College of Registered Nurses of Saskatchewan

Otitis Media: Adult

Ears, Eyes, Nose, Throat and Mouth

Clinical Decision Tools for RNs with Additional Authorized Practice [RN(AAP)s]

Effective Date: May 4, 2022

Background

Acute otitis media (AOM), also referred to as suppurative otitis media (OM) or purulent OM, is an inflammation of the structures of the middle ear characterized by the presence of pus in the middle ear in association with local or systemic infection (viral orbacterial) (Huether & Rodway, 2019; Porter, Dunphy, & Reinoso, 2019). AOM is more common in children than adults (Huether & Rodway, 2019; Porter et al., 2019).

Respiratory viral pathogens account for up to 50% of AOM cases (Porter et al., 2019). According to Porter and colleagues (2019) *Streptococcus pneumoniae* is the most frequent pathogen isolated (40 to 50% of all AOM cases) among adults. Additional bacterial pathogens include *Moraxella catarrhalis*, *Haemophilus influenzae,* and *Staphylococcus aureus* (Huether & Rodway, 2019; Porter et al., 2019).

Other types of OM include otitis media with effusion (OME) and chronic OM (Huether & Rodway, 2019; Porter et al., 2019). Otitis media with effusion is presence of fluid in the middle ear without symptoms of acute infection (Huether & Rodway, 2019). Causes of OME include recent viral upper respiratory tract infection (URTI), or acute allergy attack (Porter et al., 2019). Chronic OM is persistent (greater than three months) or recurring infection of the middle ear (Huether & Rodway, 2019; Porter et al., 2019).

Bacterial pathogens responsible for chronic OM include any of the pathogens associated with AOM, as well as *Escherichia coli, Proteus, Pseudomonas aeruginosa,* or *Staphylococcus aureus* (Porter et al., 2019).

Immediate Consultation Requirements

The RN(AAP) should seek immediate consultation from a physician/NP when any of the following circumstances exist:

- signs of meningeal irritation;

- mastoid process erythema, tenderness, swelling with fever, protrusion of pinna;
- facial nerve palsy;
- lateral neck abscess; and/or
- persistent OM following two rounds of antibiotic therapy (Interprofessional Advisory Group [IPAG], personal communication August 28, 2019).

Predisposing and Risk Factors

Predisposing and risk factors for acute OM in adults include:

- eustachian tube dysfunction (due to allergies, sinusitis, rhinitis, or pharyngitis),
- exposure to fumes,
- recent or concurrent URTI,
- perforated tympanic membrane (TM) (due to direct blunt trauma, swimming or diving accidents),
- immunosuppression,
- active or passive smoking,
- Down syndrome,
- crowded or unsanitary living conditions,
- exposure to wood-burning stoves,
- increased prevalence in fall and winter months,
- older age related to decrease in immune functioning,
- male gender,
- craniofacial abnormalities (e.g., cleft palate, deviated nasal septum, or nasopharyngeal tumours), and/or
- family history of OM (Porter et al., 2019).

Health History and Physical Exam

Subjective Findings

The circumstances of the presenting complaint should be determined. These include:

- otalgia,
- general malaise and fever,
- unilateral hearing loss,
- otic discharge following TM perforation,
- tinnitus or roaring in the ear,
- vertigo,
- nausea or vomiting, and/or
- recent history of URTI (Porter et al., 2019).

Clients with OME typically present with the following complaints:

- absence of pain and fever;
- recent history of URTI or allergic rhinitis;

- sensation of ear fullness;
- ear popping, crackling, or gurgling sounds;
- decreased hearing acuity; and/or
- vertigo (rare) (Porter et al., 2019).

Clients with chronic OM typically present with the following complaints:

- history of frequent AOM,
- continuous or intermittent otorrhea for three months or more,
- hearing loss on the affected side, and/or
- pain (not common) (Porter et al., 2019).

Objective Findings

The signs and symptoms of OM may include:

- fever;
- pink external ear canal with no evidence of erythema or pain with manipulation of pinna;
- TM may be red, dull, cloudy, or yellow, often bulging and opaque;
- bony landmarks in middle ear are obscured or absent;
- cone of light reflex is absent;
- purulent or mucoid discharge is typically present if the TM is perforated;
- decreased mobility of TM;
- bullae seen on TM (only in cases of Mycoplasma infection);
- peri-auricular and posterior cervical nodes enlarged and tender; and/or
- conductive hearing loss may be present (Porter et al., 2019).

The signs and symptoms of OME may include:

- no abnormalities to external ear,
- inflammation or swelling to the mucous membranes of the nose and mouth suggesting recent URTI,
- dull TM, and/or
- no bulging of the TM noted on otoscopic exam (Porter et al., 2019).

The signs and symptoms of chronic OM may include:

- TM perforation,
- foul-smelling otorrhea, and/or
- possible invasive granulation tissue on otoscopic exam (Porter et al., 2019).

Differential Diagnosis

The following should be considered as part of the differential diagnosis:

- OME,

- chronic OM,
- acute otitis externa,
- temporomandibular joint syndrome,
- trauma to or foreign body in ear canal,
- referred pain from dental abscess or temporomandibular joint dysfunction,
- mastoiditis (rare),
- parotitis,
- transient middle ear effusion (due to air travel or altitude changes),
- eustachian tube disorders or nasopharyngeal pathology,
- allergic rhinitis, or
- myringitis (Porter et al., 2019).

