Royal Cornwall Hospitals NHS Trust

Policy Under Review

Please note that this policy is under review. It does, however, remain current Trust policy subject to any recent legislative changes, national policy instruction (NHS or Department of Health), or Trust Board decision. For guidance, please contact the Author/Owner.

Information Category	Detailed Information
Document Title:	Acute Viral Laryngo-Tracheobronchitis (Croup) Management Paediatric Clinical Guideline V5.0
This document replaces (exact title of previous version):	Acute Viral Laryngo-Tracheobronchitis (Croup) Management Paediatric Clinical Guideline V4.0
Date Issued / Approved:	July 2023
Date Valid From:	August 2023
Date Valid To:	February 2027
Author / Owner:	Dr. Stuart Nath; Consultant Paediatrician Dr. Kathryn Thomas; Consultant Paediatrician
Contact details:	01872 252069/ 252463
Brief summary of contents:	Clear guidance for medical and nursing staff caring for a child presenting with croup.
Suggested Keywords:	Children, croup, respiratory.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Child Health Audit and Guidelines Group
Manager confirming approval processes:	Caroline Chappell

UNDER REVIEW

Information Category	Detailed Information
Name of Governance Lead confirming consultation and ratification:	Michael Cross
Links to key external standards:	None required
Related Documents:	https://cks.nice.org.uk/croup#!scenario. Calculator: Westley croup severity score (appropriate for use in children ≤6 years of age) – UpToDate. Westley, CR, Cotton, EK, Brooks, JG. Nebulized racemic epinephrine by IPPPB for the treatment of croup: a double-blind study. Am J Dis Child 1978; 132:484. Wagener JS, Landau LI, Olinsky A, Phelan PD. Management of children hospitalized for laryngotracheobronchitis. Pediatr Pulmonol 1986 May-Jun;2(3): 159-62. Bourchier D, Dawson KP, Fergusson DM. Humidification in viral croup: a controlled trial. Aust Paediatr J 1984;20:289-291. Ausejo M, Saenz A, Pham B, et al. lucocorticoids for Croup. In: The Cochrane Library, Issue 1 2000. Oxford: Update software. Search date 1997; primary sources Cochrane Controlled Trials Register, Embase 1974 to August 1997, Medline 1966 to August 1997, letters to authors. Substantially amended June 1999. [Q to A: what was amended?]. Johnson DW, Jacobson S, Edney PC, et al. A comparison of nebulised budesonide, intramuscular dexamethasone, and placebo for moderately severe croup. N Engl J Med 1998;339:498-503. Klassen TP, Craig WR, Moher D, et al. Nebulised budesonide and oral dexamethasone for the treatment of croup: a randomised controlled trial. JAMA 1998;279:1629-1632. Geelhoed GC, Macdonald WB. Oral and inhaled steroids in croup: a randomised, placebo-controlled trial. Pediatr Pulmonol 1995;20:355-361. Kristjansson S, Berg-Kelly K, Sinso E. Inhalation of racemic adrenaline in the treatment of mild and moderately severe croup. Clinical symptom score and oxygen saturation measurements for evaluation of treatment effects. Acta Paediatr 1994 Nov; 83(11):1156-60.

UNDER REVIEW

Information Category	Detailed Information
Training Need Identified:	No
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical/ Paediatrics/ Respiratory

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust Policy on Document Production. It should not be altered in any way without the express permission of the author or their Line Manager.

UNDER REVIEW

Acute Viral Laryngo- Tracheobronchitis (Croup) Management Paediatric Clinical Guideline

V5.0

August 2023

UNDER REVIEW

1. Aim/Purpose of this Guideline

1.1. This guideline applies to all nursing and medical staff caring for an Infant/ Child with Croup. It affects all infants, children and their family's requiring management of Croup.

1.2. This version supersedes any previous versions of this document.

Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation

The Trust has a duty under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team

Royal Cornwall Hospital Trust rch-tr.infogov@nhs.net

UNDER REVIEW

2. The Guidance

Viral croup is the most common form of upper airway obstruction in children aged 6 months to 6 years.

Most children with croup have a mild, self-limiting illness and can be managed as outpatients. However, some will quickly progress with potentially life threatening airway obstruction. This guideline helps to identify these children and manage appropriately.

