LRI Emergency Department and Children's Hospital

Management of Croup in Children

Staff relevant to:	Medical & Nursing Staff working in Children's Hospital and the Emergency Department
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This SOP does not provide advice on the threatened airway. For airway issues please phone 2222 and ask for the senior Anaesthetic SpR and ODP.

1. Introduction and Who Guideline applies to

This guideline is for all clinical staff working within the Children's Hospital and the ED. Please follow this link to the interactive croup guideline. If the link does not work, please find all the information in text format below.

http://insitetogether.xuhl-tr.nhs.uk/SP2007/Documents/Croup%20Scoring.xlsm

Key Points:

Croup is a common viral illness that typically presents with stridor, hoarse voice & barking cough. The majority have no or mild symptoms of respiratory distress however severe croup can result in significant airway compromise and needs expert airway management. Bacterial infection in the form of bacterial tracheitis or epiglottitis have clinical features similar to croup and are not always toxic looking on initial presentation.

Initial Assessment:

Regardless of severity all children with croup should be approached in a calm manner. Unnecessary upset will increase respiratory distress. Please calculate a Croup Score [1]. The numbers in brackets represent the score for each category. Please note these scores are a guide only and should be superseded by clinical judgement (especially if child tiring).

Stridor	None (**0**)	When agitated/active (**1**)	At rest (**2**)
Intercostal recessions	None (**0**) Mild (**1**)	Moderate (**2**)	Severe (**3**)
Air entry on auscultation	Normal (**0**)	Mildly reduced (**1**)	Severely reduced (**2**)
Cyanosis	None (**0**)	When agitated/active (**4**)	At rest (**5**)
Level of consciousness	Normal (**0**)		Altered (**5**)

Mild Croup 0
A score of 0 doesn't need treatment

Mild Croup 1-4
Give oral dexamethasone (*0.15mg/kg*)

If score less <2 can be discharged otherwise observe for one hour

If improving discharge with safety net and explanation of natural history
Those with stridor at rest may be admitted to CSSU/ward for on-going observation.

Moderate Croup 4-6
Prompt Senior Review
Give oral dexamethasone (0.15mg/kg) (consider budesonide (*2mg*) if struggling to take oral medication)
Oxygen if sats < 92%

If improving observe over 2-3 hours & discharge if score <2
If on-going respiratory concerns admit (CSSU/ward) for observation. A lack of response to treatment without deterioration does NOT require adrenaline.

Severe Croup >6

ED	**Wards**
Manage in Resus	Urgent Senior Review

Give oral dexamethasone (0.15mg/kg)
Give nebulised adrenaline 0.4mg/kg (max 5mg) Of 1:1000 solution (1mg=1ml)

Respiratory Failure >12

Phone 2222: Ask for the Senior SpR, ENT & ODP	
ED	**Wards**
Manage in Resus	Alert CICU

Give oral dexamethasone (0.15mg/kg)
Give adrenaline
Do not gain IV access unless airway secure or with senior input

Re-evaluate: is this definitely Croup? Discuss with CICU if deteriorating and give further adrenaline with senior advice.

Background

Croup is a respiratory illness characterised by a sore throat, barking cough, stridor, hoarseness and respiratory

- Most common in children between six months and three years of age but can occur in children as young as three months and in older children and teens.
- Most commonly viral aetiology e.g. influenza or parainfluenza

The infection results in inflammation of the upper airway, including the larynx, trachea and bronchi (laryngotracheobronchitis). Typically it has an abrupt onset, most commonly at night. Most cases of croup can be managed by primary care, but up to 30% require hospitalisation and, of these, less than 2% need intubation

Symptoms typically last 3-5 days but (as with all viral illnesses) can last up to 2 weeks.

Assessment

Assess the child where most comfortable, for example on parents lap. Avoid distressing the child. Assess the degree of airway obstruction; not the loudness of the stridor.

Keep the child comfortable and avoid unnecessary distress. Do not examine the throat. Children with Croup should not need an x-ray or IV access.

Mild respiratory distress and stridor is common. Please seek senior advice if you have not seen croup before. Assessment is about ensuring the child is currently stable.

A	Biphasic stridor, dysphonia, drooling and dysphagia all concerning. Beware quietening stridor and increasing respiratory distress.
B	Assess work of breathing and effectiveness of respiration, look for recessions, tiring and falling of saturations.
C	Assess for shock and cardiovascular effects of impending respiratory failure.
D	Deteriorating or altering consciousness is a sign of severe upper airway obstruction.

