Ashford and St. Peter's Hospitals
NHS Foundation Trust

GUIDELINE FOR MANAGEMENT OF CROUP

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Guideline History		
Date	**Comments**	**Approved By**
December 2019	Initial guideline	Paediatric Guideline Group
August 2024	Guideline re-written by Dr Abeer Asif	Paediatric Guideline Group

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Management of Croup in children

Objectives:

This guideline has been designed to assist in the diagnosis and management of children with croup. It includes a management algorithm and a list of potential differential diagnoses.

Scope:

Children presenting with the signs of croup.

Audience:

Healthcare professionals involved in acute paediatric medicine.

Definition:

Croup is a clinical diagnosis that is identified by:

- characteristic “seal-like” or “barking” cough
- stridor
- hoarseness
- mild fever
- Variable respiratory distress (especially at night).

Usually aged from 6 months to 6 years, peak incidence in the 2nd year of life.

Due to oedema of the larynx and trachea triggered by recent viral infection (most commonly parainfluenza virus type 1)

Stridor is a harsh respiratory noise, usually inspiratory indicating obstruction in the larynx or upper trachea.

ASSESSMENT:

ABC approach. Minimise distress to children with upper airway obstruction/croup. Keep the patient calm, **DO NOT** examine throat, **DO NOT** take bloods, **DO NOT** perform X-ray, **DO NOT** lie flat

A – Look for stridor, drooling and hoarseness of voice. Loudness of stridor does not correlate with severity of potential airway compromise.

B – Assess work of breathing, pulse oximetry and auscultate for bilateral equal air entry. (Hypoxia is a late sign in upper airway obstruction)

C – assess for shock and signs of cardiovascular decompensation secondary to respiratory failure

D – check for agitation or drowsiness

Consider alternative diagnoses, see differential diagnoses chart below

Evaluate severity of croup. Assess degree of respiratory distress (can use Westley score).		
Mild - Score 0 – 1	**Moderate-** Score 2 – 7	**Severe-** Score 8
• Normal RR • No recessions • Normal heart rate • Normal oxygen saturations • Normal conscious level • Inspiratory stridor only when upset	• Normal or raised RR • Mild recession • Air entry decreased but easily audible • Increased heart rate • Oxygen saturations > 94% • Normal conscious level	• Tachypnoea • Moderate recession • Air entry decreased and difficult to hear • Increased heart rate • Inspiratory & expiratory stridor at rest

Management: • Keep child calm • Consider oral dexamethasone 0.15mg/kg single dose, total 0.6mg/kg (max 16mg). • Reassure • Home with advice & leaflet	Management: • Keep child calm • Oral dexamethasone 0.15mg/kg single dose, total 0.6mg/kg in 24h(max 16mg). • Budesonide 2mg neb can be used, but oral dex is preferred. • Minimum interval of 2 hours between oral doses of dexamethasone. • Consider: Adrenaline neb 0.4 mL/kg (max 5 mL) of 1:1000. This dose can be repeated after 30 minutes • Observe for 2-3 hours • If improves – consider criteria for discharge as below • If no improvement or deterioration, reassess and consider further treatment	Management: **CALL FOR SENIOR HELP** • Paediatrician (SpR bleep 5315) • Anaesthetist (SpR bleep 5007) • ENT (Via switch board) • Keep child calm • Adrenaline neb 0.4 mL/kg (max 5 mL) of 1:1000. This dose can be repeated after 30 minutes • Oral dexamethasone 0.15mg/kg single dose, total 0.6mg/kg (max 16mg) • Budesonide 2mg neb can be used, but oral dex is preferred. • Minimum interval of 2 hours between oral doses of dexamethasone.
Criteria for discharge • No stridor at rest & normal oxygen saturations • Good air entry • Normal colour • Normal level of conscious • Able to tolerate oral fluids		**Indications for intubation:** • Fall in conscious level • Hypoxia (sats <92% despite high flow oxygen) • Rising pC02

• Caregivers understand indicators of when return to care and are able to return if necessary • NEVER discharge home within 3 hours of an adrenaline nebuliser as effects may wear off in 60-90 minutes	• Clinically: exhaustion, apnoea, impending respiratory arrest

Important Differential Diagnoses:

	Croup	Bacterial Tracheitis	Epiglottitis	Anaphylaxis
Cause	Viral	Commonly: S. aureus; Streptococcus	Haemophilis influenza B	IgE mediated reaction
Age	6m – 3yr	Any age	2 – 6yr	Any age
Onset	Gradual	Gradual	Sudden	Sudden
Pyrexia	Mild	Usually > 38C	Usually > 38C	Mild
Abnormal Sounds	Barking cough, stridor	Barking cough, stridor	Muffled, guttural cough	Wheeze, stridor
Swallowing		Difficult	Very difficult, drooling	Mucosal oedema
Posture	Recumbent	Sitting	Tripod Position	Sitting
Facies		Anxious	Distressed and toxaemic	Distressed

Other diagnoses to consider; foreign body, inhalation injury, acute angioedema.

Further Discharge Guidance:

Steroids should not routinely be given as a TTO.

