1. Introduction and who guideline applies to

This guideline has been developed to deliver safe and appropriate empirical use of antibiotics for Adult patients presenting with Ear Nose and Throat (ENT) infections at University Hospitals of Leicester NHS Trust. The guideline applies to adult inpatient and discharge prescriptions and should be used in conjunction with the Antimicrobial Prescribing Policy; it can also serve as a guide to prescribing in the outpatient setting.

The recommendations within this guideline provide targeted empirical regimens covering likely pathogenic organisms for defined infections and aim to promote the evidence based use of antibiotics, minimise the effect of antibiotics on the patient's normal bacterial flora and adverse effects.

2. Guideline Standards and Procedures

Specimens are essential to guide therapy, especially for patients who may require prolonged courses of antibiotics.

Duration of treatment may vary according to individual patient circumstances. Complex or deep seated infections should be discussed with Microbiology.

2.1. General Advice

- Take appropriate specimens for microscopy, culture and sensitivity testing prior to starting antibiotics.
- The choice of antibiotic must be reviewed with the culture and antimicrobial sensitivity results.
- Intravenous (IV) therapy should be reserved for those patients who are seriously ill with moderate to severe infections or are unable to take medications enterally.
- Review IV treatment within 72 hours with a view to switching to oral therapy as soon as clinically appropriate.
- The antibiotic doses recommended in this guidance are intended for adult patients with normal renal and liver function who are not pregnant or breast feeding. Refer to a Pharmacist for further advice in these patients. Some advice for dose recommendations in renal impairment can be found on the Antimicrobial Website and App.

2.2. Specific Antibiotic Advice

- Quinolone (e.g. ciprofloxacin) warnings:
  - Tendon Damage (rare) – Contraindicated with a history of tendon disorders related to quinolone use. Caution in people over 60 years, solid organ transplant, renal impairment, or concomitant corticosteroids. Stop quinolone treatment immediately if tendonitis suspected.
  - Aortic Aneurism and Dissection (small increased risk) – Use with caution in patients at risk of aortic aneurism and dissection (includes connective tissue disorders). Urgent review if sudden-onset severe abdominal, chest, or back pain develops.
  - Muskuloskeletal and nervous effects (very rare) – Stop treatment at the first signs of muscle pain, muscle weakness, joint pain, joint swelling, peripheral neuropathy, and other CNS effects. Avoid use in patients who have experienced adverse effects from quinolones previously. Caution in people with a history or predisposition to seizures.

2.3. Empiric antimicrobial therapy

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Peritonsillar abscess	1st Line	Benzylpenicillin IV 1.2g QDS + Metronidazole IV 500mg BD	Phenoxymethylpenicllin orally 500mg QDS + Metronidazole orally 400mg BD	Up to 10 days	Refer to ENT for drainage of abscess
	Penicillin allergy	Clarithromycin IV 500mg BD + Metronidazole IV 500mg BD	Clarithromycin orally 500mg BD + Metronidazole orally 400mg BD		
Acute Epiglotitis/ Supraglotitis	1st Line	Ceftriaxone IV 2g OD	Co-amoxiclav orally 625mg TDS	5 days	Urgent ENT referral for airway management; for longer durations of treatment discuss with micro.
	Penicillin allergy	Ciprofloxacin IV 400mg BD + Vancomycin IV *(as per vancomycin chart)*	Doxycycline orally 200mg OD		

