Whittington Health NHS

Upper Respiratory Tract Infections in Children

Subject:	Paediatric Upper Respiratory Tract Infections
Policy Number	N/A
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Date Ratified:	July 2015, reviewed February 2019
Version:	2.0
Policy Executive Owner:	Clinical Director, CYP ICSU
Designation of Author:	Dr E Ivey (paediatric speciality trainee) Dr J Moreiras (paediatric consultant) Dr C Fertleman (paediatric consultant)
Name of Assurance Committee:	As above
Date Issued:	February 2019
Review Date:	3 years hence
Target Audience:	Clinical staff working in the paediatric emergency department
Key Words:	Upper respiratory tract infection (URTI), pharyngitis, tonsillitis, otitis, sinusitis, mastoiditis

Version Control Sheet

Version	Date	Author	Status	Comment
1.0	May 2015	Dr E Ivey (paediatric speciality trainee) Dr C Fertleman (paediatric consultant)	New	New guideline approved at July 2015 Clinical Guidelines Committee
2.0	Feb 2019	Dr T Patel (Infectious Diseases/ Microbiology Consultant)	Updated	Reviewed. Minor updates, most notably Antibiotic choice for Pharyngitis/Tonsillitis *(IV: Benzylpenicillin (inpatient) / Ceftriaxone (ambulating*) Antibiotic choice for Peritonsillar abscess (Quinsy) *IV: Benzylpenicillin (inpatient) / Ceftriaxone (ambulating).* Microbiology Registrar added to Contacts list.

➢ Criteria for use

Children aged 0 -16 years presenting with coryza, sore throat, ear pain, cough or other non-specific symptoms (e.g. fever, vomiting) that may indicate an upper respiratory tract infection (URTI).

This guideline should be used in conjunction with the Whittington Health Antibiotic Protocols for Children seen in General Paediatrics, from which all antibiotic guidance in this guideline is taken, correct as of April 2015.

	Please see Whittington Health Guideline: **'Antibiotic Protocols for Children seen in General Paediatrics'** **http://whittnet/document.ashx?id=602**

➢ Background

Approximately 80% of all paediatric respiratory infections involve only the nose, throat, ears or sinuses and these are therefore termed upper respiratory tract infections[1].

URTIs include:

- Common cold
- Pharyngitis, including tonsillitis
- Acute otitis media, including mastoiditis
- Sinusitis

Common cold

The common cold is caused by a variety of viruses, including rhinoviruses which are thought to cause up to 50% of colds, influenza viruses, parainfluenza viruses, respiratory syncytial virus (RSV) and adenoviruses. Children under 6 years have an average of 6-8 colds per year (may be monthly September-April) with symptoms usually lasting 14 days. Older children typically have 2-4 colds per year, with a shorter symptom duration (5-7 days).[2]

Clinical features include: nasal congestion, sore throat, cough, sneezing, fever, cervical lymphadenopathy, headache. In infants reduced feeding and poor sleep may be prominent features.

Features that suggest an alternative diagnosis is more likely: persistent fever >39°C, absence of coryzal symptoms, signs of respiratory distress, wheeze, focal findings on lung examination, acute onset/choking episode, features of chronic illness.

Pharyngitis/Tonsillitis

Pharyngitis: erythematous pharynx on inspection.
Tonsillitis: enlarged, inflamed tonsils +/- exudate.

Pharyngitis may be viral (respiratory viruses or Epstein Barr Virus (EBV)) or bacterial (Group A Streptococcus most commonly).[3] Group A Streptococcus accounts for 15-30% of pharyngitis in children aged 5-15 years.[4]

Diagnosis of viral pharyngitis is usually clinical. Consider Coxsackie virus if there are vesicles on the pharynx as well as hand and foot involvement (hand, foot and mouth disease). EBV may show large, mildly tender posterior cervical/diffuse lymphadenopathy and sometimes hepatosplenomegaly.

Bacterial pharyngitis is suggested by fever, exudate, palatal petechiae and anterior cervical lymphadenopathy.

A peritonsillar abscess (quinsy) is a collection of pus located between the capsule of the tonsil and the pharyngeal muscles.[5] Clinical features include unilateral sore throat, fever, muffled voice, drooling, trismus. Examination reveals an extremely swollen, fluctuant tonsil with deviation of the uvula, or bulging of the soft palate near to the tonsil.

Acute otitis media (AOM)

Between 60-80% of children have at least one episode of AOM by one year of age, and 80-90% by two to three years[6]. Bacterial pathogens (most often Strep. pneumoniae) have been detected in over 90% of cases and there is often concurrent viral infection. Children typically present with fever and non-specific symptoms; they may complain of ear pain and/or hearing loss. Examination shows a bulging tympanic membrane +/- otorrhoea. A red tympanic membrane without bulging means this is unlikely to be AOM[7].

