

## **POLICY FOR TREATMENT OF UPPER RESPIRATORY TRACT INFECTIONS**

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*This document is part of antibiotic formulary guidance  
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For antimicrobial management of **orbital cellulitis** please refer to the [Skin and Soft Tissue Infection Guideline](#)

## 1) Pharyngitis / Tonsillitis / Quinsy

### Definition

Pharyngitis is inflammation of the pharynx, which is the area extending from the skull base behind the nose (nasopharynx) through the oropharynx to the level of the cricopharyngeus muscle at the upper end of the oesophagus (hypopharynx).

Tonsillitis is inflammation of the tonsils. Quinsy (peritonsillar abscess), a complication of tonsillitis, is collection of pus in the peritonsillar space (between the tonsillar capsule and the fauces). It is more common in adolescents and young adults, and smoking appears to be a risk factor.

*Corynebacterium diphtheria* (or rarely *C.ulcerans*) strains that produce toxin cause diphtheria, a rare disease in the UK which is almost always imported mainly from Africa, South Asia and the former Soviet Union. It presents with fever, sore throat and swollen neck or “bull neck”(due to cervical lymphadenopathy and oedema of soft tissues), and may cause hoarse voice or cough. In severe cases, a greyish membrane may develop in the throat, obstructing the airway. Neurological and myocardial complications may occur as a result of the effects of the toxin. Laboratory diagnosis is made by culture of nose or throat swabs on special culture media (please specify clinical suspicion on request form) and testing of the organism for toxin production.

Common causative organisms		Microbiological Investigations
Pharyngitis / tonsillitis	Quinsy	
Mostly respiratory viruses Group A $\beta$ -haemolytic Streptococcus Group C&G $\beta$ -haemolytic Streptococcus	Often polymicrobial Group A $\beta$ -haemolytic Streptococcus <i>Staphylococcus aureus</i> Anaerobes <i>Haemophilus influenzae</i>	Mild - None required  Swabs of inflamed tonsils or throat swab (please specify if viral studies are required) Pus from peritonsillar abscess Blood culture (if systemically unwell)

## Treatment

Most infections are of viral aetiology; therefore the majority do NOT require antibiotic treatment.

Antibiotics are indicated for Group A, C & G streptococci, *Corynebacterium diphtheriae* (or rarely *C.ulcerans*) and *Neisseria gonorrhoeae* but have no proven benefit in pharyngitis caused by any other bacteria.

Pharyngitis / Tonsillitis		If <u>MRSA</u> colonised in nose, throat or sputum:	Duration
Group A,C & G streptococcus	1 <sup>st</sup> line	Penicillin V 500mg QDS PO  <b>OR</b> (if not taking orally)  Benzylpenicillin 1.2g QDS IV	<p><b>10 days</b> for Group A Streptococcus</p> <p><b>OR</b></p> <p><b>5 days</b> for Groups C &amp; G Streptococcus</p>
	Penicillin allergy	Clarithromycin 500mg BD PO (or IV if not taking orally)	
		<p><b>Add</b> (based on sensitivity results) <i>any</i> of:</p> <p>1<sup>st</sup> line: Doxycycline 200mg stat then 100mg OD PO</p> <p><b>OR</b></p> <p>2<sup>nd</sup> line: Clarithromycin 500mg BD IV/PO</p> <p><b>OR</b></p> <p>3<sup>rd</sup> line: Linezolid 600mg BD IV/PO</p> <p><b>Unless the patient is already on, or the regimen contains <i>any</i> of these.</b></p>	
<b><i>Corynebacterium diphtheriae</i>, <i>C.ulcerans</i> and <i>Neisseria gonorrhoeae</i></b>	Contact Microbiologist		

Quinsy		Oral switch	If <u>MRSA</u> colonised in nose, throat or sputum:	Duration
1 <sup>st</sup> Line	Benzylpenicillin 1.2g QDS IV <b>AND</b> Metronidazole 500mg TDS IV	Penicillin V 500mg QDS <b>AND</b> Metronidazole 400mg TDS	<b>Add</b> (based on sensitivity results) <i>any</i> of: 1 <sup>st</sup> line: Doxycycline 200mg stat, then 100mg OD PO <b>OR</b> 2 <sup>nd</sup> line: Clarithromycin 500mg BD IV/PO <b>OR</b> 3 <sup>rd</sup> line: Linezolid 600mg BD IV/PO <b>Unless the patient is already on, or the regimen contains <i>any</i> of these</b>	Surgical drainage of the abscess 5-7 days
Penicillin allergy	Clarithromycin 500mg BD IV <b>AND</b> Metronidazole 500mg TDS IV	Clarithromycin 500mg BD <b>AND</b> Metronidazole 400mg TDS	<b>Unless the patient is already on, or the regimen contains <i>any</i> of these</b>	