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Sore throat/ Pharyngitis/ Tonsillitis ***with systemic symptoms or FeverPain score ≥4*** Use Fever Pain score to determine whether antibiotics are required Treat only if FeverPain score is ≥4 or ***with systemic upset*** (i.e. temperature, HR, RR or WBC deranged)	1st Line	Phenoxymethylpenicillin orally 500mg QDS *Or* Benzylpenicillin IV 1.2g QDS (if patient unable to swallow) (Add Metronidazole 500mg IV BD if there is abscess formation or Lemierre's Syndrome)	Phenoxymethylpenicillin orally 500mg QDS + (Add Metronidazole orally 400mg BD if there is abscess formation or Lemierre's Syndrome)	5 to 10 days	All patients with Lemierre's syndrome should be referred to ENT as they typically require 4 weeks of antibiotic treatment. Link for FeverPain score: https://ctu1.phc.ox.ac.uk/feverpain/index.php
	Penicillin allergy	Clarithromycin orally 500mg BD (IV if patient unable to swallow) (Add Metronidazole 500mg IV BD if there is abscess formation or Lemierre's Syndrome.)	Clarithromycin orally 500mg BD + (Add Metronidazole orally 400mg BD if there is abscess formation or Lemierre's Syndrome)	5 days	
Acute Uncomplicated Otitis Media	1st line	Amoxicillin orally 1g TDS	N/A	5 days	If the patient has been treated with Amoxicillin in the community and symptoms persist, discuss with ENT. Consider treatment with co-amoxiclav 625mg TDS for 5 days
	Penicillin allergy	Clarithromycin orally 500mg BD	N/A	5 days	

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Acute Otitis Media or Mastoiditis with suspected intracranial extension	1st line	Ceftriaxone 2g IV BD + Metronidazole orally 400mg IV BD	N/A	14 days	Case to be discussed with ENT and microbiology
	Severe penicillin allergy or Cephalosporin allergy	Discuss with Microbiology			
Acute uncomplicated Mastoiditis	1st line	Co-amoxiclav 1.2g IV TDS	Co-amoxiclav 625mg orally TDS	14 days initially (but likely to require longer duration) Discuss with microbiology	Refer all cases to ENT and discuss with microbiology.
	Penicillin allergy	Vancomycin IV *(as per vancomycin chart)* + Metronidazole orally 400mg BD (If nil by mouth (NBM) metronidazole IV 500mg BD) + Ciprofloxacin orally 500mg BD (If NBM ciprofloxacin IV 400mg BD)	Doxycycline orally 200mg OD + Metronidazole orally 400mg BD + Ciprofloxacin orally 500mg BD		

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Uncomplicated Otitis Externa	1st line	Topical acetic acid 2% 1 spray TDS	N/A	Continue until two days after symptoms have disappeared but no longer than 7 days	Use of aural toilet should be considered to remove debris from the ear canal before treatment.
	2nd line	Ciprofloxacin 2mg/ml (Cetraxal®) ear drops apply contents of single ampoule (2mg in 1ml) BD	N/A	5 days	
	For ENT use only: Contraindicated in perforated tympanic membrane	Sofradex® or Gentisone HC® ear drops apply 2 drops 4 times daily Must document in patients' notes that it has been confirmed that tympanic membrane is intact - *Sofradex* contains dexamethasone, framycetin, and gramicidin - *Gentisone* contains gentamicin and hydrocortisone	N/A		
Otitis Externa with Cellulitis or disease extending outside the ear canal	1st line	Ear drops as per Uncomplicated Otitis Externa + Flucloxacillin orally 1g QDS	N/A	5 days	Refer to ENT
	Penicillin allergy	Ear drops as per Uncomplicated Otitis Externa + Doxycycline 200mg OD			

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Malignant otitis externa If patient immunocompromised e.g. diabetes, HIV, chemotherapy	1st line	Piperacillin-tazobactam IV 4.5g TDS		6 weeks	Discuss management with Microbiology and ENT. Empirical treatment should be reviewed once microbiology results are available. The remainder of the course will need to be based on microbiology sensitivity results. **Consider OPAT when stable.**
	Penicillin allergy	Ciprofloxacin 750mg orally BD If NBM: Ciprofloxacin IV 400mg BD			