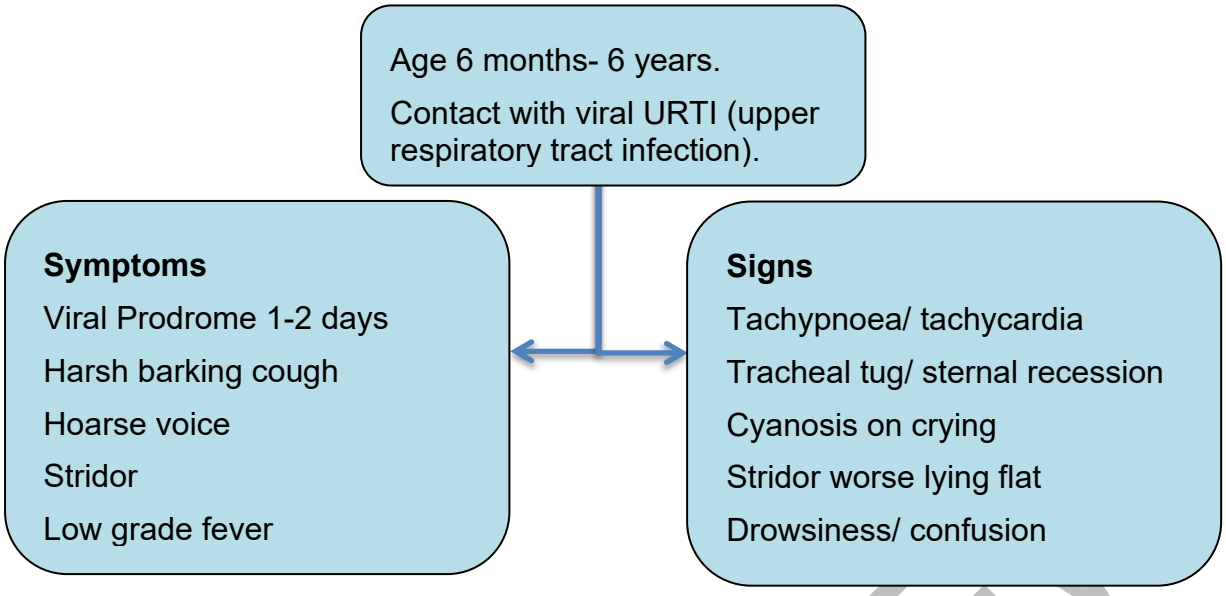
2.1. Aetiology

- Usually Para Influenza I, II or III.
- Adenovirus.
- Influenza A and B.

Please note - chronic or recurrent croup is not covered in this guideline and is often due to different underlying pathology.

2.2. Diagnosis

Please see next page



2.3. Differential Diagnosis

Epiglottitis	High fever. Drooling. Muffled voice 'hot potato speech'. Rare since Haemophilus influenza B vaccine.
Bacterial Tracheitis	High fever. Bacterial infection. Prolonged course of illness/ atypical course.
Retropharyngeal abscess	High fever. Foul breath. Cervical lymphadenopathy. Muffled voice 'hot potato speech'.
Foreign body	Acute onset stridor in otherwise well child. Typically age 1- 3 years.
Other differentials to consider	Anaphylaxis. Laryngomalacia. Subglottic stenosis. Peritonsillar abscess. Vocal cord paralysis. Laryngeal mucosal lesions. Diphtheria.

UNDER REVIEW

2.4. Severity assessment

The Westley croup score (ranges from 0- 17) grades severity of croup by clinical features guiding management based on severity score. The presence of chest wall recessions and stridor at rest are the two more critical clinical features.

2.5. Westley Severity score

Level of consciousness	**Stridor**	**Cyanosis**	**Air entry**	**Recession**
Normal, including sleeping = 0	None = 0	None = 0	Normal = 0	None = 0
Disorientated = 5	With agitation = 1	With agitation = 4	Decreased = 1	Mild = 1
	At rest = 2	At rest = 5	Markedly decreased = 2	Moderate = 2
				Severe = 3
Total score (0 – 17):				

2.6. Croup Management based on Westley score

Score	**Severity**	**Description**	**Management**
≤ 2	**Mild**	No stridor at rest. Mild chest recession.	Oral dexamethasone. Discharge home.
3 - 7	**Moderate**	**With** Stridor at rest. Mild to moderate recession. Minimal distress/ agitation.	**Observe for at least 4 hours** • Oral dexamethasone. • Oxygen if Sa02 ≤92%. • Discharge after 4 hours if fulfil the discharge criteria (see below 2.10), otherwise admit.

