

# Clinical Evidence Handbook

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## Chronic Suppurative Otitis Media

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Chronic suppurative otitis media causes recurrent or persistent discharge (otorrhea) through a perforation in the tympanic membrane, and can lead to thickening of the middle ear mucosa and mucosal polyps. It usually occurs as a complication of persistent acute otitis media (AOM) with perforation in childhood.

- Chronic suppurative otitis media is a common cause of hearing impairment, disability, and poor scholastic performance. Occasionally it can lead to fatal intracranial infections and acute mastoiditis, especially in developing countries.

In children with chronic suppurative otitis media, topical antibiotics may improve symptoms compared with antiseptics. The benefits of ear cleansing are unknown, although this treatment is usually recommended for children with ear discharge.

- We do not know whether topical antiseptics, topical or systemic antibiotics, or topical corticosteroids (alone or in combination with antibiotics) improve symptoms in children with chronic suppurative otitis media compared with placebo or other treatments.

In adults with chronic suppurative otitis media, topical antibiotics (alone or in combination with topical corticosteroids) may improve symptoms compared with placebo or topical corticosteroids alone, although we found few adequate studies. There is consensus that topical antibiotics should be combined with ear cleansing so the antibiotics are able to reach the middle ear space.

- We do not know whether topical antiseptics, topical corticosteroids, or systemic antibiotics are beneficial in reducing symptoms.

- It is possible that antibiotics effective against gram-negative bacteria may reduce ear discharge more than other classes of antibiotics or placebo.

We do not know whether tympanoplasty with or without mastoidectomy improves symptoms compared with no surgery or other treatments in adults or children with chronic suppurative otitis media.

Cholesteatoma is an abnormal accumulation of squamous epithelium usually found in the middle ear cavity and mastoid process of the temporal bone. Granulation tissue and ear discharge are often associated with secondary infection of the desquamating epithelium.

Cholesteatoma can be congenital (behind an intact tympanic membrane) or acquired. If untreated, it may progressively enlarge and erode the surrounding structures.

- We do not know the beneficial effects of surgery, whether surgery can be delayed, or which surgical techniques are associated with the best outcomes in children or adults with cholesteatoma.

### Definition

Chronic suppurative otitis media is persistent inflammation of the middle ear or mastoid cavity. Synonyms include chronic otitis media, chronic mastoiditis, and chronic tympanomastoiditis. Chronic suppurative otitis media is characterized by recurrent or persistent ear discharge (otorrhea) over two to six weeks through a perforation of the tympanic membrane. Chronic suppurative otitis media usually begins as a complication of persistent AOM with perforation in childhood. Typical findings may also include thickened granular middle ear mucosa and mucosal polyps. Occasionally, chronic suppurative otitis media will be associated with a cholesteatoma within the middle ear. Chronic suppurative otitis media is differentiated from chronic otitis media with effusion, in which there is an intact tympanic membrane with fluid in the middle ear but no active infection. Chronic

suppurative otitis media does not include chronic perforations of the eardrum that are dry, or that only occasionally produce discharge, and have no signs of active infection.

Cholesteatoma is an abnormal accumulation of squamous epithelium usually found in the middle ear cavity and mastoid process of the temporal bone. Granulation tissue and ear discharge are often associated with secondary infection of the desquamating epithelium. Cholesteatoma is most often detected by careful otoscopic examination in children or adults with persistent discharge that does not respond to treatment.

### Incidence and Prevalence

The worldwide prevalence of chronic suppurative otitis media is 65 to 330 million persons, and 39 to 200 million (60%) of those individuals have clinically significant hearing impairment. Cholesteatoma can be either congenital (behind an intact tympanic membrane) or acquired. The overall incidence is estimated to be around nine per 100,000 persons. At least 95% of cholesteatomas are acquired. The incidence is similar in children and adults.

### Etiology and Risk Factors

Chronic suppurative otitis media is usually a complication of persistent AOM, but the risk factors for the condition vary in different settings. Frequent upper respiratory tract infections and poor socioeconomic conditions (e.g., overcrowded housing, poor hygiene and nutrition) are often associated with the development of chronic suppurative otitis media. In developed countries and advantaged populations, previous insertion of tympanostomy tubes is now probably the single most important etiologic factor. Of those children who have tympanostomy tubes in place, a history of recurrent AOM, older siblings, and attendance at a child care center increase the risk of developing chronic suppurative otitis media. In developing countries and disadvantaged populations, poverty, overcrowding, family history, exposure to smoke, and being indigenous to the area are important. Improvements in housing, hygiene, and nutrition decreased the prevalence of chronic suppurative otitis media by one-half in Maori children between 1978 and 1987.

The most commonly isolated microorganisms associated with chronic suppurative otitis media are *Pseudomonas aeruginosa* and *Staphylococcus aureus*; *P. aeruginosa* has been particularly implicated in the causation of bony necrosis and mucosal disease. One systematic review found a lack of studies assessing the role of prophylactic antibiotics in preventing the progression of disease to chronic suppurative otitis media. Most cholesteatomas are thought to occur as a complication of a retraction pocket in the tympanic membrane. They are associated with recurrent or persistent middle ear disease, family history, and craniofacial abnormalities. If untreated, a cholesteatoma may progressively enlarge and erode the surrounding structures.

### Prognosis

The natural history of chronic suppurative otitis media is poorly understood. The perforation may close spontaneously in an

## Clinical Questions

### What are the effects of treatments for chronic suppurative otitis media in adults?

Likely to be beneficial	Antibiotics (topical) Antibiotics (topical) plus corticosteroids (topical)
Unknown effectiveness	Antibiotics (systemic; unclear if as effective as topical) Antibiotics (topical plus systemic; unclear if more effective than topical alone) Antiseptics (topical) Corticosteroids (topical) Ear cleansing Tympanoplasty (with or without mastoidectomy)

### What are the effects of treatments for chronic suppurative otitis media in children?

Unknown effectiveness	Antibiotics (systemic) Antibiotics (topical) Antibiotics (topical) plus corticosteroids (topical) Antiseptics (topical) Corticosteroids (topical) Ear cleansing Tympanoplasty (with or without mastoidectomy)
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### What are the effects of treatments for cholesteatoma in adults?

Unknown effectiveness	Surgery
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### What are the effects of treatments for cholesteatoma in children?

Unknown effectiveness	Surgery
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unknown portion of cases, but it persists in others, leading to mild to moderate hearing impairment (about a 26- to 60-dB increase in hearing thresholds), based on surveys among children in Africa, Brazil, India, and Sierra Leone, and among the general population in Thailand. In many developing countries, chronic suppurative otitis media represents the most common cause of moderate hearing loss (40 to 60 dB). Persistent hearing loss during the first two years of life may increase learning disabilities and poor scholastic performance. Progressive hearing loss may occur among those in whom infection persists and discharge recurs.

Less often, spread of infection may lead to life-threatening complications such as intracranial infections and acute mastoiditis.

The frequency of serious complications fell from 20% in 1938 to 2.5% in 1948 worldwide, and is currently estimated to be about 0.7% to 3.2% worldwide. This is believed to be associated with increased use of antibiotic treatment, tympanoplasty, and mastoidectomy. Otitis media was estimated to have caused 3,599 deaths and a loss of almost 1.5 disability-adjusted life-years in 2002, 90% of which were in developing countries. Most of these deaths were probably owing to chronic suppurative otitis media, because AOM is a self-limited infection.

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