

# Clinical Pathway

## Croup

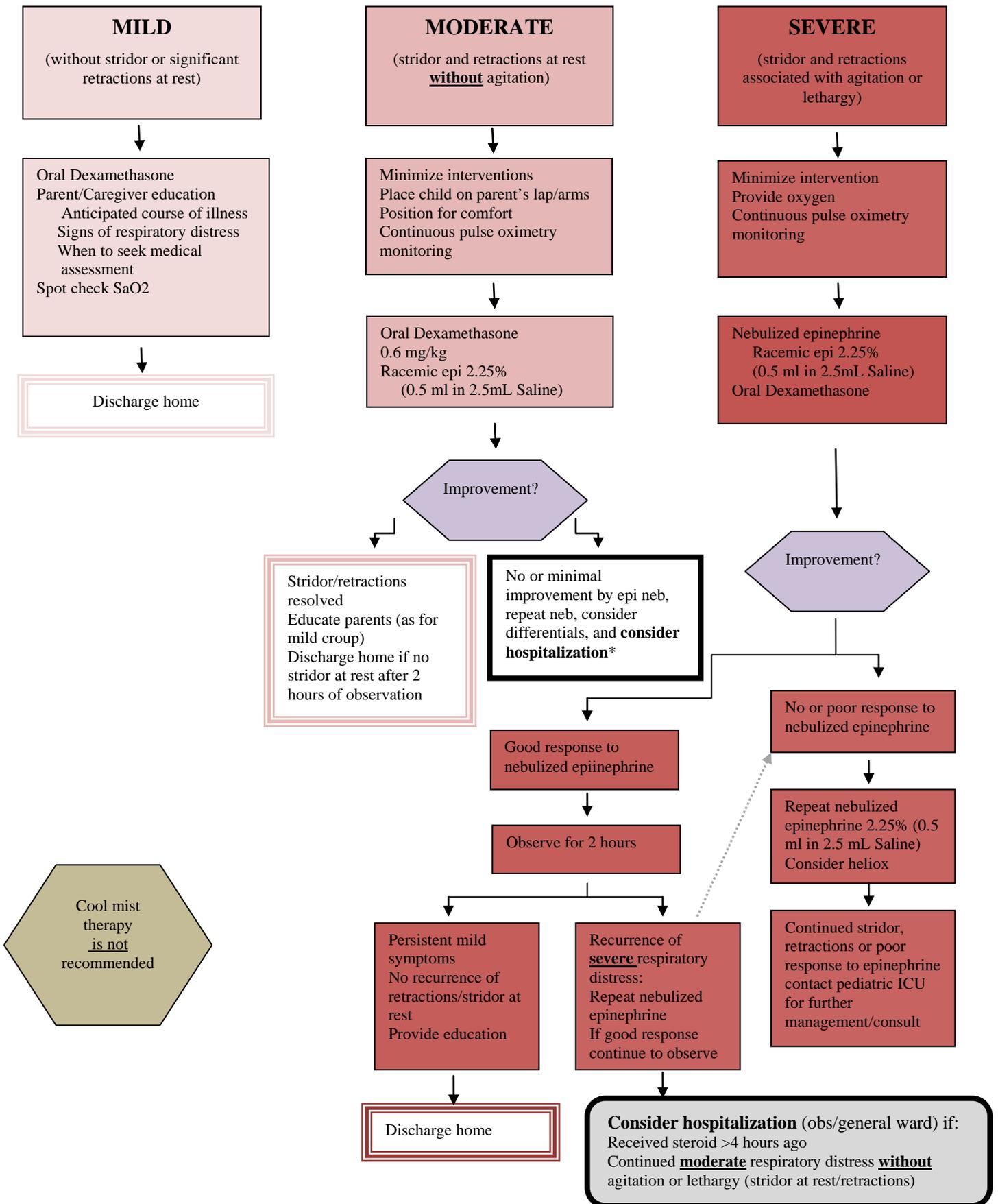
Updated: December 2012

<b>Outcomes/Goals</b>	<ol style="list-style-type: none"> <li>1. Identification and treatment of pediatric patients with croup</li> <li>2. Create a team-oriented approach to treatment and care</li> <li>3. Identify and distinguish mild, moderate and severe croup and prevent impending respiratory failure</li> </ol>			
<b>NURSE</b> Documentation	Chief complaint. Onset of symptoms, alleviating/contributing factors, appearance, lung sounds, work of breathing, retractions, pulses, skin temperature/fever. Assess for possibility of FB.			
<b>INTERVENTIONS</b> Initiate on arrival	<p>Full set of vitals per standard of care. Minimize interventions for moderate and severe croup (see algorithm)</p> <p>Determine severity of exacerbation *</p> <p>Continuous pulse oximetry for moderate and severe croup. Spot check SaO2 for mild croup.</p> <p>Initiate oral Dexamethasone for mild and moderate severity.</p> <p>oxygen if cyanosis or SaO2 &lt;93% present</p> <p>Racemic epi for stridor at rest – Use mask for neb delivery if severe symptoms</p> <p>Mist therapy (saline nebs) not recommended for any severity category</p>			
<b>DIAGNOSTICS</b>	<p>Consult with LIP for indications before ordering. May include:</p> <ul style="list-style-type: none"> <li>• Chest x-ray</li> <li>• Soft tissue neck x-ray</li> </ul>			
<b>PHYSICIAN (LIP)</b>				
Medication Steroids	Oral Dexamethasone 0.6 mg/kg (parental if not able to tolerate po safely) *Maximum dose 10mg			
Inhalation therapy <u>(for stridor at rest)</u>	<p>Nebulized racemic epinephrine 2.25% (0.5 ml in 2.5 ml Saline)</p> <ul style="list-style-type: none"> <li>• May repeat racemic epinephrine x 1. If 3<sup>rd</sup> dose needed consider differentials and inpatient admission.</li> <li>• If continued racemic needed consider heliox</li> </ul>			
Rehydration	Evaluate/encourage oral rehydration as appropriate for mild croup NPO for moderate/severe croup until persistent mild symptoms			
Radiology	Consider imaging to exclude alternate diagnoses for all children that receive racemic epi , do not respond to treatment, or present with high fever			
<b>ADMISSION</b>	<p>Call primary care physician</p> <p>Call peds ward/PICU attending</p> <p>Prepare family/infant for admission to OBS, PICU or ward as appropriate</p>			
<b>Severity Assessment*</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>	<b>Impending Respiratory Failure</b>
	Occasional barky cough, no audible stridor at rest and no to mild suprasternal and /or intercostals retractions	Frequent barky cough, easily audible stridor at rest, suprasternal and sterna wall retraction at rest but little or no distress or agitation	Frequent barky cough, prominent inspiratory and occasionally expiratory stridor, marked sterna retractions, significant distress and agitation	Change in mental status Fatigue Listlessness <u>Agitation</u> Pallor Dusky appearance Decreased retractions Decreased breath sounds with decreasing stridor

# Clinical Pathway Decision Making Process

## Croup

Updated: December 2012



# Croup Rationale and Data

## Goals of Clinical Pathway

1. Identification and treatment of pediatric patients with croup
2. Create a team-oriented approach to treatment and care
3. Identify and distinguish mild, moderate and severe croup and prevent impending respiratory failure