Mastoiditis

This suppurative infection of the mastoid air cells presents with ear pain, post-auricular inflammation +/- displacement of the outer ear (downward and outward in children under 2y, upward and outward in older children). There is usually fever. Examination of the tympanic membrane will usually show signs of AOM. Rarely, they may present with facial nerve palsy, a complication of inflammatory compression. Other complications include subperiosteal abscess (indicated by a tender, fluctuant mass overlying the mastoid bone), hearing loss, labyrinthitis and osteomyelitis.[8]

Sinusitis

Approximately 5% of viral URTIs are complicated by secondary bacterial sinusitis. Consider acute bacterial sinusitis in children who present with typical URTI symptoms that have persisted >10days, especially with a history of high fever >3 days. They may additionally complain of facial pain/swelling and there is usually cough (day and night).[9]

➢ Inclusion/ exclusion criteria

This guideline does not cover:

- Epiglottitis
  - Rare since the introduction of *Hib* vaccine. Acute onset, toxic and ill. Temp >39° C Often drooling and in respiratory distress but with no cough. Usually 2 to 7 years old. Do not examine. When intubated, swab epiglottis, blood cultures, IV ceftriaxone 80mg/kg/day.

	Please see Whittington Health Guideline: **'Upper Airway Obstruction'** **http://whittnet.whittington.nhs.uk/document.ashx?id=10019**

- Foreign body inhalation

	Please see Whittington Health Guideline: ' **Foreign Body Aspiration and Foreign Body Ingestion in children Diagnosis and Management'** **http://whittnet.whittington.nhs.uk/document.ashx?id=9989**

- Acute wheeze

	Please see Whittington Health Guideline: **'Acute wheeze in childhood'** **http://whittnet/document.ashx?id=697**

- Bronchiolitis

	Please see Whittington Health Guideline: **'Bronchiolitis – Paediatric Management'** http://whittnet/document.ashx?id=851

- Retropharyngeal abscess
- Other life threatening causes of sore throat e.g. diphtheria
- Other causes of rhinitis e.g. allergic, seasonal

➢ Clinical management

General Points

Full history and examination including ENT.

If the child looks ill and has a high fever, consider an alternative diagnosis/sepsis and refer to paediatrics as the child may need admission.

If significant feeding problems or signs of dehydration are present, refer to paediatrics for advice.

If you discharge the child from ED, remember to advise the parent/carer to return if there is any deterioration (e.g. noisy/fast breathing, increasing difficulty feeding).

Common Cold

Parents and patients should be reassured that this is a common and self-limiting illness caused by a virus. Educating parents about expected course of the illness, indications to return for repeat evaluation, supportive measures and prevention of spread will help with this.

Advice should be given regarding maintenance of adequate fluid intake, supportive measures such as saline drops/sprays and over the counter medications e.g. paracetamol and ibuprofen.[10] If sore throat is a prominent feature, it may be the cause of poor fluid intake. In this case, Difflam spray may be a useful adjunct.

Pharyngitis/Tonsillitis

Manage viral pharyngitis with supportive measures and advice as above.

Bacterial pharyngitis is suggested by fever, exudate, palatal petechiae and anterior cervical lymphadenopathy. **Do not routinely send a throat swab.** In high risk

patients who have significant symptoms and pharyngeal erythema/exudate where you specifically need to look for streptococcal infection, send a throat swab to microbiology. [11] Do not do a throat swab if there is evidence of a viral cause (coryzal, red ears).

The Centor Criteria may help guide your management.

Centor Criteria

- Tonsillar exudate
- Tender anterior cervical lymphadenopathy
- Fever
- Absence of cough

≥3 signs gives 40-60% chance that this is Group A Streptococcal infection and patient may benefit from antibiotics. <3 gives 80% chance that this is not Group A Streptococcus.[11]

Indications for antibiotics:

- Children who are systemically unwell with high fever
- Evidence of streptococcal infection e.g. Centor score ≥3, Scarlet fever
- Children at increased risk of bacterial infection e.g. immune deficiency

Antibiotic choice:

- **Oral: Penicillin V 10 days / Azithromycin 5 days**
- **IV: Benzylpenicillin (inpatient) / Ceftriaxone (ambulating)**

Peritonsillar abscess (Quinsy)

Diagnosis is clinical and antibiotics are recommended for all cases of suspected peritonsillar infection. However, imaging has a role if there is uncertainty over the diagnosis or if you suspect complications – discuss with radiologist.

Admit for IV antibiotics, analgesia and hydration. Antibiotics should be given parenterally until the patient is afebrile and clinically improved.

Antibiotic choice:

IV:Benzylpenicillin (inpatient) / Ceftriaxone (ambulating). . IV until clinically improves; complete 10 days total. Liaise with microbiology.