UNDER REVIEW

Score	Severity	Description	Management
8 - 11	**Severe**	**With** Significant stridor at rest. Severe recession. Reduced air entry.	Give Oxygen. Nebulised adrenaline. Nebulised budesonide. Inform paediatrician. Notify anaesthetist - if does not respond may need intubation.
≥ 12	**Very Severe**	**With** Confusion. Drowsiness.	Give Oxygen. Notify Anaesthetist, Paediatrician and ENT Surgeon. Intubate. IV Cannulation and Intravenous dexamethasone 150 micrograms/kg.

UNDER REVIEW

Red Flag symptoms needing immediate medical attention:

- Stridor at rest.
- Abnormal airway (eg. Pierre Robin sequence/ small airway/ subglottic stenosis).
- Previous episodes of moderate to severe croup.
- Medical conditions that predispose to respiratory failure (neuromuscular disorders/ complex needs).
- Rapid progression of symptoms.
- Inability to tolerate oral fluids.
- Parental concerns that cannot be relieved by reassurance.
- Prolonged atypical symptoms (over 3- 7 days) may indicate alternative diagnosis.

2.7. Investigation

2.7.1. Minimise investigations.

2.7.2. Lateral neck x-rays are not indicated as they are not a reliable indicator of disease severity.

2.7.3. Avoid blood gases unless intubated.

2.7.4. NB – If Paediatric Early Warning Score (PEWS) >3 - this will trigger the sepsis protocol and indicates that a capillary blood gas would be indicated. In a presentation of croup this needs to be considered carefully and balanced against the risk of distressing the child and increasing the airway compromise. Please discuss with senior.

2.7.5. Chest x-ray is rarely required.

2.8. Management

2.8.1. General

2.8.1.1. Avoid doing anything that may distress the child e.g.:

- Inserting IV cannula.
- using tongue depressor.
- inserting (nasogastric) NG Tube.

2.8.1.2. Encourage good hydration.

2.8.1.3. High humidity environments such as mist tents do not influence recovery rate.

2.8.2. Steroids

Steroid treatment is first line. Systemic Dexamethasone and nebulised Budesonide are equally effective in reducing symptoms. Oral Dexamethasone is less expensive and likely to distress the infant less so as the first line of treatment. Nebulised Budesonide is the treatment of choice in the vomiting infant.

NB A further dose of Dexamethasone may be considered 12 hours later – this will depend on the individual case and would be indicated for those who re-develop symptoms of stridor and/or increased work of breathing. This group of children would need a further clinical review. Repeat doses of Dexamethasone are not indicated for ongoing croup cough, with no other clinical signs or symptoms.

UNDER REVIEW

Steroid	Route	Indication
Dexamethasone 150 micrograms/kg, reassess requirement for 12 hourly doses*	Oral	First line if able to tolerate oral medication/ oral medication unlikely to worsen distress
Prednisolone 1-2mg/kg	Oral	Could be used if oral dexamethasone is not readily available
Budesonide 2mg stat, reassess requirement for 12 hourly doses	Nebulised	If vomiting/ not tolerating oral medication
Dexamethasone 150 micrograms/kg Intramuscular dexamethasone (0.6 mg/kg as a single dose) is a possible alternative if no IV access	Intravenous	• Severe croup if vomiting/ not tolerating oral medication. • Inserting cannula may upset child and worsen airway obstruction. • Should only be done with anaesthetist present.

** The advice to administer oral dexamethasone at a dosage of 0.15 mg/kg is based on evidence that this is as effective as the traditionally-used dose of 0.6 mg/kg [BMJ Best practice, 2017]*

2.8.3. Observation of Mild Croup

Children with mild croup who are tolerating fluids may be sent home after evaluation and a single dose of oral dexamethasone (randomized controlled trials have demonstrated that treatment with a single dose of oral dexamethasone may reduce the need for review, shorten the course, improve duration of the child's sleep, and reduce parental stress in children with mild croup). The caregiver needs to receive instructions regarding home care and indications to seek further medical attention including:

- Difficulty breathing.
- Pallor or cyanosis.
- Severe coughing spells.
- Drooling or difficulty swallowing.

