Otitis media in Aboriginal children: tackling a major health problem

**Improved living conditions hold the key**

**CHRONIC SUPPURATIVE OTITIS MEDIA (CSOM) (see Box)** is very uncommon in First World countries and is best regarded as a disease of poverty. The World Health Organization has indicated that a prevalence rate of CSOM greater than 4% in a defined population of children is indicative of a massive public health problem requiring urgent attention. That CSOM affects up to ten times this proportion of children in many Aboriginal communities is an indictment of the poor living conditions in these communities. The associated hearing loss has a life-long impact, as it occurs during speech and language development and the early school years.

**Why is chronic suppurative otitis media so recalcitrant?**

Many factors contribute to poor health outcomes. In biological terms, the greatest risk factor for the early onset and persistence of otitis media is nasopharyngeal colonisation by multiple bacterial species and subtypes. In Aboriginal communities with overcrowded households, infants are frequently exposed to siblings whose nasopharyngeal carriage of pathogenic bacteria may persist throughout childhood: early exposure, persistence and Torres Strait Islander people identified effective primary prevention strategies: improving nutrition and the home environment, increasing breastfeeding, and reducing passive smoking. A small but important role was noted for vaccines (the polysaccharide, polyvalent pneumococcal vaccine and the new pneumococcal conjugate vaccine). Controversies remain regarding the effectiveness of antibiotics in primary prevention and the impact of maternal pneumococcal vaccination on infant disease.

High doses and prolonged courses of antibiotics are often required for the treatment of acute otitis media and CSOM, but the optimal use of topical ear preparations...
remains uncertain. Where appropriate primary healthcare interventions have failed, timely referral to otorhinolaryngologists for assessment and surgical interventions can improve hearing outcomes. However, access to such specialist care for children in remote Aboriginal communities is suboptimal. Audiological rehabilitation is critical, requiring the provision of ongoing education about effective communication strategies and appropriate use of devices to assist hearing. These include standard hearing aids and bone conductors, as well as classroom devices such as soundfield amplification systems (which provide a uniform soundfield throughout the classroom and increase the speech-signal:noise ratio), and FM systems (a form of personal amplification whereby an FM signal from a microphone worn by the teacher is picked up by a receiver worn by a child with hearing loss).

What needs to happen in the future?

Greater community control over improvements to education, employment opportunities, housing infrastructure and primary healthcare services is long overdue. To realise these improvements requires substantially increased resources, linked to community responsibility. In the meantime, initiatives that increase access to primary healthcare for the detection and management of ear disease and facilitate access to other services should continue. An example is the Office for Aboriginal and Torres Strait Islanders Health Hearing Health Program. Realistic expectations about the benefits and harms of evidence-based healthcare interventions should be incorporated into updates of currently available clinical guidelines, and the information made accessible to families. The Commonwealth needs to reform the provision of rehabilitative services and coordinate approaches to soundfield amplification in schools.

The research priority is to determine the best use of preventive strategies and interventions (including educational, medical, surgical and audiological initiatives). Multi-disciplinary research in the areas of diagnosis, new antibiotics, the role of biofilm and vaccines is also appropriate. Bacterial biofilm is a community of interacting bacteria attached to a surface and encased in a protective matrix of exopolysaccharide. Formation of biofilm in the middle-ear mucosa of Aboriginal children with CSOM may explain the recrudescence of bacterial infection and otitis media. The research priority is to determine the best use of preventive strategies and interventions (including educational, medical, surgical and audiological initiatives). Multi-disciplinary research in the areas of diagnosis, new antibiotics, the role of biofilm and vaccines is also appropriate.

References