



Evidence-Based Clinical Pathway: Treatment of Croup

Pathway Applicability

Suspected diagnosis of croup:

Age 6 months to 6 years, peak at 2 years

Late fall to early spring

Barky cough, hoarseness, high pitched inspiratory stridor

Consider alternative diagnoses:

Airway foreign body

Allergic reaction

Bacterial Tracheitis

Subglottic stenosis

Epiglottitis

Peritonsillar abscess

Retropharyngeal abscess

Diagnosis of
croup is likely

Yes

No

Assess severity of illness

Mild croup:

- Stridor when agitated/crying
- No tachypnea
- No retractions
- No mental status changes

Moderate croup:

- Stridor at rest
- Mild tachypnea
- Mild retractions
- No mental status changes

Severe croup:

- Severe stridor at rest
- Marked retractions
- Hypoxia
- Agitation/distress
- +/- Mental status changes

Administer dexamethasone
0.15-0.3 mg/kg, PO or IM x 1

Discharge home if no
stridor at rest, well
hydrated, taking and
tolerating PO

No

Symptoms
persist?

Yes

Repeat epinephrine neb, admit if
symptoms persist or > 2 nebs given

Administer dexamethasone
0.3-0.6 mg/kg, PO or IM x 1
AND
Nebulized epinephrine
0.05 mL/kg racemic
epinephrine 2.25% (max 0.5
mL)
OR
0.5 mL/kg L-epinephrine
1:1000 (max 5 mL)

Observe in ED for 2-4 hours

Administer supplemental
oxygen if needed

Administer dexamethasone
0.6 mg/kg, IM x 1
AND
Nebulized epinephrine
0.05 mL/kg racemic
epinephrine 2.25% (max 0.5
mL)
OR
0.5 mL/kg L-epinephrine
1:1000 (max 5 mL)
Repeat as needed Q1H

Admit to hospital
PICU for continued severe symptoms
**If intubation required, ETT at least
0.5 smaller than expected based on
child's size often required**

Clinical considerations:

- Proper dose and maximum dose for dexamethasone is not well defined. Consider lower doses for mild cases and higher doses for more severe cases. Maximum dose varies in literature but 8-12 mg is most common
- Clinical benefit to steroids should be evident by six hours post administration

Evidence

- IM dosing equivalent to PO for moderate croup
Rittichier KK, Ledwith CA. Outpatient treatment of moderate croup with dexamethasone: intramuscular versus oral dosing *Pediatrics* 2000 Dec;106(6):1344-8.
<http://www.ncbi.nlm.nih.gov/pubmed/11099587>
- IM dosing equivalent to PO for moderate to severe croup
Donaldson D, Poleski D, et al. Intramuscular versus oral dexamethasone for the treatment of moderate-to-severe croup: a randomized, double-blind trial. *Acad Emerg Med* 2003 Jan;10(1):16-21
<http://www.ncbi.nlm.nih.gov/pubmed/12511310>
- Glucocorticoids beneficial in croup
Russell KF, Liang Y, et al. Glucocorticoids for croup. *Cochrane Database Syst Rev.* 2011 Jan 19;(1):CD001955
<http://www.ncbi.nlm.nih.gov/pubmed/21249651>
- Dexamethasone dosing
Geelhoed GC, Macdonald WB. Oral Dexamethasone in the Treatment of Croup: 0.15 mg/kg Versus 0.3 mg/kg Versus 0.6 mg/kg. *Pediatr Pulmonol* 1995 Dec;20(6):362-8.
<http://www.ncbi.nlm.nih.gov/pubmed/8649915>
- General References
Petrocheilou A, Kalliopi T. Viral croup: diagnosis and a treatment algorithm. *Pediatr Pulmonol* 2014 May;49(5):421-9
<http://www.ncbi.nlm.nih.gov/pubmed/24596395>

Zoorob R, Sidani M, Murray J. Croup: an overview. *Am Fam Physician.* 2011 May 1;83(9):1067-73.
<http://www.ncbi.nlm.nih.gov/pubmed/21534520>

Bjornson C, et al. Nebulized epinephrine for croup in children. *Cochrane Database Syst Rev.* 2013 Oct 10;10:CD006619
<http://www.ncbi.nlm.nih.gov/pubmed/24114291>

Gunn JD, III. Stridor and Drooling. In: Tintinalli JE, Stapczynski J, Ma O, Cline DM, Cydulka RK, Meckler GD, T. eds. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide.* New York, NY: McGraw-Hill; 2011