LRI Emergency Department and Children's Hospital

Upper Respiratory Tract Infection in Children

Staff relevant to:	Clinical staff working within UHL Children's Hospital and Children's ED.
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Contents

1. Introduction and Who Guideline applies to

This guideline applies to children presenting to Leicester Children's Hospital with features suggestive of upper respiratory tract infection. This guideline covers the management of single infections. If there are concerns regarding recurrent, severe infections then further advice should be sought. This may include the consideration of immune deficiency or primary ciliary dyskinesia.

Upper respiratory tract infection (URTI) is defined as any infectious disease of the upper respiratory tract, including the common cold, pharyngitis/tonsillitis, otitis externa and acute otitis media.

Upper respiratory tract infections can last between 3 days and 2 weeks. Antibiotics are not usually advised. This is because the majority of these infections are caused by viruses. It is also important to note that even for those infections presumed to have been caused by bacteria, antibiotics will not have a significant effect on the clinical course of the illness.

The management of URTI in children will be determined by good clinical assessment to assess the severity of the illness. This will help to determine management and advice to give to families.

Specific indications for the use of antibiotics, choice and duration will be discussed in detail within the relevant section and appendices for this document

This guidance will cover the following conditions:

- Common cold
- Acute sore throat/ pharyngitis/ tonsillitis
- Acute otitis media
- Otitis externa

For advice about influenza, croup and pertussis please refer to the appropriate guideline.

Related documents:

- Influenza (Flu) Like Illness - Treatment in Children and Young People UHL Childrens Guideline
- Croup UHL Childrens UHL Childrens Guideline
- Pertussis (Whooping Cough) UHL Childrens Medical Guideline

Additional information (update February 2023):

In view of reduction in circulating Group A Streptococcal (GAS) infections back to expected levels following the peak in Winter 2022-2023, the interim guidelines for lowered threshold of antibiotic prescribing for acute sore throats has now been withdrawn by NHS England. Clinicians should continue to be alert to the severe complications of GAS and maintain a high degree of clinical suspicion when assessing patients, particularly those with preceding viral infection (including chickenpox) or close contacts of scarlet fever/iGAS.

2. Diagnosis and management

This guidance has been adapted from national guidelines, including the Public Health England (PHE) guidelines and NICE guidelines.

2.1 Common Cold

- Common cold is an acute, self-limiting inflammation of the upper respiratory tract mucosa that may involve any or all of: the nose, throat, sinuses, and larynx.
- Common symptoms include any or all: runny/blocked nose, sneezing, sore throat, cough, headache, malaise and fever.
- The natural history of the common cold is rapid onset, with symptoms peaking after 2–3 days, and typically resolving after 7 to14 days in young children, although a mild cough may persist for 3 weeks.
- The condition is associated with more than 200 virus subtypes.
- The majority of common colds are caused by rhinoviruses (up to 50%). Other known pathogens include coronavirus, influenza, parainfluenza, respiratory syncytial virus and metapneumovirus.

Treatment

- Symptomatic relief and rest are the most appropriate management (steam inhalation, nasal saline drops, analgesia; paracetamol and ibuprofen)
- Antibiotics and antihistamines are ineffective and may cause adverse effects. **Therefore do not prescribe antibiotics.**
- Adequate fluid should be taken during the illness.

Alternative underlying diagnoses to be considered

Consider	**If**
Atopic Rhinitis	No fever, possible seasonal onset
Streptococcal tonsillitis	A sore throat is the main symptom
Influenza	The illness started suddenly with fever & chills
Otitis media	Otalgia is a main symptom
Sinusitis	Facial pain/ tenderness is a main symptom
Lower Respiratory Tract Infection (LRTI)	The patient has large amounts of sputum, difficulty breathing or pleuritic pain
Meningitis/Meningococcal disease	The patient has altered consciousness, photophobia, hypotonia, neck stiffness, seizures, rash

2.2 Acute Sore Throat/ Pharyngitis/ Tonsillitis

Acute sore throat can be caused by a viral or bacterial infection. The vast majority of these (whether viral or bacterial) will resolve with conservative management and so do not require antibiotic treatment.

