

Croup is an acute respiratory illness causing inflammation and narrowing of the subglottic region of the larynx. It is most often caused by a viral infection.

Where appropriate (if severity allows) a minimally invasive HANDS OFF APPROACH allows best initial assessment– as children can look very different if allowed to settle for a few minutes

Key points:

- If possible allow child to sit on carers lap – DO NOT FORCE TO LIE DOWN
- Do not examine throat
- If hypoxic try to give O2 by facemask

SIGNS...

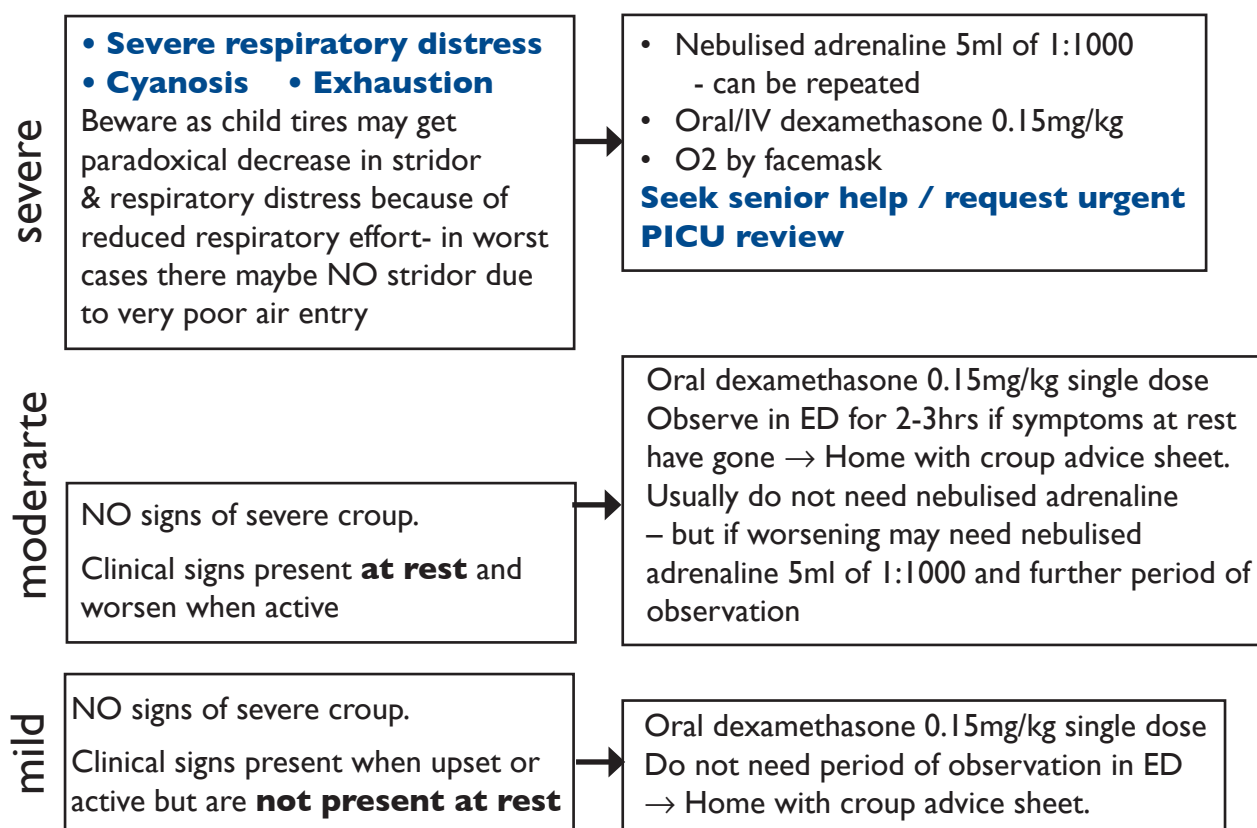
The following clinical signs (in varying combination) are found in croup:

- STRIDOR • BARKING COUGH • HOARSENESS • RESPIRATORY DISTRESS +/- FEVER +/- CORYZA

Assessment of SEVERITY is based on assessment of following parameters:

- RESPIRATORY RATE • HEART RATE • O2 SATURATIONS • RESPIRATORY DISTRESS • EXHAUSTION

Algorithm For Management Of Child With Croup



PREDNISOLONE

A single dose Prednisolone (1mg/kg) is not as effective as a single dose of dexamethasone for the treatment of croup. Therefore if using prednisolone as treatment for croup a second dose is recommended

- If prednisolone already given by GP and child has mild croup in ED may not need second dose, but if child has signs of moderate croup consider giving second dose prednisolone 1mg/kg
- If for any reason dexamethasone not available – use prednisolone 1mg/kg once daily for 2 days.

Differential Diagnosis

It is essential to differentiate croup from other causes acute upper airway obstruction. The main differentials are:

- Acute foreign body aspiration
- Acute anaphylaxis
- Bacterial upper airway infections e.g. epiglottitis, bacterial tracheitis.