UNDER REVIEW

- Fatigue.
- Worsening course.
- Fever (>38.5ºC).
- Prolonged symptoms (longer than seven days).
- Stridor at rest.
- Suprasternal recession.

2.9. Observation of Moderate Croup

Children with moderate croup should be observed after pharmacologic intervention. During the observation period, children should be encouraged to drink. Children who received dexamethasone and remain symptomatic may need to be observed for at least four hours before deciding whether they require hospital admission or can go home (as the effect of dexamethasone may not be apparent for several hours).

2.9.1. Indicator of Increasing Severity

2.9.1.1. Increasing respiratory rate.

2.9.1.2. Diminished air entry on auscultation.

2.9.1.3. Cyanosis at rest with Sa02 < 93% in air.

2.9.1.4. Altered level of consciousness.

2.9.1.5. Sternal recession.

2.9.2. Indications for admission to HDU/ITU and Intubation under anaesthesia

2.9.2.1. Poor air entry.

2.9.2.2. Cyanosis.

2.9.2.3. Altered level of consciousness.

2.9.2.4. Tiring with marked work of breathing.

2.9.3. Management

2.9.3.1. Call anaesthetist, Consultant Paediatrician and ENT Surgeon.

2.9.3.2. Administer humidified Oxygen to keep Sa02 ≥ 94%.

2.9.3.3. Deliver nebulised Adrenaline via face mask.

- 400mcg/ kg (maximum dose 5mg) of 1 in 1000 Adrenaline(1mg/ml) diluted to 2- 3 ml with NaCl 0.9%.

UNDER REVIEW

- Closely monitor ECG and Sa02, (discontinue if HR> 200 beats/minute).
- This will produce a transient improvement which normally lasts for about 2-3 hours so will buy time in order to organise an ITU/ HDU (Intensive Therapy Unit/ High Dependency Unit) bed.
- The dose of adrenaline can be repeated after 30 minutes if necessary.

2.10. Criteria for discharge

- No stridor at rest.
- Normal pulse oximetry.
- Good air entry.
- Normal colour.
- Normal level of conscious.
- Demonstrated ability to tolerate fluids by mouth.
- Caregivers understand the indications for return to care and would be able to return if necessary.

2.11. Re-admission

2.11.1. If parents/guardian or primary care team are concerned that the child is not improving or is showing signs of deterioration – they will need a further clinical assessment.

2.11.2. The Westley score should be repeated, and the management chart followed as above.

2.11.3. Safety netting must be given to all parents/guardians prior to initial and any subsequent discharge from hospital, particularly emphasising the need for a further review if noisy breathing (stridor) is persistent and not settling at rest, the child has signs of increased work of breathing, is drowsy, or has poor fluid intake.

UNDER REVIEW

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Compliance with guideline- first line drug treatment.
Lead	Audit Lead.
Tool	Audit using a WORD or EXCEL template, monitoring of Datix investigations.
Frequency	At point of investigation or bi annually.
Reporting arrangements	Audit lead, Audit and Guidelines Specialty meeting.
Acting on recommendations and Lead(s)	Actions will be delegated at Specialty meetings.
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

UNDER REVIEW

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Acute Viral Laryngo-Tracheobronchitis (Croup) Management Paediatric Clinical Guideline V5.0
This document replaces (exact title of previous version):	Acute Viral Laryngo-Tracheobronchitis (Croup) Management Paediatric Clinical Guideline V4.0
Date Issued/Approved:	July 2023
Date Valid From:	August 2023
Date Valid To:	August 2026
Directorate / Department responsible (author/owner):	Dr. Stuart Nath; Consultant Paediatrician Dr. Kathryn Thomas; Consultant Paediatrician
Contact details:	01872 252069/ 252463
Brief summary of contents:	Clear guidance for medical and nursing staff caring for a child presenting with croup
Suggested Keywords:	Children Croup Respiratory
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Child Health Audit and Guidelines Group
Manager confirming approval processes:	Caroline Chappell
Name of Governance Lead confirming consultation and ratification:	Caroline Amukusana
Links to key external standards:	None required
Related Documents:	https://cks.nice.org.uk/croup#!scenario