- Common infectious causes of acute sore throat include:
  - Rhinovirus, coronavirus, parainfluenza virus, Influenza types A and B.
  - Epstein-Barr virus, leading to infectious mononucleosis (glandular fever)
  - *Streptococcus* sp (Group A,C,G)

Consider diphtheria if recent foreign travel (check immunisation status).
Fusobacterium spp may cause Lemierre's syndrome and peritonsillar abcess

Clinical judgement to determine the need for hospital admission is needed for anyone with possible red flag signs :

- Breathing difficulty
- Clinical dehydration
- Signs of marked systemic illness or sepsis.
- Difficulty in swallowing with muffled voice, pooling of saliva or drooling and trismus are signs of a peritonsillar abscess (Quinsy) which needs an urgent ENT consultation.

FeverPAIN Score is a clinical scoring tool that can help to identify the people in whom Group A Streptococcus (GAS) is more likely:

For FeverPAIN calculator score - https://www.mdcalc.com/feverpain-score-strep-pharyngitis
Fever in last 24 hours; **P**urulence; **A**ttend rapidly; severely **I**nflamed tonsils; **N**o cough or coryza

<u>Important things to remember when using the FeverPAIN score to decide on antibiotic prescription</u>

- The Fever PAIN score was derived from a study on patients over 3yrs, and so should not be used in younger children.
- It predicts the likelihood of having GAS on swab. If score of 4-5 then likelihood is 62-65%. It does not predict that the child will have a more serious clinical course or be at higher risk of the rare sequelae.
- If a child does have GAS, then a pain reduction at day 3 is more likely with using antibiotics. The NNT is 6. This means for every 6 children who do have a Streptococcal sore throat, 1 of them will have less pain at day 3, than if they had had no antibiotics.
- The adverse effects of antibiotics (including diarrhoea, skin rashes and candidiasis) occur in 1 in every 6-9 children treated with antibiotics.
- Complications such as quinsy only occur in about 0.35% children. Antibiotics may reduce this a little, need to treat a lot of children to prevent a case.
- Most children improve without needing antibiotics. Treating pain effectively and ensuring hydration are the most important things to make the child feel better.
- Scarlet fever is a clinical diagnosis which often presents initially with sore throat, headache, fever, nausea and vomiting. After 12 to 48 hours the characteristic fine red rash develops (if you touch it, it feels like sandpaper). Typically, it first appears on the chest and stomach, rapidly spreading to other parts of the body.
- Take a throat swab where there is diagnostic uncertainty, Scarlet fever, peritonsillar abscess/quinsy or suspected Lemierre's syndrome.

Treatment

- Pain control to enable the child to drink well is the best treatment. This means paracetamol and/or ibuprofen. Difflam can be occasionally helpful if an older child is still struggling to swallow fluids despite simple analgesia. However it is not required for most children, where regular analgesia, cool drinks/ice cream/yoghurts work very well.
- Antibiotics are not needed for the vast majority of children with simple uncomplicated sore throat. Consider prescribing antibiotics if FeverPAIN≥4, ***and*** you feel the risk/benefits (noting the guidance above) warrant treatment
- Antibiotics is indicated if the patient is suspected to have Scarlet fever, peritonsillar abscess/quinsy or Lemierre's syndrome.

Refer to appendix 1 for the antibiotic choice and duration

2.3 Acute Otitis Media (AOM)

- Acute otitis media (AOM) is an infection involving the middle ear space and is a common complication of viral respiratory illnesses. Average total length of the illness is 4 days, but may take up to a week

- AOM resolves within 24 hours in 60% of cases without antibiotics. Antibiotic treatment has no benefit to reduce pain early in the illness and does not prevent deafness.

- If there is hearing loss in the absence of pain or fever, this most probably indicates otitis media with effusion (OME): there is no evidence to support the use of antibiotics in this case.

- If there is discharge from the ear canal persisting for 2 weeks, it is likely due to chronic suppurative otitis media (CSOM): needs ENT assessment.