## 2) Otitis Externa, Cellulitis of pinna and Pinna perichondritis

### Definition

Inflammation of the skin lining the external auditory canal. Malignant otitis externa is a serious form of otitis externa, usually due to *Pseudomonas* and classically occurring in elderly diabetic male patients. The infection may spread to the skull base causing cranial nerve palsies and can result in death.

Common causative organisms	Microbiological Investigations
<i>Pseudomonas aeruginosa</i> <i>Staphylococcus aureus</i> Anaerobes Fungi	Only if immuno-suppressed, severe disease or unresponsive to initial treatment. Blood cultures (if systemically unwell) Ear swab

### Treatment

Otitis externa			Duration	Notes
Mild - moderate	Aural toilet + Advice re: water exclusion	1 <sup>st</sup> line: Acetic acid 1 spray TDS <b>OR</b> Sofradex 2-3 drops 3-4 times per day <b>OR</b> Gentisone HC 2-3 drops 3-4 times a day <hr/> 2 <sup>nd</sup> line Betnesol N 2-3 drops 3-4 times per day <b>OR</b> Topical ciprofloxacin 2-3 drops 3-4 times per day	7-14 days	Topical aminoglycosides can only be used for a <u>maximum of 14 days</u> in the presence of a perforated tympanic membrane

Malignant otitis externa		Outpatient/ Oral switch	If <b>MRSA</b> colonised in nose, throat or sputum:	Duration	Notes
1 <sup>st</sup> line	Piperacillin + tazobactam 4.5g TDS IV	Ciprofloxacin 500mg BD PO	Add(based on sensitivity results) any of:  1 <sup>st</sup> line: Doxycycline 200mg stat then 100mg OD PO  <b>OR</b>  2 <sup>nd</sup> line: Clarithromycin 500mg BD IV/PO  <b>OR</b>  3 <sup>rd</sup> line: Linezolid 600mg BD IV/PO	6 weeks	Antimicrobials should be adjusted based on culture results
Penicillin allergy (non-life threatening)	Ceftazidime 1g TDS IV				
Life threatening penicillin allergy	Ciprofloxacin 500mg BD PO				
<b>Pinna perichondritis (due to ear piercing)</b>					
1 <sup>st</sup> line	Ciprofloxacin 500mg BD PO  <b>OR</b>  Piperacillin + tazobactam 4.5g TDS IV		<b>Unless the patient is already on, or the regimen contains <i>any</i> of these.</b>  <b>OR</b>  The patient is already on ciprofloxacin, <b>AND</b> the MRSA is <u>susceptible</u> to ciprofloxacin	Treat until resolution of infection	If not improving on 1 <sup>st</sup> line treatment, please discuss with microbiologist.  Antimicrobials should be adjusted based on culture results.  If intolerant or allergic to both 1 <sup>st</sup> line antibiotics, please discuss with a microbiologist

Cellulitis of pinna			If <b>MRSA</b> colonised in nose, throat or sputum:
1 <sup>st</sup> line	Mild to moderate (oral)	Flucloxacillin 500 - 1000mg QDS <b>OR</b> (if penicillin allergy) Clarithromycin 500mg BD	Clarithromycin 500mg BD <b>OR</b> (if not susceptible to clarithromycin) Linezolid 600mg BD
	Moderate to severe (IV)	Flucloxacillin 1-2g QDS <b>OR</b> (if penicillin allergy) Clindamycin 600 – 1200mg 6 hourly	Clindamycin 600 – 1200mg 6 hourly <b>OR</b> (if not susceptible to clindamycin) Linezolid 600mg BD
2 <sup>nd</sup> line		If secondary to otitis externa, consider treating as per otitis externa guideline (above).	

### **3) Otitis media and Mastoiditis**

#### **Definition**

Inflammation of the middle ear.

Otitis media is divided into acute and chronic.