In cases with airway compromise, refer promptly to ENT to arrange needle aspiration or incision and drainage. Pus should be sent to microbiology. Tonsillectomy may be indicated in cases with significant airway obstruction. For patients with no airway compromise, a trial of 24 hours medical therapy may be appropriate.

Acute otitis media

Simple analgesia should be given regularly. Decongestants and anti-histamines are not recommended[12].

Not all children with AOM need antibiotics. In some cases, it may be appropriate to initiate antibiotics only if symptoms fail to improve after 48-72hours.

- In children under 2 years with bilateral acute otitis media, give immediate antibiotics
- In immunocompetent children over 2 years with unilateral AOM, mild symptoms and no otorrhoea, observation may be appropriate. Ensure parents understand the rationale and signs of deterioration.

Antibiotic choice:

- **Co-amoxiclav 7 days/Azithromycin 3 days**

Acute Mastoiditis

Diagnosis is clinical and even in uncomplicated cases, IV antibiotics will be required. Therefore, take bloods including blood culture and start IV antibiotics. The most common pathogens are *Streptococcus pneumoniae*, *Streptococcus pyogenes* and *Staphylococcus aureus*.[13]

For antibiotic advice, discuss with microbiology.

Give analgesia/antipyretics as required and ensure the child is well hydrated. If there is visible discharge, swab and send for MC+S.

Refer to ENT who may request a CT of the temporal bones for the purpose of determining the stage of the disease and looking for complications. The patient may require aspiration, drainage or mastoidectomy.

Sinusitis

Give analgesia/antipyretics as required and ensure the child is well hydrated. Do not send a throat swab or nasopharyngeal aspirate (NPA) if you think this is sinusitis – there is a poor correlation between these and sinus aspirate culture.[9] In severe cases, discuss with ENT regarding sinus aspiration.

In mild/moderate cases (temperature <39°C, no systemic signs), oral antibiotics are appropriate.[14]

Admit children who look septic, if complications are suspected, or if oral antibiotics and outpatient management has failed. In these cases, send bloods, blood cultures and give IV antibiotics.

For antibiotic advice, discuss with microbiology.

Discuss with ENT any child requiring admission. They may require a CT to look for complications.

➢ Contacts (inside and outside the Trust including out-of-hours contacts)

- Paediatric Registrar on-call: bleep 3111
- Anaesthetic Registrar on-call: bleep 3005
- ENT Registrar on-call: phone clinic 4B during working hours as an ENT doctor may be able to come if there is an ENT clinic taking place. Outside working hours phone the Royal Free Hospital and ask to speak to the ENT registrar on call.
- Microbiology Registrar, 9am-5pm: bleep 3069; out-of-hours: mobile via switchboard

➢ References (evidence upon which the guideline is based)

1. Lissauer T, Clayden G. *Illustrated textbook of paediatrics.*4th ed. London: Mosby Elsevier; 2012.
2. Pappas DE, Hendley JO. The common cold in children: clinical features and diagnosis. [Online]. 2014 Jan 15. Available from: http://www.uptodate.com/contents/the-common-cold-in-children-clinical-features-and-diagnosis?source=preview&search=upper+respiratory+tract+infection+children&language=en-US&anchor=H1&selectedTitle=2~150#H1
3. Fleisher GR. Evaluation of sore throat in children. [Online]. 2013 Aug 22. Available from: http://www.uptodate.com/contents/evaluation-of-sore-throat-in-children?source=search_result&search=pharyngitis+children&selectedTitle=1~150
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5. Wald ER. Peritonsillar cellulitis and abscess. [Online]. 2014 Jan 20. Available from: http://www.uptodate.com/contents/peritonsillar-cellulitis-and-abscess?source=search_result&search=quinsy&selectedTitle=1~34

6. Klein JO, Pelton S. Acute otitis media in children: epidemiology, microbiology, clinical manifestations, and complications. [Online]. 2014 Nov 11. Available from: http://www.uptodate.com/contents/acute-otitis-media-in-children-epidemiology-microbiology-clinical-manifestations-and-acomplications?source=see_link&anchor=H22#H22

7. Wald ER. Acute otitis media in children: diagnosis. [Online]. 2014 Oct 21. Available from: http://www.uptodate.com/contents/acute-otitis-media-in-children-diagnosis?source=see_link&anchor=H19#H19

8. Wald ER. Acute mastoiditis in children: clinical features and diagnosis. [Online]. 2014 May 21. Available from: http://www.uptodate.com/contents/acute-mastoiditis-in-children-clinical-features-and-diagnosis?source=machineLearning&search=Acute+mastoiditis+in+children%3A+Clinical+features+and+diagnosis&selectedTitle=1~150&sectionRank=1&anchor=H7#H7