- If an episode of acute otitis media (AOM) fails to improve or worsens, an immediate specialist assessment is needed to exclude complications of AOM (such as meningitis, mastoiditis, or facial nerve paralysis).

Treatment

- Pain control is central to managing the condition: oral or rectal analgesia.
- Consider eardrops containing an anaesthetic and an analgesic for pain (ie phenazone+lidocaine) if an immediate antibiotic is not given, and there is no eardrum perforation or otorrhoea

- Consider giving antibiotics in the following cases:
  - <2 years old and bilateral AOM bulging membrane
  - All ages with otorrhoea

Refer to appendix 2 for the antibiotic choice

2.4 Acute Otitis Externa

- Acute otitis externa (AOE) refers to inflammation of the external auditory canal, causes includes Infection, allergy, and dermatological conditions.

- Risk factors include swimming, trauma, devices, allergic contact dermatitis and other dermatological conditions.

- The key diagnostic factors: ear pain, tragal tenderness and ear canal swelling and erythema.

- The spectrum of AOE ranges from mild to severe, based upon the presenting symptoms and physical examination
    - Mild disease is characterized by minor discomfort and pruritus. There is minimal canal oedema.
    - Moderate disease is characterized by an intermediate degree of pain and pruritus. The canal is partially occluded
    - Severe disease is characterized by intense pain, and the canal is completely occluded from oedema

- Patients with malignant otitis externa usually presents systemically unwell with unremitting, disproportionate ear pain, fever, headache, purulent otorrhoea, vertigo, profound conductive hearing loss, with/without ipsilateral facial nerve palsy – this requires urgent referral to ENT for further management

Treatment

Analgesia and topical treatments are useful to treat AOE
Use of aural toilet should be considered to remove debris from the ear canal. Ensure that the tympanic membrane is visualised and noted to be intact before treatment.

Refer to appendix 3 for the antibiotic choice

3. Education and Training

This guideline will be available in the Policy & Guidelines Library accessed via Insite for staff working in Children's ED and Children's Hospital.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
100% appropriate use of antibiotics according to the guideline	Review of case notes/ICE documentation	Paediatric or Microbiology team	Annual	Clinical audit group

5. Supporting References

NICE guideline [NG84]; sore throat (acute): antimicrobial prescribing. January 2018

NHS England. Group A Streptococcus: reinstatement of NICE sore throat guidance for children and young people and withdrawal of NHS England interim guidance. 16 February 2023

Cochrane library (acute sore throat):
https://www.ncbi.nlm.nih.gov/pubmed/24190439
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3898431/

NICE guideline [NG91]; Otitis media (acute): antimicrobial prescribing. March 2022

Rosenfeld RM, Schwartz SR, Cannon CR, Roland PS, Simon GR, Ashok Kumar K et al. Clinical practice guideline: acute otitis externa. Otolaryngol Head Neck Surg. 2014 Feb; 150(1):1-24. Available from: http://oto.sagepub.com/content/150/1_suppl/S1.full.pdf+html.

Clinical Knowledge Summaries (CKS). Otitis externa. February 2022. Available from: http://cks.nice.org.uk/otitis-externa#!topicsummary.
UK Paediatric Antimicrobial Stewardship (UK-PAS). Antimicrobial paediatric summary for hospitals. February 2022

6. Key Words

Respiratory, paediatrics, tonsillitis, otitis

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) Fadwa Elsanousi - Medical Microbiologist Reviewed by: A Atkinson – Consultant in paediatric emergency medicine R Radcliffe – Consultant Paediatrician S Koo – Consultant Microbiologist	**Executive Lead** **Chief Medical Officer**

Details of Changes made during review:
Added GASi statement following the peak this winter and the cessation of the interim guidance.
Fusobacterium spp may cause Lemierre's syndrome and peritonsillar abcess added to possible causes of acute sore throat/pharyngitis/tonsillitis
Also added -

- Scarlet fever is a clinical diagnosis which often presents initially with sore throat, headache, fever, nausea and vomiting. After 12 to 48 hours the characteristic fine red rash develops (if you touch it, it feels like sandpaper). Typically, it first appears on the chest and stomach, rapidly spreading to other parts of the body.

