreign body aspiration
- Retropharyngeal or peritonsillar abscess
- Laryngomalacia/ Tracheomalacia
- Peritonsillar, parapharyngeal or retropharyngeal abscess - may present with fever, drooling, neck stiffness lymphadenopathy, and varying degrees of toxicity. Barking cough is usually absent.
- Spasmodic croup (recurrent croup)
- Congenital anomalie of the upper airway (laryngeal webs, laryngomalacia, congenital subglottic stenosis, subglottic hemangioma, bronchogenic cyst, laryngea papillomas, and vocal cord paralysis)
- Anaphylaxis
- Upper airway injury - usually no fever or a viral prodrome.

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The following tests and treatments are NOT routinely indicated if the suspicion for a diagnosis of croup is strong:
- Viral testing
- Chest or lateral neck x-rays
- Antibiotics
- Albuterol
- Prednisolone (Dexamethasone preferred)
- Inhaled corticosteroids
- Cool mist humidification

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Addendum 1: Clinical Scoring System

Table 1: Westley Croup Score (Clinical Scoring System)		Score
Stridor		
	None	0
	Audible with a stethoscope (at rest)	1
	Audible without stethoscope (at rest)	2
Retractions		
	None	0
	Mild	1
	Moderate	2
	Severe	3
Air entry		
	Normal	0
	Decreased	1
	Severely decreased	2
Cyanosis		
	None	0
	With agitation	4
	At rest	5
Level of Consciousness		
	Normal	0
	Altered	5
Total Score:		

Score	Severity	Description
0 to 2	Mild	Occasional barky cough, no stridor at rest, mild or no retractions
3 to 7	Moderate	Frequent barky cough, stridor at rest, and mild to moderate retractions but no or little distress or agitation
8 to 11	Severe	Frequent barky cough, stridor at rest, marked retractions, significant distress, and agitation
12 to 17	Impending Respiratory failure	Depressed level of consciousness, stridor at rest, severe retractions, poor air entry, cyanosis, or pallor

Westley CR, Cotton EK, Brooks JG. Nebulized racemic epinephrine by IPPB for the treatment of croup: a double-blind study. Am J Dis Child 1978; 132:484.

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