Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

POLICY FOR TREATMENT OF UPPER RESPIRATORY TRACT INFECTIONS

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This document is part of antibiotic formulary guidance

Formulary guidance holds the same status as Trust policy

CONTENTS

Upper Respiratory Tract Infections

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.

Corynebaterium 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 ß-haemolytic Streptococcus Group C&G ß-haemolytic Streptococcus	Often polymicrobial Group A ß-haemolytic Streptococcus *Staphylococcus aureus* Anaerobes *Haemophilus influenzae*	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.

<table>
<tr><th colspan="3">Pharyngitis / Tonsillitis</th><th>If MRSA colonised in nose, throat or sputum:</th><th>Duration</th></tr>
<tr><td rowspan="2">Group A,C & G streptococcus</td><td>1st line</td><td>Phenoxymethylpenicillin 500mg QDS PO

OR (if not taking orally)

Benzylpenicillin 1.2g QDS IV</td><td rowspan="2">Add (based on sensitivity results) any of:

1st line: Doxycycline 200mg stat then 100mg OD PO

OR

2nd line: Clarithromycin 500mg BD IV/PO

OR

3rd line: Linezolid 600mg BD IV/PO

Unless the patient is already on, or the regimen contains any of these.</td><td rowspan="2">10 days for Group A Streptococcus

OR

5 days for Groups C & G Streptococcus</td></tr>
<tr><td>Penicillin allergy</td><td>Clarithromycin 500mg BD PO (or IV if not taking orally)</td></tr>
<tr><td>Corynebacterium diphtheriae, C.ulcerans and Neisseria gonorrhoeae</td><td colspan="4">Contact Microbiologist</td></tr>
</table>

Quinsy		Oral switch	If MRSA colonised in nose, throat or sputum:	Duration
1st Line	Benzylpenicillin 1.2g QDS IV **AND** Metronidazole 500mg TDS IV	Phenoxymethylpenicillin 500mg QDS PO **AND** Metronidazole 400mg TDS	**Add** (based on sensitivity results) *any* of: 1st line: Doxycycline 200mg stat, then 100mg OD PO **OR** 2nd line: Clarithromycin 500mg BD IV/PO **OR** 3rd line: Linezolid 600mg BD IV/PO **Unless the patient is already on, or the regimen contains *any* of these**	Surgical drainage of the abscess 5-10 days
Penicillin allergy	Clarithromycin 500mg BD IV **AND** Metronidazole 500mg TDS IV	Clarithromycin 500mg BD **AND** Metronidazole 400mg TDS		

2) Otitis Externa,Cellulitis of pinna and Pinna perichondritis

Definition

Inflammation of the skin lining the external auditory canal. Necrotising 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
Pseudomonas aeruginosa *Staphylococcus aureus* 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	1st line: Dexamethasone 0.1% plus Neomycin 0.5% plus acetic acid 2% ear spray (Otomize) 1 spray TDS **OR** Dexamethasone 0.05% plus Framycetin 0.5% plus Gramicidin 0.005% ear/eye drops (Sofradex) 2-3 drops 3-4 times per day **OR** Gentamicin 0.3% plus Hydrocortisone 1% ear drops (Gentisone HC) 2-3drops 3-4 times a day	7-14 days	Topical aminoglycosides can only be used for a maximum of 14 days in the presence of a perforated tympanic membrane

		2nd line Ciprofloxacin 2mg/ml ear drops 1amp twice daily **OR** Ciprofloxacin 3mg/ml plus Fluocinolone Acetonide 0.25mg/ml ear drops 1amp twice daily		

Necrotising otitis externa		**Outpatient/ Oral switch**	**If MRSA colonised in nose, throat or sputum:**	**Duration**	**Notes**
1st line	Piperacillin + tazobactam 4.5g QDS IV	Ciprofloxacin 750mg BD PO	Add(based on sensitivity results) *any* of: 1st line: Doxycycline 200mg stat then 100mg OD PO **OR** 2nd line: Clarithromycin 500mg BD IV/PO **OR** 3rd line: Linezolid 600mg BD IV/PO **Unless the patient is already on, or the regimen contains *any* of these**. **OR** The patient is already on ciprofloxacin, **AND** the MRSA is susceptible to ciprofloxacin	6 weeks	Antimicrobials should be adjusted based on culture results
Penicillin allergy (non-life threatening)	Ceftazidime 2g TDS IV				
Life threatening penicillin allergy	Ciprofloxacin 750mg BD PO				
Pinna perichondritis (due to ear piercing)					
1st line	Ciprofloxacin 750mg BD PO **OR** Piperacillin + tazobactam 4.5g QDS IV			Treat until resolution of infection	If not improving on 1st line treatment, please discuss with microbiologist. Antimicrobials should be adjusted based on culture results. If intolerant or allergic to both 1st line antibiotics, please discuss with a microbiologist

Cellulitis of pinna			If MRSA colonised in nose, throat or sputum:
1st line	Mild to moderate (oral)	Flucloxacillin 500 - 1000mg QDS **OR** (if penicillin allergy) Clarithromycin 500mg BD **Duration:** 7 days or until full resolution, whichever is later	Clarithromycin 500mg BD **OR** (if not susceptible to clarithromycin) Linezolid 600mg BD
	Moderate to severe (IV)	Flucloxacillin 1-2g QDS **OR** (if penicillin allergy) Clindamycin 600 – 1200mg 6 hourly **Duration:** 7 days or until full resolution, whichever is later	Clindamycin 600 – 1200mg 6 hourly **OR** (if not susceptible to clindamycin) Linezolid 600mg BD
2nd 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.

