



## Otological Agents

### Otitis externa

Infection of the soft tissue of external ear canal which can be bacterial or fungal. Oral antibiotics are rarely needed as they have poor penetration. Topical antibiotics more suited unless systemic illness.

### Otitis media

Bacterial infection of the middle ear. An oral antibiotic may be used (if no improvement after 72 hours of no treatment). Some evidence of antibiotic resistance developing.

### Otitis media with perforated tympanic membrane

Consider antibiotic ear drops with/without steroid, sometimes in combination with oral.

### Oral antibiotics in otology

- Drugs administered systemically to act on inner and middle ear must be able to cross blood inner ear barrier
- Penetration to the external auditory canal by PO antibiotics is limited therefore the use of oral antibiotics in otology is often reserved for treatment of bacterial infections affecting the middle & inner ear

Drug name / preparation	Indication	Dose	Caution
Amoxicillin	Otitis media	250-500mg QDS in adults	In penicillin allergy consider managing 72 hours with no antibiotic if no systemic illness
Azithromycin	Otitis media with penicillin allergy	Immediate release: 500mg OD for three days Extended release: 2g orally once as a single diagnosis	
Clarithromycin	Otitis media with penicillin allergy	500mg BD for 14 days	
Erythromycin	Otitis media with penicillin allergy	Mild to moderate infection: 250-500mg (base estolate, stearate) or 400 – 800mg (ethylsuccinate) orally QID. Severe infection: 1-4g/day IV in divided doses QID or by continuous infusion	

## Pregnancy & lactation

- Individual antibiotic guidance should be checked prior to use in pregnancy

## Topical antibiotics in Otolaryngology

### Absorption, distribution, metabolism, excretion in otology

- Only the external ear is easily accessible for direct drug administration. The main problem secondary to their application comes from skin irritation
- Tympanic membrane separates external ear from middle ear. The middle ear is only susceptible to drug effect if incision made in tympanic membrane i.e. injected drug.
- Inner ear not accessible for direct drug administration either. Drugs administered to the middle ear may be taken up by inner ear.
- No capacity for drug metabolism within inner ear.
- Drugs administered systemically to act on inner and middle ear must be able to cross blood inner ear barrier
- Earwax is slightly acidic to prevent growth of microbes. pH of drops is a consideration to reduce microbial growth (more acidic).

*Ear Drops: easy to administer but likely to run out of the ear. Increasing the viscosity of ear drops makes them more likely to stay in place. Can add cotton wool as a physical barrier to the drops running out.*

Drug name / preparation	Indication	Dose	Caution
Gentamicin (+/- Hydrocortisone) drops	Bacterial OE	2-3 drops, QID, 7 days	Perforated ear drum / grommets
Neomycin (+/- betamethasone) drops	Bacterial OE	3 drops TDS 7 days	Perforated ear drum / grommets
Ciprofloxacin drops	Bacterial OE (with perforation)	2 drops BD 7 days	
Framycetin drops	Bacterial OE	2 drops BD 7 days	Perforated ear drum / grommets
Clioquinol/flumetasone drops	Bacterial and fungal OE	2 drops BD 7 days	Perforated ear drum / grommets
Chloramphenicol drops	Bacterial OE	2 drops BD 7 days	Perforated ear drum / grommets
Clotrimazole solution	Fungal OE	2 drops BD 7 – 21 days	
Acetic acid	Any OE	2 drops of solution TID 7 days	

## Pregnancy & lactation

No risk with topical ear drops – no systemic absorption (if no perforated ear drum). If using in perforation, theoretical risk of foetal ototoxicity and nephrotoxicity if systemic absorption.

Lactation: minimal absorption into breast milk from topical administration. If it can be used in paediatrics, it would be generally safe in lactation. Avoid quinolones.