- Acute otitis media occurs most commonly in childhood and is an infective process.
- Acute mastoiditis (suppurative infection of the mastoid air cells) may arise as a complication and is a serious, potentially life-threatening condition as intra-cranial sepsis may follow. The mastoid is the part of the temporal skull located behind the ear and is in communication with the middle ear and in close proximity to the middle and posterior cranial fossae.
- Otitis media with effusion is the presence of mucoid fluid in the middle ear for more than 12 weeks and is not infected. Antibiotics have no role in the management.
- Chronic suppurative otitis media refers to chronic (persistent or intermittent) ear discharge associated with either tympanic membrane perforation or cholesteatoma. Antibiotic therapy may bring short-term improvement but management is usually surgical. There is a risk of acute mastoiditis or intra-cranial sepsis arising as complications.

<b>Common causative organisms</b>	<b>Microbiological Investigations</b>
<i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i> Viruses especially in children Group A $\beta$ -haemolytic Streptococcus <i>Staphylococcus aureus</i> <i>Moraxella catarrhalis</i>	Mild – none required  Ear swabs Pus, if perforated Blood cultures (if systemically unwell)

## Treatment

Acute otitis media		If <b>MRSA</b> colonised in nose, throat or sputum and systemic antibiotics are indicated	Duration	Notes
Antibiotics are <b>NOT</b> recommended for uncomplicated acute otitis media, most of which are likely to be viral.				
1 <sup>st</sup> Line	Amoxicillin 500mg TDS PO	<b>Add</b> (based on sensitivity results) <i>any</i> of: 1 <sup>st</sup> line: Doxycycline 200mg stat, then 100mg OD PO  <b>OR</b> 2 <sup>nd</sup> line: Clarithromycin 500mg BD IV/PO  <b>OR</b> 3 <sup>rd</sup> line: Linezolid 600mg BD IV/PO  <b>Unless the patient is already on, or the regimen contains <i>any</i> of these</b>	5 days	Treatment should be started in proven bacterial causes or if no improvement 72 hours after onset of symptoms
Penicillin allergy	Clarithromycin 500mg BD PO			

Chronic otitis media		Duration	Notes
1 <sup>st</sup> line	Sofradex 2-3 drops 3-4 times per day	7-14 days	Oral antibiotics have no role
2 <sup>nd</sup> line	Betnesol N 2-3 drops 3-4 times per day <b>OR</b> Otomize 1 spray 3 times per day		

Mastoiditis		If <b>MRSA</b> colonised in nose, throat or sputum and systemic antibiotics are indicated	Duration	Notes
1 <sup>st</sup> Line	Co-amoxiclav 1.2g TDS IV	<b>Add</b> (based on sensitivity results) <i>any</i> of:  1 <sup>st</sup> line: Doxycycline 200mg stat, then 100mg OD PO  <b>OR</b>  2 <sup>nd</sup> line: Clarithromycin 500mg BD IV/PO  <b>OR</b>  3 <sup>rd</sup> line: Linezolid 600mg BD IV/PO	Minimum 7-14 days depending on response	Switch to oral after clinical response (usually 48hrs).
Penicillin allergy (non-life threatening)	Cefuroxime 1.5g TDS IV			Base oral option on culture results.
Penicillin anaphylaxis (life threatening)	Levofloxacin 500mg BD IV			May need surgical treatment.
Mastoiditis with intracranial spread		<b>Unless the patient is already on, or the regimen contains <i>any</i> of these</b>		
Cefotaxime 2-3g TDS IV <b>AND</b> Metronidazole 500mg TDS IV				Discuss with ENT and Microbiologist  If anaphylaxis (life-threatening allergy) to penicillin – contact Microbiologist.

## **4) Acute Sinusitis**

### **Definition**

Inflammation of one or more paranasal sinuses, usually with concurrent inflammation of the nasal cavity. It may be acute, chronic or recurrent.

<b>Common causative organisms</b>	<b>Microbiological Investigations</b>
Mostly respiratory viruses <i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i> <i>Moraxella catarrhalis</i>	Nasal swabs are NOT recommended Sinus aspirate ONLY for recurrent or persistent infections Blood cultures (if systemically unwell)

### **Treatment**

Topical treatment with 1% ephedrine drops and nasal douching may allow drainage of sinuses with mild disease without the need for antibiotics.

In chronic cases, topical steroid sprays are the mainstay of management with antibiotics reserved for acute flare ups.