Making the Diagnosis

The diagnosis is usually made clinically based on the health history and physical exam (Anti-infective Review Panel, 2019; Porter et al., 2019).

Investigations and Diagnostic Tests

Investigations and diagnostic test are not typically required if the history and physical examination support the diagnosis of OM (Porter et al., 2019). Do not universally swab otorrhea for culture and sensitivity. Consider culture and sensitivity swab for chronic otorrhea or complex cases and include cultures to rule out fungi and mycobacteria (Porter et al., 2019).

Management and Interventions

Goals of Treatment

The primary goals of immediate treatment are to relieve pain and fever, eradicate infection, prevent complications and avoid unnecessary use of antibiotics to reduce antibiotic resistance. The majority of uncomplicated cases of OM are self-limited (up to 82%) and may not require specific interventions other than pain control and symptomatic treatment (RxFiles Academic Detailing Program, 2021; Porter et al., 2019).

Non-Pharmacological Interventions

The RN(AAP) should recommend, as appropriate, application of heat or cold to the outer ear, which may help with discomfort (Porter et al., 2019).

Pharmacological Interventions

The pharmacological interventions recommended for the treatment of OM in the adult client are in accordance with the *Anti-infective Guidelines for Community-acquired Infections* (Anti-infective Review Panel, 2019), *Antibiotic Prescribing for Acute Otitis Media and Acute Sinusitis: A Cross-sectional Analysis of the ReCEnT Study Exploring the Habits of Early Career Doctors in Family Practice* (Dallas et al., 2017), *CPS drug information (*Canadian Pharmacists Association, 2021), and *Inflammatory and Infectious Disorders of the Ear* (Porter et al., 2019).

Analgesics and Antipyretics

	Drug	Dose	Route	Frequency	Duration
Adult					
	Acetaminophen	500-1000 mg (maximum daily dose of 4 g/day)	p.o.	q4-6h prn	5-7 days
AND/ OR	Ibuprofen	400-600 mg (maximum daily dose of 3200 mg/day)	p.o.	q6-8h prn	5-7 days

Oral Antibiotics

Antimicrobial therapy in adults is typically the norm. Watchful waiting is indicated in cases of OME. Effusions typically resolve without treatment within 12 weeks.

	Drug	Dose	Route	Frequency	Duration
Adult (without penicillin allergy)					
	Amoxicillin	500 mg	p.o.	q8h	10 days
OR	Amoxicillin/ Clavulanate	875/125 mg	p.o.	b.i.d.	10 days
OR	Cefprozil	250-500 mg	p.o.	b.i.d.	7 days
OR	Cefuroxime	250-500 mg	p.o.	b.i.d.	7 days
Adult (with penicillin allergy)					
	Azithromycin	250 mg	p.o.	two tablets on day 1 and then 250 mg on days 2-5	5 days
OR	Clarithromycin	250-500 mg	p.o.	b.i.d.	7 days

Topical Antibiotics

Acute otitis media with chronic tympanic perforation or ventilation tubes can be treated using a topical preparation, only if there are no signs of systemic illness.

	Drug	Dose	Route	Frequency	Duration
Adult (with a ruptured TM or those with ventilation tubes in place)					
	Ciprofloxacin and Dexamethasone	4 drops to affected ear	topical	b.i.d.	7 days

Client and Caregiver Education

The RN(AAP) provides client and caregiver education as follows:

- Advise about the timelines of treatment and expected course of the disease process.
- Recommend increased rest in the acute pain and febrile phases.
- Counsel about appropriate use of medications (dose, frequency, compliance, etc.).
- Avoid swimming until OM clears as water immersion could lead to otitis externa.
- Avoid exposure to tobacco smoke.
- Frequent and thorough hand washing to prevent transmission of concomitant upper respiratory infection (URI).
- Keep ear canal clean and dry during the course of the infection.
- Advise that cotton applicators (e.g., Q-tips) should not be used to clean ears.
- Advise that spontaneous rupture of TM is common and will heal with resolution of infection.
- Recommend immunizations as necessary (Anti-infective Review Panel, 2019; Porter et al., 2019).

Monitoring and Follow-Up

Instruct client to return in two to three days if symptoms do not improve or if symptoms progress despite therapy (Porter et al., 2019). Follow-up in seven to 14 days if symptoms are not resolved completely (Porter et al., 2019). Assess hearing one month after treatment if any symptoms persist (Porter et al., 2019).

Complications

The following complications may be associated with OM:

- perforated TM;
- chronic OM;
- hearing reduction;
- speech, language, and cognitive disabilities;
- mastoiditis (rare);

- meningitis (rare);
- facial nerve palsy;
- brain abscess (rare);
- labyrinthitis; or
- cholesteatoma (Huether & Radway, 2019).

Referral

Refer to a physician/NP if client presentation is consistent with those identified in the *Immediate Consultation Requirements* section, if the client's pain is not managed with simple analgesics (e.g., acetaminophen, ibuprofen), or symptoms fail to improve with therapy (IPAG, personal communication August 28, 2019).

References

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