BOTTOM LINE RECOMMENDATIONS

Croup

Croup is the most common cause of upper airway obstruction in children. It is characterized by acute onset of barky cough +/- stridor. The typical age of presentation is between 6 months and 5 years with a peak around 2 years. Consider other causes of upper airway obstruction such as bacterial tracheitis, epiglottitis and retropharyngeal abscess in children presenting with severe symptoms and a transient or lack of response to croup treatment.

- » X-rays are rarely necessary to confirm the diagnosis of croup.
- » Because croup symptoms are triggered by a viral infection, antibiotics are **not** effective.
- » A single dose of **dexamethasone** 0.15 to 0.6 mg/kg (MAX 12 mg/dose) PO should be given to **ALL** children who present to the emergency department (ED) with croup.
- » Minimize interaction and place the child in a position of comfort (e.g., caregiver's lap), as agitation can precipitate significant respiratory distress.

Assessment & management

Severity*	Clinical signs	Management
Mild (Westley Croup Score ≤2)	No inspiratory stridor at rest, no indrawing	Discharge home after a single dose of PO dexamethasone without observation.
Moderate (Westley Croup Score 3-4)	Inspiratory stridor at rest and mild to moderate indrawing, no desaturation	Observe after a single dose of PO dexamethasone until stridor at rest and indrawing resolve (usually 2-4 hours).
Severe (Westley Croup Score 5-7)	Stridor (often biphasic), severe chest wall indrawing, agitation, desaturation	• Treat with epinephrine 5 mg by nebulization (using 1 mg/mL injectable formulation) **AND** dexamethasone PO (dosed as above)**.** • Repeat doses of nebulized epinephrine may be required in severe croup. • Observe children treated with nebulized epinephrine for a minimum of **2 hours** before discharge home.
Impending Respiratory Failure (Westley Croup Score ≥8)	Severe symptoms PLUS altered level of consciousness (LOC), marked decreased air entry, cyanosis	• Treat with nebulized epinephrine Q15 min PRN (dosed as above). • Dexamethasone may be given IM/IV if altered LOC; same dose as PO above. • If LOC, air entry and/or cyanosis do not improve after 3 doses of nebulized epinephrine, then activate difficult airway team OR clinician with the most pediatric airway experience (e.g., ENT, anesthesia, pediatrics) for possible advanced airway. • Consider alternate diagnoses such as bacterial tracheitis, epiglottitis or retropharyngeal abscess. • There is currently not enough evidence to support the routine use of Heliox in croup.[1] A trial of Heliox *may* be considered in the setting of impending respiratory failure but should not delay other more proven life-saving treatments. • Contact PICU/Pediatric Referral Centre/Transport Team

*Severity can be determined based on clinical signs or by using the Westley Croup Score

Croup

Criteria for safe discharge home

» Absence of inspiratory stridor at rest and signs of respiratory distress (suprasternal, intercostal and/or chest wall indrawing).
» Caregiver is able to bring child back to the ED if there is any clinical deterioration.
» Provide reassurance and croup education for caregiver, including return to ED instructions. A child in respiratory distress is very scary for both the patient and the caregiver.
» Croup resources to share with caregivers can be found in the Parent and Family section of the TREKK website.

Criteria for hospital admission

» Persistence of stridor at rest and signs of respiratory distress **≥4 hours** after treatment with dexamethasone and repeated doses of nebulized epinephrine.
» Social or logistical concerns exist that might prevent return to the ED if needed.
» Contact Pediatrics/Pediatric Referral Centre.

Criteria for transfer to PICU

» Persistent severe croup [stridor (often biphasic), severe indrawing, agitation, and/or hypoxia] despite treatment with dexamethasone and two doses of nebulized epinephrine OR impending respiratory failure at any time.
» Contact PICU/Pediatric Referral Centre/Transport Team

For a full list of references and development team members, please see the following page.

Bottom Line Recommendations

Bottom Line Recommendations are short summaries for healthcare providers of the latest knowledge related to the diagnosis and management of pediatric emergency conditions. This resource is not intended to be used as a step-by-step guide. It is ideal for educational purposes and to summarize existing evidence on croup in pediatric emergency care. Development of this resource involved a rigorous and iterative process, bringing together experts from a variety of specialties (nursing, simulation, emergency medicine, intensive care, and pharmacy). To learn more about the development, see the References & Development Team section below.

References

1. Aregbesola A, Tam CM, Kothari A, et al. Glucocorticoids for croup in children. Cochrane Database Syst Rev. 2023;1:Cd001955.
2. Alberta Medical Association. Diagnosis and Management of Croup, Summary of the Alberta Clinical Practice Guideline. Update 2014.
3. Bjornson et al. The Cochrane Library and the Treatment of Croup in Children: An Overview of Reviews. Evidence-based Child Health 2012; 5:1555-65

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To see our resource development process please visit our website here.

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