<table>
<tr><th>Indication</th><th colspan="2">Recommended Initial Empirical Therapy</th><th>Recommended Empirical IV to Oral Switch</th><th>Total Duration</th><th>Notes</th></tr>
<tr><td rowspan="3">Acute Uncomplicated Sinusitis (no orbital cellulitis or central nervous system involvement) with <u>no systemic upset</u> (i.e. temperature, HR, RR or WBC not deranged)

Issue antibiotic prescription <u>only if</u> several of the following are present:
• symptoms for more than 7 days
• discoloured or purulent nasal discharge
• severe localised unilateral pain (particularly pain over teeth and jaw)
• fever
• marked deterioration after an initial milder phase</td><td colspan="4">For outpatients/ED:
Provide information on self care and signpost patient to their local pharmacy if symptomatic relief is sought.

If after self-care, symptoms worsen rapidly or significantly, or do not start to improve in 7 days,patient’s should be advised to visit their GP with a copy of their discharge summary to obtain a prescription for antibiotics.</td><td rowspan="3">Sinusitis is normally caused by a virus and is self limiting which can last up to 3 weeks.

If delaying prescription ensure thorough patient counselling (i.e. self-care, when to seek advise and when to see their GP with a copy of their discharge summary to obtain antibiotic prescription).</td></tr>
<tr><td>1st Line</td><td colspan="2">For inpatients:
Consider delaying antibiotic prescription. If symptoms worsen rapidly or significantly, or do not improve in 7 days prescribe:
Phenoxymethylpenicillin orally 500mg QDS</td><td rowspan="2">5 days</td></tr>
<tr><td>Penicillin allergy</td><td colspan="2">Doxycycline orally 200mg OD</td></tr>
</table>

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Severe Acute Uncomplicated Sinusitis (no orbital cellulitis or central nervous system involvement) ***with systemic upset*** (i.e. temperature, HR, RR or WBC deranged)	1st line	Co-amoxiclav IV 1.2g TDS	Co-amoxiclav orally 625mg TDS	5 days	Refer ENT
	Penicillin allergy	Clarithromycin IV 500mg BD (add Metronidazole orally 400mg BD if dental abscess present)	Clarithromycin 500mg orally BD (plus Metronidazole orally 400mg BD if dental abscess present)		
Acute Complicated Sinusitis (concomitant orbital cellulitis, subperiosteal abscess, central nervous system involvement)	First line and patients with non-severe penicillin allergy	Ceftriaxone 2g IV BD + Metronidazole orally 400mg BD	Contact microbiology	7 days initially (but likely to require longer duration). Discuss with microbiology	Discuss all cases with ENT and microbiology
	Severe penicillin allergy or cephalosporin allergy	Contact Microbiology			

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Chronic Sinusitis	1st line	Co-amoxiclav PO 625mg TDS	N/A	5 days	Longer courses may be indicated for selected patients after discussion with Microbiology and ENT
	Penicillin allergic	Clindamycin orally 300mg QDS			
Neck abscess	1st Line	Co-amoxiclav IV 1.2g TDS	Co-amoxiclav orally 625mg TDS	5 days	Deep space neck abscesses should be discussed with Microbiology and ENT
	Penicillin allergy	Vancomycin IV *(as per vancomycin chart)* + Metronidazole orally 400mg BD (If NBM metronidazole IV 500mg BD) + Ciprofloxacin orally 500mg BD (If NBM ciprofloxacin IV 400mg BD)	Doxycycline orally 200mg OD + Metronidazole orally 400mg BD + Ciprofloxacin orally 500mg BD		

