RECOMMENDATIONS

DIAGNOSIS

- ✓ Diagnose based on history and physical examination (Clinical features include: a seal-like barky cough, hoarseness, and often include fever, irritability, stridor and cheat wall indrawing of varying severity. Children with coup should not drool or appear toxic)
- X Laboratory and radiological assessment are not routinely required
- ✓ Consider differential diagnoses:
  - Bachterial tracheitis if high fever, toxic appearance, and poor response to epinephrine
  - Epiglottitis if sudden onset of symptoms with high fever, absence of barky cough, dysphagia, drooling, anxious appearance and sitting forward in 'sniffing position'
  - Other causes of stridor: foreign body lodged in upper esophagus, retropharyngeal abcess, and hereditary angioedema

MANAGEMENT (SEE ALGORITHM: CROUP IN THE OUT-PATIENT SETTING AND TABLE 1)

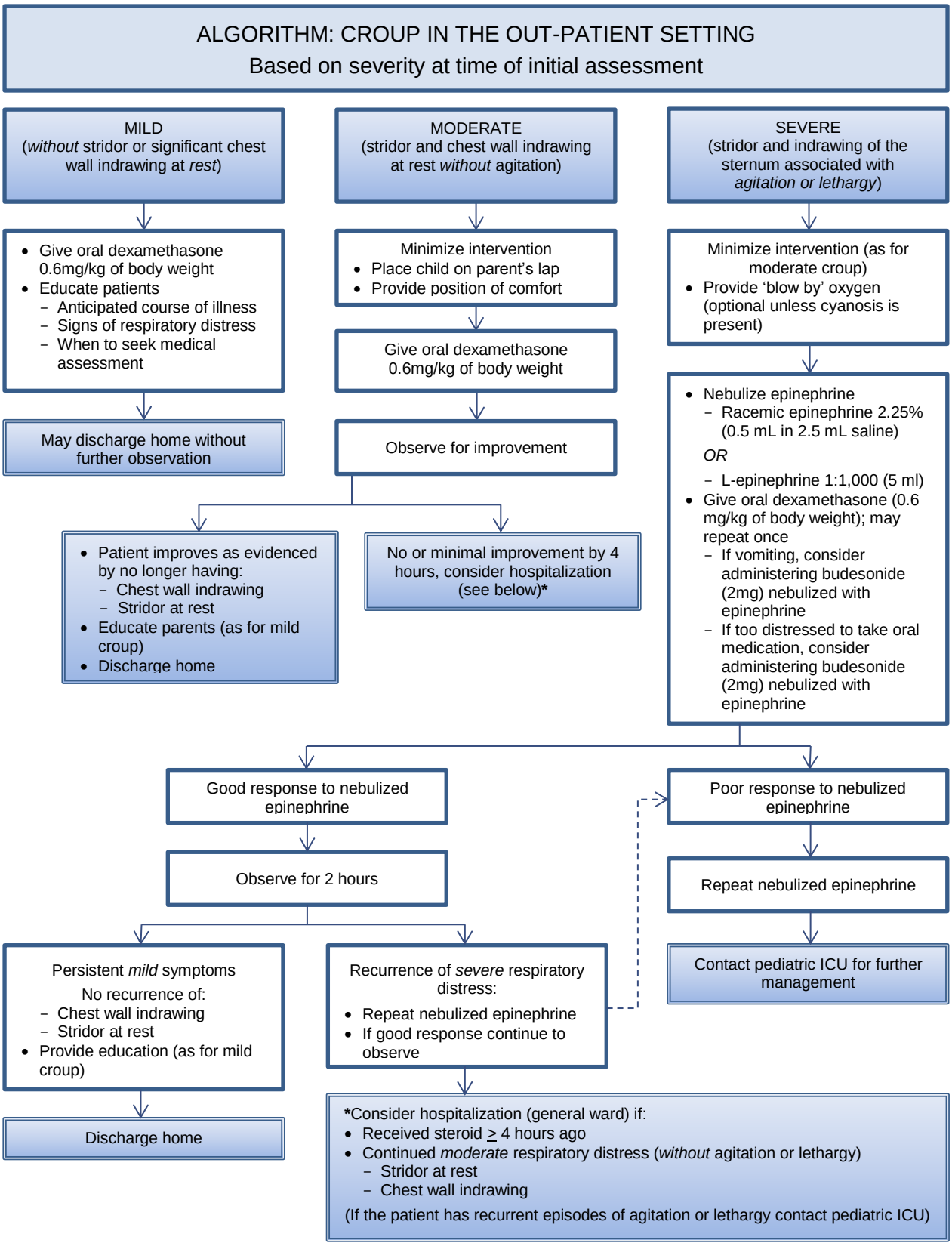
Drug Category	Dose and Duration	Comments
Adrenergic Agonist • Epinephrine	• Racemic epinephrine 0.5 mL of 2.25% solution diluted in 2.5 mL of NS or sterile water via nebulizer • L Epinephrine 1:1,000 solution 5 ml via nebulizer • May be repeated back to back in children with severe respiratory distress	• Racemic epinephrine and L Epinephrine are equivalent in terms of effect and safety • Racemic epinephrine is no longer readily available in North America • The duration of effect of epinephrine does not exceed two hours. This patient should not be discharged from medical care for at least two hours after receiving a dose of epinephrine. • In a child with persistent vomiting, nebulized budesonide may be combined and administered simultaneously with epinephrine