Turn over for differential diagnosis and management advice

Differentials of acute airway issues

Croup	Tracheitis	Epiglotitis	Foreign Body	Angioedema
Parainfluenza, Adenovirus, Influenza	Staph aureus, Streptococcus	HiB-check immunisation history	Foreign body	Allergic, hereditary, unknown
Age 6m-3yrs	Any Age	Age 2-6 yrs	Any age	Any age
Abrupt onset (usually)	Gradual onset	Very sudden onset	Sudden onset	Sudden onset
Mild Pyrexia	Temp >38	Temp >38, look toxic	Apyrexial	Apyrexial
Barking Cough, Stridor. Response to nebulised Adrenaline	Barking cough, Stridor. Poor response to nebulised Adrenaline	Muffled, guttural cough. Poor response to nebulised Adrenaline	Choking, cough, stridor, hoarseness. No response to nebulised Adrenaline	Facial and soft tissue swelling.

Management

Children with a croup score >0 should receive a single dose of oral dexamethasone (0.15mg/kg).
[Oral prednisolone (1-2 mg/kg) is another alternative if dexamethasone is not available]

A second dose should be considered if residual symptoms of stridor are still present if the patient returns (may be given 12 hours after first dose).

Paracetamol or Ibuprofen should be considered for distress if the child is uncomfortable.

IV fluids may be necessary in some children where respiratory distress prevents adequate fluid intake. In most cases oral fluids will be adequate

If dexamethasone is not tolerated orally consider 2 mg nebulised Budesonide

If a child with Croup receives nebulised Adrenaline they will need at least a 3-4 hour period of normal observations prior to discharge home.

Further nebulisers may be given but this is unusual & senior staff must be involved

Investigations are rarely needed
Consider a CXR and Lateral Neck only if there is a potential for Foreign Body ingestion as the cause of respiratory distress
(see **Basic Life Support or Choking UHL Childrens Hospital Guideline**, **Foreign Body Ingestion UHL Paediatric Emergency Department Guideline.pdf** or **Button Battery Ingestion UHL Childrens Hospital Guideline**)

Turn over for discharge advice

Discharge

Assess the child frequently (every 30 minutes) and only discharge when he or she meets criteria for discharge

Criteria for discharge

Absent/mild intermittent stridor with saturations above 93%
And other diagnosis considered (i.e. foreign body, epiglottis etc) and excluded
And parents confident that they can manage the child

Dexamethasone given unless score 0. Steroids should not routinely be given as a TTO

There should be a period of at least 3 hours observation following adrenaline

Take care with children with pre-existing narrowing of the upper airways (e.g. subglottic stenosis) and note children with Down's syndrome are prone to more severe croup. Admission should be considered even with mild symptoms in these groups of patients. Children with recurrent episodes/repeated presentations with Croup should be referred to the ENT department.

Referrals to ENT

In a child with a severe spell of croup necessitating intubation please phone the ENT SpR on Call to facilitate ENT support of airway management as required by the Anaesthetic team.

Recurrent spells of croup is a potential risk factor for underlying airway pathology.

Refer for urgent ENT outpatient assessment if complete recovery of presenting episode and more than 3 spells of croup in the last 6 months or 5 spells of croup in the last year.

Prolonged spells of croup is a potential risk factor for underlying airway pathology.

A spell of croup where a patient is having persistent symptoms despite treatment, and not following a normal path of recovery. Please refer to the ENT SpR on call for inpatient assessment.

Additional risk factors in the patient history to check for;

- Stridor on exertion between spells
- Persistent hoarse voice (when well)
- Previous Intubation
- Significant prematurity
- Cutaneous haemangioma

Discharge Advice

Explain natural history is generally that croup peaks for 24 hours and this should be the worst the child gets. However concerns with breathing, lethargy or intake should prompt a medical review.

Highlight Red Flag features of:

- Stridor at rest
- Difficulty breathing/suprasternal recession
- Pallor or cyanosis
- Severe coughing spells
- Drooling or difficulty swallowing
- Fatigue
- Prolonged symptoms (longer than 7 days)

Ensure parents have been given parent information leaflet:

https://yourhealth.leicestershospitals.nhs.uk/

Turn over for Education and Audit Requirements

2. Education and Training

No new training required

3. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Documentation of Croup Score and correct prescribing of dexamethasone and adrenaline	Audit of discharge records	Audit Lead	Annual	Departmental clinical practice group

4. Supporting References

Gates A, Gates M, Vandermeer B, Johnson C, Hartling L, Johnson DW, Klassen TP. Glucocorticoids for croup in children. Cochrane Database of Systematic Reviews 2018, Issue 8. Art. No.: CD001955. DOI: 10.1002/14651858.CD001955.pub4

5. Key Words

Croup, Respiratory, Stridor

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) D Bronnert – Consultant D Roland - Consultant	**Executive Lead** Chief Medical Officer
Details of Changes made during review: **September 2022** **No changes to practice made.** **Updated ENT referral guidance**	