9. Wald ER. Acute bacterial rhinosinusitis in children: clinical features and diagnosis. [Online]. 2013 Dec 13. Available from: http://www.uptodate.com/contents/acute-bacterial-rhinosinusitis-in-children-clinical-features-and-diagnosis?source=search_result&search=acute+sinusitis+children&selectedTitle=2~41

10. Pappas DE, Hendley JO. The common cold in children: treatment and prevention. [Online]. 2015 Jan 20. Available from: http://www.uptodate.com/contents/the-common-cold-in-children-treatment-and-prevention?source=machineLearning&search=upper+respiratory+tract+infection+children&selectedTitle=1~150&sectionRank=1&anchor=H199065563#H199065563

11. NICE Clinical Knowledge Summaries. Sore throat – acute. [Online]. 2012 Oct. Available from: http://cks.nice.org.uk/sore-throat-acute#!scenarioclarification

12. Klein JO, Pelton S. Acute otitis media in children: treatment. [Online]. 2014 Jan 31. Available from: http://www.uptodate.com/contents/acute-otitis-media-in-children-treatment?source=search_result&search=acute+otitis+media+children&selectedTitle=1~150

13. Wald ER. Acute mastoiditis in children: treatment and prevention. [Online]. 2015 Jan 05. Available from: http://www.uptodate.com/contents/acute-mastoiditis-in-children-treatment-and-prevention?source=search_result&search=acute+mastoiditis&selectedTitle=3~150

14. Wald ER. Acute bacterial rhinosinusitis in children: microbiology and treatment. [Online]. 2014 Nov 20. Available from: http://www.uptodate.com/contents/acute-bacterial-rhinosinusitis-in-children-microbiology-and-treatment?source=search_result&search=acute+sinusitis+children&selectedTitle=1~41

- **Compliance with this guideline (how and when the guideline will be monitored e.g. audit and which committee the results will be reported to) Please use the tool provided at the end of this template**

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval

		Yes/No	Comments
1.	**Does the procedural document affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	No	
4.	**Is the impact of the procedural document likely to be negative?**	No	
5.	**If so can the impact be avoided?**	N/A	
6.	**What alternatives are there to achieving the procedural document without the impact?**	N/A	

		Yes/No	Comments
7.	**Can we reduce the impact by taking different action?**	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the Director of Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the Director of Human Resources.

Checklist for the Review and Approval of Procedural Document

To be completed and attached to any procedural document when submitted to the relevant committee for consideration and approval.

	Title of document being reviewed:	**Yes/No**	**Comments**
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Is it clear that the relevant people/groups have been involved in the development of the document?	Yes	
	Are people involved in the development?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
5.	**Evidence Base**		
	Are key references cited in full?	N/A	
	Are supporting documents referenced?	N/A	
6.	**Approval**		
	Does the document identify which committee/	Yes	

	Title of document being reviewed:	Yes/No	Comments
	group will approve it?		
7.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Yes	
8.	**Document Control**		
	Does the document identify where it will be held?	Yes	
9.	**Process to Monitor Compliance and Effectiveness**		
	Are there measurable standards or KPIs to support the monitoring of compliance with and effectiveness of the document?	Yes	
	Is there a plan to review or audit compliance with the document?	Yes	
10.	**Review Date**		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so is it acceptable?	Yes	
11.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes	

Executive Sponsor Approval			
If you approve the document, please sign and date it and forward to the author. Procedural documents will not be forwarded for ratification without Executive Sponsor Approval			
Name		Date	
Signature			
Relevant Committee Approval			
The Director of Nursing and Patient Experience's signature below confirms that this procedural document was ratified by the appropriate Governance Committee.			
Name		Date	
Signature			
Responsible Committee Approval – only applies to reviewed procedural documents with minor changes			
The Committee Chair's signature below confirms that this procedural document was ratified by the responsible Committee			
Name		Date	

Name of Committee		Name & role of Committee Chair	
Signature			

Tool to Develop Monitoring Arrangements for Policies and guidelines

What key element(s) need(s) monitoring as per local approved policy or guidance?	Who will lead on this aspect of monitoring? Name the lead and what is the role of the multidisciplinary team or others if any.	What tool will be used to monitor/check/observe/Assess/inspect/ authenticate that everything is working according to this key element from the approved policy?	How often is the need to monitor each element? How often is the need complete a report ? How often is the need to share the report?	What committee will the completed report go to?
Element to be monitored	**Lead**	**Tool**	**Frequency**	**Reporting arrangements**
Compliance with the guideline recommendations **Any problems with the guideline**	**Dr Jon Moreiras**	**Audit** **Reporting of any problems with the guideline**	**Audit 1 - 2 years after introducing the guideline** **If there are problems with the guideline they are to be reported when they occur**	**Paediatric team and paediatric clinical governance group**