Data Considerations	Interventions	Rationale
Steroids	Dexamethasone	Single dose oral Dexamethasone is indicated in all children diagnosed to have croup including those with only a barking cough without any other signs of respiratory distress (Ausejo, Bjornson 2006) Dexamethasone may be administered orally in all but those children with very severe croup, is rapidly absorbed with less than 5% of children vomiting the drug (Klassen, Duggan)
Diagnosics	Lab and radiology	Laboratory and radiological assessments are not necessary to make the diagnosis of croup. Reliable diagnosis can be made by clinical presentation in combination with a thorough history and physical exam. Viral cultures or rapid antigen tests do not aid in routine management of patients and add unnecessary and potentially counterproductive additional stimulus. Radiological assessment may be helpful for ruling out FB, bacterial tracheitis, or retropharyngeal abscess for moderate and severe symptoms that do not respond to treatment (Chin 2002)
Monitoring	Pulse Oximetry Observation	Pulse oximetry is indicated in children with moderate to severe croup. Continuous monitoring is not essential in patients with mild croup (Margolis, Newth, Chin 2002) Children should not be discharged with less than 2 hours of observation following administration of epinephrine (Westley, Corneli, Ausejo, Rizos, Kunkel, Kelley)

## Differential Diagnosis considerations

**Bacterial tracheitis:** High fever, toxic appearance and poor response to epinephrine

**Epiglottitis:** Sudden onset, high fever, absence of barking cough, dysphagia, drooling, anxious appearance, sniffing position

**Foreign body, retropharyngeal abscess and hereditary angioedema:** less common but additional causes of stridor which should be considered

## Indications for Admission

<u>Absolute</u>	<u>Relative</u>
<ul style="list-style-type: none"> <li>• Significant respiratory compromise persisting 4 or more hours after treatment with corticosteroids</li> <li>• Continued audible stridor at rest following treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate access to medical care (lives long distance from hospital, transportation concerns)</li> <li>• Concerns for inadequate observation or follow-up</li> <li>• Significant parental anxiety</li> <li>• Recurrent ED visit within 24 hours</li> </ul>

## Criteria for Discharge from ED (Chin, Wegener 2002)

- Presence of mild symptoms either on initial evaluation or after a period of observation
- Recommended 2 hours of observation (or provider discretion) following administration of epinephrine
- Reliability of parents/caregivers to return/seek medical care if respiratory distress recurs at home

## Croup Severity Assessment

MILD	MODERATE	SEVERE	Impending Respiratory Failure
Occasional barking cough <b>no</b> audible stridor <b>at rest</b> no to mild suprasternal and /or intercostals retractions	Frequent barking cough easily audible stridor <b>at rest</b> suprasternal and sternal wall retraction at rest <b>little or no</b> distress or agitation	Frequent barking cough prominent inspiratory and occasionally expiratory stridor marked sterna retractions significant distress and agitation	Change in mental status Fatigue Listlessness Pallor Dusky appearance Decreased retractions Decreased breath sounds with decreasing stridor