If for any reason dexamethasone not available – use prednisolone 1mg/kg once daily for 2 days.

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.

Indications for ENT referral or follow-up:

- Recurrent croup (3 or more episodes within one year)
- Stridor in very young child (<6m), especially if history of prematurity; previous intubations; hypotonia (eg: trisomy 21); or presence of haemangioma.
- Child with known ENT history of e.g. laryngomalacia, tracheomalacia or subglottic stenosis as they can worsen quickly.
- History suggestive of foreign body inhalation. This should always be considered in any child with sudden onset of stridor. Diagnosis relies on clinical suspicion and a careful history from the child or anyone else present.

Discharge Advice including red flags:

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 e,g barking cough etc (longer than 7 days)

Ensure parents have been given parent information leaflet

2. Supporting References:

Medscape- the Westley croup score is made up of the following items from the clinical exam:

- Level of consciousness: Normal, including sleep = 0; disoriented = 5
- Cyanosis: None = 0; with agitation = 4; at rest = 5
- Stridor: None = 0; with agitation = 1; at rest = 2
- Air entry: Normal = 0; decreased = 1; markedly decreased = 2
- Retractions: None = 0; mild = 1; moderate = 2; severe = 3
- Mild croup is defined by a Westley croup score of ≤2. Moderate croup is defined by a Westley croup score of 3 to 5. Severe croup is defined by a Westley croup score of 6-11. A score of ≥12 indicates impending respiratory failure.

BMJ- Best clinical practice
Archives of disease in Childhood 2024- 6429 A service evaluation of croup management in a paediatric emergency department | Archives of Disease in Childhood (bmj.com)

Clinibee- Guy's and St Thomas's Guideline.

University Hospital Leicester – Emergency guidance

NHSGGS Paediatrics for health professionals

3. Guideline Governance

a. Scope

This guideline is relevant to all staff caring for all children from 0-18 years old across the emergency department, inpatient ward and outpatient department.

b. Purpose

i. This guidelines aims to facilitate a common approach to the management of children. At times deviation from the guideline may be necessary, this should be documented and is the responsibility of the attending consultant.

ii. This guideline is subject to regular review to ensure ongoing evidence based practice.

c. Duties and Responsibilities

All healthcare professionals responsible for the care of all children 0-18years should be aware of practice according to this guideline.

d. Approval and Ratification

This guideline will be approved and ratified by the Paediatric Guidelines Group.

e. Dissemination and Implementation

i. This guideline will be uploaded to the trust intranet 'Paediatric Guidelines' page and thus available for common use.
ii. This guideline will be shared as part of ongoing education within the Paediatric Department for both medical and nursing staff.
iii. All members of staff are invited to attend and give comments on the guideline as part of the ratification process.

f. Review and Revision Arrangements

a. This policy will be reviewed on a 3 yearly basis by the appropriate persons.
b. If new information comes to light prior to the review date, an earlier review will be prompted.
c. Amendments to the document shall be clearly marked on the document control sheet and the updated version uploaded to the intranet. Minor amendments will be ratified through the Paediatric Guidelines Group. A minor amendment would consist of no major change in process, and includes but is not limited to, amendments to documents within the appendices.

g.

h.

i. Equality Impact Assessment

Background • Who was involved in the Equality Impact Assessment
Author and the supervising consultants.
Methodology • A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age) • The data sources and any other information used • The consultation that was carried out (who, why and how?)
All groups of staff and patients were taken into consideration and there is no bias towards or against any particular group.
Key Findings • Describe the results of the assessment • Identify if there is adverse or a potentially adverse impacts for any equalities groups
There is no evidence of discrimination.
Conclusion • Provide a summary of the overall conclusions
There is no evidence of discrimination.
Recommendations • State recommended changes to the proposed policy as a result of the impact assessment • Where it has not been possible to amend the policy, provide the detail of any actions that have been identified • Describe the plans for reviewing the assessment
This guideline is appropriate for use.

j. Document Checklist

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

Title of the document:

Policy (document) Author:

Executive Director: N/A

		Yes/No/ Unsure/NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	**Y**	
	Is it clear whether the document is a guideline, policy, protocol or standard?	**Y**	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	**Y**	
	Is the purpose of the document clear?	**Y**	
	Are the intended outcomes described?	**Y**	
	Are the statements clear and unambiguous?	**Y**	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	**N**	
	Who was engaged in a review of the document (list committees/ individuals)?		**Guideline meeting 21/08/2024**
	Has the policy template been followed (i.e. is the format correct)?	**Y**	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	**Y**	

		Yes/No/ Unsure/NA	Comments
	Are local/organisational supporting documents referenced?	**N/A**	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	**N**	
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?	**N/A**	
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	**Y**	
	Does the plan include the necessary training/support to ensure compliance?	**N/A**	
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	**Y**	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	**Y**	**August 2027**
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	**Y**	
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	**Y**	

Committee Approval (Paediatric Guidelines Group)			
If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner			
Name of Chair	**Dr Alexandra Jones**	**Date**	**21/08/2024**
Ratification by Management Executive (if appropriate)			
If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner			
Date: n/a			