Acute Sinusitis			If MRSA colonised in nose, throat or sputum and systemic antibiotics are indicated:	Duration
Moderate / severe disease	1 <sup>st</sup> line	Phenoxymethylpenicillin 500mg QDS PO	<p><b>Add</b> (based on sensitivity results) <i>any</i> of:</p> <p>1<sup>st</sup> line: Doxycycline 200mg stat, then 100mg OD PO</p> <p><b>OR</b></p> <p>2<sup>nd</sup> line: Clarithromycin 500mg BD IV/PO</p> <p><b>OR</b></p> <p>3<sup>rd</sup> line: Linezolid 600mg BD IV/PO</p> <p><b>Unless the patient is already on, or the regimen contains <i>any</i> of these.</b></p>	5-7 days
	Penicillin allergy to 1 <sup>st</sup> line	Doxycycline 200mg stat, then 100mg OD PO  <b>OR</b>  Clarithromycin 500mg BD PO		
	2 <sup>nd</sup> line  1. If no response to 1 <sup>st</sup> line after 48hrs. 2. If systemically very unwell OR at high risk of complications	Co-amoxiclav 1.2g TDS IV OR 625mg TDS PO		
	Penicillin allergy to 2 <sup>nd</sup> line	Cefuroxime 1.5g TDS IV  <b>OR</b> (if anaphylactic to Penicillin) Levofloxacin 500mg BD IV/PO		

## 5) Acute Epiglottitis and Supraglottitis

### Definition

Inflammation of the epiglottitis and supraglottic structures with a potential for life-threatening airway obstruction. It was historically a disease of children before the introduction of the Hib vaccine but is now more prevalent in adults. Early senior or ENT review is essential.

Common causative organisms	Microbiological Investigations
<i>Haemophilus influenzae</i> <i>Streptococcus pneumoniae</i> <i>Staphylococcus aureus</i> Group A $\beta$ -haemolytic Streptococcus	Blood culture Epiglottal swab ONLY in intubated patients

### Treatment

Airway management is vital.

Acute Epiglottitis	Duration	Notes
1 <sup>st</sup> line	7-10 days	Minimum of 48 hours then consider switch to oral co-amoxiclav 625mg TDS PO
If MRSA colonised in nose, throat or sputum add (based on sensitivity results):		
Penicillin allergy – life threatening	Discuss with microbiologist	

## 7) Acute bacterial parotitis

### Definition

Acute inflammation of the parotid gland due to a bacterial infection, usually in elderly dehydrated or intubated patients. Other risk factors include malnutrition, immunosuppression, dental infections, tracheostomies and medications that lead to suppression of salivary flow. The diagnosis is largely clinical and presents with sudden onset painful and tender indurated, warm, erythematous and unilateral swelling of the pre-and post-auricular area associated with fever and chills. Massive swelling of the neck and respiratory obstruction may occur late in the course of the infection. Intraoral examination reveals an inflamed Stenson's duct orifice and pus may be expressed on palpation of the affected gland.

Common causative organisms	Microbiological Investigations
<i>Staphylococcus aureus</i> Anaerobes	Blood culture Pus swab at opening of Stensen's duct (should be interpreted with caution)

If abscess is suspected, US scan, CT or MRI of the gland is recommended.

## Treatment

Acute bacterial parotitis		Duration	Notes
1 <sup>st</sup> line	<p><b>Mild-moderate:</b> Flucloxacillin 500mg-1g QDS PO <b>AND</b> Metronidazole 400mg TDS PO</p> <p><b>Severe:</b> Flucloxacillin 1- 2g QDS IV <b>AND</b> Metronidazole 500mg TDS IV</p>	10-14 days	<p>Treatment should be adjusted based on culture results</p> <p>IV antibiotics should be switched to oral treatment after satisfactory improvement to finish the course.</p>
Penicillin allergy	<p><b>Mild-moderate:</b> Clindamycin 450mg QDS PO</p> <p><b>Severe:</b> Clindamycin 600mg QDS IV</p>		
If MRSA colonised in nose, throat or sputum use (based on sensitivity results):	<p><b>1<sup>st</sup> line:</b> Clindamycin 450mg QDS PO / 600mg QDS IV (if sensitive)</p> <p><b>OR</b></p> <p><b>2<sup>nd</sup> line:</b> Linezolid 600mg BD IV/PO <b>AND</b> Metronidazole 400mg TDS PO / 500mg TDS IV (if MRSA is sensitive BUT resistant to clindamycin)</p>		