Indication	Recommended Initial Empirical Therapy		Recommended Empirical IV to Oral Switch	Total Duration	Notes
Acute Bacterial Parotitis	1st Line	Flucloxacillin IV 2g QDS + Metronidazole IV 500mg BD	Flucloxacillin orally 1g QDS + Metronidazole orally 400mg BD	5 days	
	Penicillin allergy	Doxycycline 200mg OD + Metronidazole PO 400mg BD (If NBM: Vancomycin IV *(as per vancomycin chart)* + Metronidazole IV 500mg BD	Doxycycline 200mg OD + Metronidazole orally 400mg BD		
Facial / Pinna Cellulitis	1st Line	Flucloxacillin IV 2g QDS	Flucloxacillin orally 1g QDS	5 days	Refer ENT
	Penicillin allergy	Vancomycin IV *(as per vancomycin chart)*	Doxycycline orally 200mg OD		
Ludwig's Angina	1st line	Benzylpenicillin IV 1.2g QDS + Metronidazole IV 500mg BD	N/A	14 days	Urgent ENT referral for airway management;
	Penicillin allergy	Clindamycin IV 1.2g QDS			
Auricular Perichondritis	1st line	Ciprofloxacin PO 500mg BD	N/A	5 days	Refer ENT
	2nd line	Discuss with microbiology	N/A	5 days	Refer ENT

3. Education and Training

None additional

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Adherance to guideline in terms of choice and duration of antimicrobial therapy, and obtaining samples before commencing antimicrobial therapy	Annual Trust Wide Anitmicrobial Prescribing Audit	Antimicrobial Pharmacists	Annual	CMGs and TIPAC

5. Supporting References

- Brook I: Anaerobic bacteria in upper respiratory tract and head and neck infections: Microbiology and treatment Anaerobe 18 (2012) 214-220.
- Desrosiers M et al: Canadian clinical practice guidelines for acute and chronic rhinosinusitis Allergy Asthma ClinImmunol. 2011; 7(1): 2.
- Uptodate.com submandibular space infection (Ludwig's angina) accessed 28th March 2017.
- NICE guideline [NG84]. Sore throat (acute): antimicrobial prescribing. January 2018.
- NICE guideline [NG79]. Sinusitis (acute): antimicrobial prescribing. October 2017.
- Uptodate.com Suppurative parotitis in adults. Accessed 11 May 2020
- Uptodate.com Peritonsillar cellulitis and abscess. Accessed 11 May 2020

6. Key Words

ENT Ear Nose Throat Infection Antibiotic

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Antimicrobial Working Party Review Ratified: 9th July 2019 Review Due: July 2022 Reference: AWP49	**Policy and Guideline Committee Review** Ratified: 24.4.20 Review Due: June 2023 Reference: B20/2020

Details of Changes made during review:

- Sore throat indication and recommendations added in line with NICE guidance
- Acute uncomplicated Mastoiditis in penicillin allergic patients treatment changed from clindamycin to vancomycin + metronidazole + ciprofloxacin. Corresponding PO options added and initial duration extended.
- Uncomplicated Otitis Externa 1st line option added acetic acid 2% in line with primary care guidelines.
- Uncomplicated Otitis Externa 2nd line treatment changed from Ciloxan/Exocin to licensed product Cetraxal
- Sofradex and gentisone HC reserved for ENT use only and after confirming tympanic membrane intact.
- Aural toileting comment added
- Complicated otitis externa oral flucloxacillin dose increased
- Complicated otitis externa in penicillin allergy, clarithromycin changed to doxycycline
- Acute Uncomplicated Sinusitis section updated in line with NICE and recommendations added for outpatients/ED and inpatients
- Delayed antibiotic prescribing recommendations added for above indication in line with NICE
- Acute Complicated Sinusitis duration changed from 14 days to 7 days in line with NICE
- Chronic Sinusitis first line option changed from clarithromycin to co-amoxiclav and therefore penicillin allergic option also added (clindamycin).
- Neck abscess in peniclllin allergic patients, clarithromycin changed to Vancomycin (IV option) or doxycline (PO option). Ciprofloxacin also added for gram negative cover.
- Acute Bacterial Parotitis in penicillin allergic patients, clarithromycin changed to doxycycline or Vancomycin (if NBM)
- New quinolone safety warnings added