UNDER REVIEW

Information Category	Detailed Information
	Calculator: Westley croup severity score (appropriate for use in children ≤6 years of age) - UpToDate Westley, CR, Cotton, EK, Brooks, JG. Nebulized racemic epinephrine by IPPPB for the treatment of croup: a double-blind study. Am J Dis Child 1978; 132:484. Wagener JS, Landau LI, Olinsky A, Phelan PD. Management of children hospitalized for laryngotracheobronchitis. Pediatr Pulmonol 1986 May-Jun;2(3): 159-62 Bourchier D, Dawson KP, Fergusson DM. Humidification in viral croup: a controlled trial. Aust Paediatr J 1984;20:289-291 Ausejo M, Saenz A, Pham B, et al. lucocorticoids for Croup. In: The Cochrane Library, Issue 1 2000. Oxford: Update software. Search date 1997; primary sources Cochrane Controlled Trials Register, Embase 1974 to August 1997, Medline 1966 to August 1997, letters to authors. Substantially amended June 1999. [Q to A: what was amended?] Johnson DW, Jacobson S, Edney PC, et al. A comparison of nebulised budesonide, intramuscular dexamethasone, and placebo for moderately severe croup. N Engl J Med 1998;339:498-503. Klassen TP, Craig WR, Moher D, et al. Nebulised budesonide and oral dexamethasone for the treatment of croup: a randomised controlled trial. JAMA 1998;279:1629-1632. Geelhoed GC, Macdonald WB. Oral and inhaled steroids in croup: a randomised, placebo-controlled trial. Pediatr Pulmonol 1995;20:355-361. Kristjansson S, Berg-Kelly K, Sinso E. Inhalation of racemic adrenaline in the treatment of mild and moderately severe croup. Clinical symptom score and oxygen saturation measurements for evaluation of treatment effects. Acta Paediatr 1994 Nov; 83(11):1156-60

UNDER REVIEW

Information Category	Detailed Information
Training Need Identified?	No
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical/ Paediatrics/ Respiratory

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
July 2011	V1.0	Initial Issue	Dr. Anne. Prendiville Paediatric Consultant
November 2013	V2.0	Review of content and re format.	Dr. Anne. Prendiville Paediatric Consultant Tabitha Fergus Deputy ward manager
October 2017	V3.0	Review of content	Dr Anne Prendiville Dr Alan Cade
June 2020	V4.0	Full review and rewrite.	Dr Sarah Brooke, Paediatric ST1 Dr Kathryn Thomas, Consultant Paediatrician

UNDER REVIEW

Date	Version Number	Summary of Changes	Changes Made by
July 2023	V5.0	Full review, minor changes made. Link to “up to date” (online Westley Score) added. Updated to current trust format.	Dr Stuart Nath/Dr Kathryn Thomas, Consultant Paediatricians, Respiratory team

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

UNDER REVIEW

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Acute Viral Laryngo- Tracheobronchitis (Croup) Management Paediatric Clinical Guideline V5.0
Directorate and service area:	Child Health
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Child Health Audit and Guidelines Group
Contact details:	01872 252463

Information Category	Detailed Information
1. **Policy Aim - Who is the Policy aimed at?** (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To provide clear guidance for medical and nursing staff caring for a child with croup.
2. **Policy Objectives**	Clear guidance in management, observation, treatment and discharge.
3. **Policy Intended Outcomes**	Evidence based standardised practice.
4. **How will you measure each outcome?**	See section 3.
5. **Who is intended to benefit from the policy?**	Children and families. Medical and nursing staff.

UNDER REVIEW

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/ visitors: No • Local groups/ system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:** Child Health Audit and Guidelines Group
6c. What was the outcome of the consultation?	Approved- 20 July 2023
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:** No

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	Any information provided should be in an accessible format for the parent/carer/patient's needs- i.e., available in different languages if required/ access to an interpreter if required
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	Those parent/carer/patients with any identified additional needs will be referred for additional support as appropriate- i.e., to the Liaison team or for specialised equipment.

UNDER REVIEW

Protected Characteristic	(Yes or No)	Rationale
Religion or belief	No	
Marriage and civil partnership	No	
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Child Health Audit and Guidelines Group

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis

UNDER REVIEW