Corticosteroids
• Dexamethasone
	• 0.6 mg/kg PO/IM once
	• May repeat dose in six to 24 hours
		• Oral dexamethasone is well-absorbed and achieves peak serum concentrations as rapidly as with intramuscular administration (without pain!)
		• Several controlled trials suggest oral and intramuscular administration yield equivalent results
		• Experience suggests clinical improvement will begin as early as two to three hours after treatment
		• Lower dose (0.15 mg/kgPO/IM) may be considered
		• No evidence to suggest multiple doses provide additional benefit over a single dose
		• Reduces:
		  ○ Rate & duration of intubation
		  ○ Rate & duration hospitalization
		  ○ Rate of return to medical care
		  ○ Duration of symptoms in children with mild, moderate and severe symptoms

• Budesonide	• 0.6 mg/kg PO/IM once • May repeat dose in six to 24 hours	• In the vast majority of cases, budesonide offers no advantages over dexamethasone and is substantially more expensive • May be useful in patients with vomiting, severe respiratory distress; budesonide and epinephrine can be administered simultaneously

Table 1: Pharmacology

ALGORITHM


ALGORITHM: CROUP IN THE OUT-PATIENT SETTING
Based on severity at time of initial assessment
MILD (*without* stridor or significant chest wall indrawing at *rest*)
MODERATE (stridor and chest wall indrawing at rest *without* agitation)
SEVERE (stridor and indrawing of the sternum associated with *agitation or lethargy*)
• Give oral dexamethasone 0.6mg/kg of body weight
• Educate patients
– Anticipated course of illness
– Signs of respiratory distress
– When to seek medical assessment
May discharge home without further observation
Minimize intervention
• Place child on parent's lap
• Provide position of comfort
Give oral dexamethasone 0.6mg/kg of body weight
Observe for improvement
• Patient improves as evidenced by no longer having:
– Chest wall indrawing
– Stridor at rest
• Educate parents (as for mild croup)
• Discharge home
No or minimal improvement by 4 hours, consider hospitalization (see below)*
Minimize intervention (as for moderate croup)
• Provide 'blow by' oxygen (optional unless cyanosis is present)
• Nebulize epinephrine
– Racemic epinephrine 2.25% (0.5 mL in 2.5 mL saline)
OR
– L-epinephrine 1:1,000 (5 ml)
• Give oral dexamethasone (0.6 mg/kg of body weight); may repeat once
– If vomiting, consider administering budesonide (2mg) nebulized with epinephrine
– If too distressed to take oral medication, consider administering budesonide (2mg) nebulized with epinephrine
Good response to nebulized epinephrine
Observe for 2 hours
Persistent *mild* symptoms
No recurrence of:
– Chest wall indrawing
– Stridor at rest
• Provide education (as for mild croup)
Discharge home
Recurrence of *severe* respiratory distress:
• Repeat nebulized epinephrine
• If good response continue to observe
Poor response to nebulized epinephrine
Repeat nebulized epinephrine
Contact pediatric ICU for further management
*Consider hospitalization (general ward) if:
• Received steroid ≥ 4 hours ago
• Continued *moderate* respiratory distress (*without* agitation or lethargy)
– Stridor at rest
– Chest wall indrawing
(If the patient has recurrent episodes of agitation or lethargy contact pediatric ICU)