Common causative organisms	Microbiological Investigations
Streptococcus pneumoniae *Haemophilus influenzae* Viruses especially in children Group A ß-haemolytic Streptococcus *Staphylococcus aureus* *Moraxella catarrhalis*	Mild – none required Ear swabs Pus, if perforated Blood cultures (if systemically unwell)

Treatment

Acute otitis media		If MRSA colonised in nose, throat or sputum and systemic antibiotics are indicated	Duration	Notes
Antibiotics are **NOT** recommended for uncomplicated acute otitis media, most of which are likely to be viral.				
1st Line	Amoxicillin 500mg TDS PO	**Add** (based on sensitivity results) *any* of: 1st line: Doxycycline 200mg stat, then 100mg OD PO **OR** 2nd line: Clarithromycin 500mg BD IV/PO **OR** 3rd line: Linezolid 600mg BD IV/PO **Unless the patient is already on, or the regimen contains *any* of these**	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
1st line	Sofradex 2-3 drops 3-4 times per day	7-14 days	Oral antibiotics have no role
2nd line	Ciprofloxacin 3mg/ml plus Fluocinolone Acetonide 0.25mg/ml ear drops 1amp twice daily **OR** Otomize 1 spray 3 times per day		

<table>
<tr><th colspan="2">Acute uncomplicated Mastoiditis</th><th>If MRSA colonised in nose, throat or sputum and systemic antibiotics are indicated</th><th>Duration</th><th>Notes</th></tr>
<tr><td>1st Line</td><td>Co-amoxiclav 1.2g TDS IV</td><td rowspan="5">Add (based on sensitivity results) any of:

1st line: Doxycycline 200mg stat, then 100mg OD PO

OR

2nd line: Clarithromycin 500mg BD IV/PO

OR

3rd line: Linezolid 600mg BD IV/PO

Unless the patient is already on, or the regimen contains any of these</td><td rowspan="3">Minimum 7-14 days depending on response</td><td rowspan="3">Switch to oral after clinical response (usually 48hrs).

Base oral option on culture results.

May need surgical treatment.</td></tr>
<tr><td>Penicillin allergy (non-life threatening)</td><td>Cefuroxime 1.5g TDS IV</td></tr>
<tr><td>Penicillin anaphylaxis (life threatening)</td><td>Levofloxacin 500mg BD IV</td></tr>
<tr><td colspan="2">Mastoiditis with intracranial spread</td><td></td></tr>
<tr><td colspan="2">Ceftriaxone 2g 12 hourly IV
AND
Metronidazole 500mg TDS IV</td><td colspan="2">Discuss with ENT and Microbiologist

If anaphylaxis (life-threatening allergy) to penicillin – contact Microbiologist.</td></tr>
</table>

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.

Common causative organisms	Microbiological Investigations
Mostly respiratory viruses *Streptococcus pneumoniae* *Haemophilus influenzae* *Moraxella catarrhalis*	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.

<table>
<tr><th colspan="3">Acute Sinusitis</th><th>If MRSA colonised in nose, throat or sputum and systemic antibiotics are indicated:</th><th>Duration</th></tr>
<tr><td rowspan="4">Moderate / severe disease</td><td>1st line</td><td>Phenoxymethylpenicillin 500mg QDS PO</td><td rowspan="4">Add (based on sensitivity results) any of:
1st line: Doxycycline 200mg stat, then 100mg OD PO
OR
2nd line: Clarithromycin 500mg BD IV/PO
(Erythromycin 500mg QDS PO in pregnancy)
OR
3rd line: Linezolid 600mg BD IV/PO
Unless the patient is already on, or the regimen contains any of these.</td><td rowspan="4">5 days</td></tr>
<tr><td>Penicillin allergy to 1st line</td><td>Doxycycline 200mg stat, then 100mg OD PO
OR
Clarithromycin 500mg BD PO
(Erythromycin 500mg QDS PO in pregnancy)</td></tr>
<tr><td>2nd line
1. If no response to 1st line after 48hrs.
2. If systemically very unwell OR at high risk of complications</td><td>Co-amoxiclav 1.2g TDS IV OR
625mg TDS PO</td></tr>
<tr><td>Penicillin allergy to 2nd line</td><td>Cefuroxime 1.5g IV TDS
OR
(if anaphylactic to Penicillin)
Levofloxacin 500mg BD IV/PO</td></tr>
</table>

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
Haemophilus influenzae *Streptococcus pneumoniae* *Staphylococcus aureus* Group A ß-haemolytic Streptococcus	Blood culture Epiglottal swab ONLY in intubated patients

Treatment
Airway management is vital.

Acute Epiglottitis		If MRSA colonised in nose, throat or sputum add (based on sensitivity results):	Duration
1st line	Ceftriaxone 2g OD IV *Minimum of 48 hours then consider switch to:* Co-amoxiclav 625mg TDS PO	Linezolid 600mg BD IV/PO	7-10 days
Penicillin allergy – life threatening	Levofloxacin 500mg BD IV/PO		

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

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

Treatment

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