Acute otitis media now includes-

- Consider eardrops containing an anaesthetic and an analgesic for pain (ie phenazone+lidocaine) if an immediate antibiotic is not given, and there is no eardrum perforation or otorrhoea

Acute otitis externa now includes-

- Patients with malignant otitis externa usually presents systemically unwell with unremitting, disproportionate ear pain, fever, headache, purulent otorrhoea, vertigo, profound conductive hearing loss, with/without ipsilateral facial nerve palsy – this requires urgent referral to ENT for further management

Appendix 1. Antibiotic reccomendations FeverPain score

FeverPAIN score	Antibiotic choice (dose as per BNFc)	Route	Duration
0-1	Antibiotics are not recommended Any concerns, worsening or no improvement advise to seek medical advice for a clinical reassessment.		
2-3	Antibiotics are not usually recommended Any concerns, worsening or no improvement advise to seek medical advice for a clinical reassessment.		
If Fever PAIN score is ≥4 ***AND*** after consideration of pro and cons of antibiotic therapy antibiotic treatment is to be prescribed, please follow guidance below. If scarlet fever is suspected, take a throat swab and start antibiotics as below for a total of 10 days. Scarlet fever is notifiable condition - notify UKHSA as soon as practicable.			
4-5	Phenoxymethylpenicillin	Oral/NG	5 days
	Add metronidazole if presence of abscess and/or suspecting Lemierre's syndrome	Oral/NG	5 days
	Penicillin allergy: Clarithromycin	Oral/NG	5 days
	Add metronidazole if presence of abscess and/or suspecting Lemierre's syndrome	Oral/NG	5 days
Severe tonsillitis/ unable to take oral antibiotics	Benzylpenicillin	IV	Until able to tolerate orally; for total of 5 days (IV+PO inclusive)
	Add metronidazole if presence of abscess and/or suspecting Lemierre's syndrome	IV	Until able to tolerate orally; for total of 5 days (IV+PO inclusive)
	Penicillin allergy Clarithromycin	IV	Until able to tolerate orally; for total of 5 days (IV+PO inclusive)
	Add metronidazole if presence of abscess and/or suspecting Lemierre's syndrome	IV	Until able to tolerate orally; for total of 5 days (IV+PO inclusive)

Appendix 2. Acute otitis media

Acute otitis media	
Majority of cases would NOT require antibiotic therapy. Give regular analgesia for pain relief. Consider eardrops containing an anaesthetic and an analgesic for pain (ie phenazone+lidocaine) if an immediate antibiotic is not given, and there is no eardrum perforation or otorrhoea Antibiotics are recommended in the following circumstances: • <2 years old and bilateral AOM bulging membrane • All ages with new otorrhoea	
Antibiotic **(dose as per BNFc)**	Duration
Amoxicillin <u>Penicillin allergy:</u> Clarithromycin	5 days 5 days

Appendix 3. Acute Otitis Externa

Acute Otitis Externa		
		Duration
First line	Analgesia for pain relief, and apply localised heat (e.g. a warm flannel)	
Use of aural toileting is important to remove debris from the ear canal. Ensure that tympanic membrane is visualised and intact before treatment.		
Second line	Acetic acid 2%	7 days
Third line	Betamethasone with neomycin ear drops (ensure tympanic membrane is intact)	7 days
If cellulitis or disease extends outside ear canal – As above and ADD: **(dose as per BNFc)**	Flucloxacillin (oral) <u>If penicillin allergy</u> Clarithromycin (oral) (If patient is known/suspected MRSA colonised, please liaise with microbiology)	7 days 7 days
If suspecting malignant otitis externa	Refer to ENT IV Piperacillin-tazobactam initially then review with culture results. Total antibiotic duration for 4-6 weeks. (If patient is known/suspected MRSA colonised, please liaise with microbiology)	