Bacterial tracheitis is an infection of the tracheal mucosa (usually *Staphylococcus aureus* or *Streptococci*) which results in copious secretions and mucosal necrosis. The child usually appears very unwell (looks septic or 'toxic') with high fever, croupy cough and signs of progressive upper airway obstruction. The croupy cough and absence of drooling help to distinguish from epiglottitis. Treatment involves securing the airway (over 80% of children with this condition will need intubation) and IV antibiotics (cefotaxime and flucloxacillin).

Epiglottitis is caused by *Haemophilus influenzae B* infection, with resultant intense swelling of the epiglottis and surrounding tissues leading to airway obstruction. The onset is usually acute with a few hours of high fever, lethargy, soft inspiratory stridor and rapidly worsening respiratory distress. Cough is usually minimal or absent. The child appears toxic with a high fever and is often sitting immobile with their chin slightly lifted and mouth open drooling saliva. Attempts to lie the child down or painful procedures can precipitate complete upper airway obstruction and so should ideally only be done when the airway has been secured. Treatment involves urgent PICU review for airway assessment and management, bloods for culture and IV cefotaxime.

Differentiation between croup, tracheitis and epiglottitis*

	Croup	Tracheitis	Epiglottitis
Cause	Viral	<i>Staphylococcus aureus</i> <i>Streptococcus</i>	<i>Haemophilus influenzae B</i>
Age	6m - 3yr	Any age	2 - 6yr
Onset	Gradual	Gradual	Sudden
Pyrexia	Mild	>38°C	>38°C
Abnormal sounds	Barking cough, stridor	Barking cough, stridor	Muffled, guttural cough
Swallowing	Normal	Difficult	Very difficult with drooling
Posture	Recumbent	Sitting	Tripod position
Facies	Normal	Anxious	Anxious, distressed, toxaemic

*from Large airway obstruction in children - part 1: causes and assessment, part 2: management N S Morton: World Anaesthesia, Update in Anaesthesia 2004 Issue 18, article 13

References:

- 1) The management of croup, JC Brown, British Medical Bulletin 2002; 61: 189-202
- 2) Glucocorticoids for croup. K Russell et al. Cochrane Database of Systematic Reviews, 2004
- 3) Prednisolone versus dexamethasone in croup: a randomised equivalence trial. A Sparrow, G Geelhoed. Arch Dis Child 2006; 91:580-583.
- 4) Stridor and Croup, Marshall J: Paediatrics – a clinical guide for nurse practitioners: p127-130, 2008 (2nd Edition)
- 5) Emergency Management of Croup Guideline, Beattie J, Gibson N, Paton J, McDevitt A: RHSC 1999
- 6) APLS Manual 4th edition 2006
- 7) Large airway obstruction in children - part 1: causes and assessment, part 2: management
N S Morton: World Anaesthesia, Update in Anaesthesia 2004 Issue 18, article 13
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Croup parent information leaflet

What is croup?

Croup is an infection of the voicebox and windpipe. It tends to affect very young children. It is often mild and most children recover after a few days. A steroid medicine is usually prescribed to help the symptoms. Severe breathing difficulties can develop in some children who then need to be admitted to hospital. This is usually only for a short time until their symptoms ease. You will be able to stay with your child if he or she needs to stay in hospital.

What causes croup?

Several different viruses cause croup. These same viruses cause coughs and colds in adults and older children.

What are the symptoms of croup?

- Cough- unusual harsh and barking cough due to inflammation of the vocal cords in the voicebox.
- Breathing problems- the infection causes inflammation on the inside lining of the breathing tube. There may also be some mucus. These 2 things can cause narrowing of the breathing tube. You may notice noisy breathing (stridor) and difficulty in breathing.
- Other symptoms- include runny nose, fever, poor appetite, hoarseness and sore throat.

How can I treat my child with croup?

There is no specific treatment for croup and it usually gets better within 3 to 4 days. There are some things you can do to help though

- Try and keep your child calm as crying makes it harder to breathe
- Sit your child upright, never force to lie down
- Lower the fever by giving liquid paracetamol (calpol, disprol) or ibuprofen
- Cool air may help so try opening a window
- Croup symptoms often get worse at night, so your child may be more settled if someone stays with them

Steam used to be recommended for treatment but now is NOT advised. This is because it does not help the child's symptoms and some children were scalded by the steam.

Other treatments

The doctor may prescribe one or two doses of steroids to help reduce inflammation. They help symptoms within a few hours

Antibiotics will NOT be prescribed as they will not work because croup is caused by a virus. Antibiotics do not kill viruses.

When to come back to hospital

- If your child's breastbone is sucking in when he or she is breathing
- If your child is struggling to breathe
- If your child is very distressed
- You hear noisy breathing (stridor) when the child is calm and not crying
- You are worried for any other reason
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You should call 999 immediately if

- Your child looks very sick and becomes pale and drowsy
- Your child's lips turn blue
- Your child is drooling and unable to swallow

Other sources of information: NHS 24 Tel. 08454 242424. or www.nhs24.com