

## OTITIS MEDIA AND THE EPIDEMIOLOGIC TRIANGLE

In this edition of the Journal an article by Alan Bowd revisits otitis media (OM), a well known scourge of circumpolar children. The three pillars of the epidemiologic triangle (host, agent and environment) contribute to the morbidity associated with this condition.

Significant differences in host factors exist between First Nations (Native Americans), Inuit and Caucasians in terms of the length, width and angle and functional properties (including tubular resistance) of the eustachian tube. Host antibody response to pathogens such as *Haemophilus influenzae* is impaired in Apache children, and certain IgG subclass concentrations are low (1). Early studies among small numbers of Inuit children, which showed diminished IgA levels in saliva and the middle ear, remain unconfirmed (2).

We remain indebted to Finnish researchers for their studies of the causative agents of acute OM in northern children. Their success relates in part to the skill of their practitioners in tympanocentesis, the integration of clinical and research activities in an organized network of health care settings, and the trust nurtured between children, parents and health care providers. *Streptococcus pneumoniae* is a common bacterial cause of

acute OM. Although the heptavalent pneumococcal polysaccharide conjugate vaccine reduced the number of culture-confirmed pneumococcal episodes of acute OM by 34% in Finland, it remains to be seen what the impact will be among children in other circumpolar regions, particularly northern Canada, where non-vaccine serotypes are prevalent (3,4).

It is difficult to disentangle the effects of individual environmental risk factors for OM, one from the other, and from host and agent factors. However, the most amenable opportunities for prevention may lie in the areas of housing, nutrition and air quality.

The need for culturally appropriate approaches to research and clinical care is discussed by Dr. Bowd as well as in the article by Bruden et al. In a prevalence study of penicillin-resistant *Streptococcus pneumoniae*, random sampling of rural Alaskan village residents through a door-to-door recruitment process was considered culturally inappropriate. The more acceptable study of a volunteer sample entailed a selection bias that limits external but not internal validity.

Primary, secondary and tertiary prevention of acute and chronic OM requires interventions that are informed by culturally sensitive research focusing on host, agent and

environment. Through collaborative networks such as the International Circumpolar Surveillance Group, the Finnish Otitis Media Study Group and the newly formed International Network of Circumpolar Health Researchers (5), we combine our strengths in common purpose.

## REFERENCES

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