

CAUSES AND COSTS OF HEARING LOSS, AND EAR OR BALANCE DISORDER TO THE AUSTRALIAN HEALTH CARE SYSTEM

1. Causes of hearing impairment in children

a) Ear infections

(i) Causes

The research reports that middle ear infection (otitis media) is a common childhood illness. Estimates indicate that by the age of 3 years at least half of all children have experienced at least one episode of otitis. The condition requires close monitoring of signs and symptoms from parents and practitioners and it is often co-morbid with other infections of the upper or lower respiratory tract.

One of the main consequences of otitis media is conductive hearing loss. Hearing loss may result in speech and language disorders as well as a delay in academic development. Subsequent behavioural problems from hearing impairment could also increase the risk of mental health disorders. Otitis media affects children's quality of life, and depending on the severity of infection, may also result in a wider impact on caregivers and health services.

The research shows that otitis media is a substantive issue amongst Indigenous people (e.g. 9% of Indigenous children with documented impaired hearing versus 3% in non-Indigenous population).

(ii) Costs to health system

For Australia Access Economics reported that the number of cases of ear infections in 2008 were estimated to be at least 650,000. Treatment costs of visits to general practitioners and medical prescriptions were estimated between A\$100 to A\$400 million.

Reports on otitis media in children have shown that indigenous children are much more likely to be diagnosed with severe ear infection and to suffer repeated or multiple episodes than non-indigenous children. Limited access to medical care, lower socioeconomic status, and remote living conditions all contributed to early childhood hearing loss among indigenous children.

Sources

Access Economics: *The cost burden of otitis media in Australia*. Perth: GlaxoSmithKline; 2009.
Taylor PS, Faeth I, Marks MK, Del Mar CB, Skull SA, Pezzullo ML, Havyatt SM, Coates HL: Cost of treating otitis media in Australia. *Expert Rev Pharmacoecon Outcomes Res* 2009, 9(2):133–141.
Klein JO: The burden of otitis media. *Vaccine* 2000, 19(Suppl 1):S2–S8.
Gunasekera H, Knox S, Morris P, Britt H, McIntyre P, Craig JC: The spectrum and management of

otitis media in Australian indigenous and nonindigenous children: a national study. *Pediatr Infect Dis J* 2007, 26(8):689–692.

Coates HL, Morris PS, Leach AJ, Couzos S: Otitis media in Aboriginal children: tackling a major health problem. *Med J Aust* 2002, 177(4):177–178.

Yiengprugsawan, V.; Hogan, A.; (2013) Ear Infection and Its Associated Risk Factors, Comorbidity, and Health Service Use in Australian Children. *International Journal of Paediatrics* Article ID 963132, 7 pages <http://dx.doi.org/10.1155/2013/963132>

Yiengprugsawan, V.; Hogan, A.; Strazdins, L.; (2013) Longitudinal analysis of ear infection and hearing impairment: findings from 6-year prospective cohorts of Australian children. *BMC Paediatrics* Vol 13: 28

b) Hearing impairment

(i) Causes

The Survey of Disability, Ageing and Carers (SDACs) reports that 19% of people with impaired hearing identify being born with that impairment.

Based on data provided from Australian Hearing, Access Economics estimated that approximately 10,000 children were treated for hearing impairment in 2010 with more boys presenting for assistance than girls.

Sources

Australian Bureau of Statistics (2012) Survey of Disability Ageing and Carers. Catalogue 4430.0 Canberra <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4430.0>

Access Economics (2006)

Australian Hearing (2006)

(ii) Costs to health system

Access Economics reported that the total costs to the health system for childhood hearing impairment was approximately \$40 million per annum.

We note that an inconsistency (of up to an order of magnitude) exists between the costs of otitis media reported in this economic analysis of hearing impairment and the costs of otitis media estimated elsewhere by Access Economics.

2. Causes of hearing impairment in adults

(i) Causes

David Wilson's epidemiological study on hearing impairment in Australia found that 1:6 people aged over 15 years of age had a measurable hearing impairment.

Sources

Wilson, D; Xibin, S; Read, P; Walsh, P; Esterman, A. 1992 Hearing loss - an underestimated public health problem. *Australian Journal of Public Health* Vol. 16, 282-286.

The Survey of Disability, Ageing and Carers (SDACs) is based on peoples' self

report of their hearing impairment. It found that 1:10 people reported a demonstrable disability resulting from hearing impairment.

Data on causes of hearing impairment (SDACs):

- Excessive exposure to noise (37%)
- Unknown (28%)
- Various disease processes (including ear infections, cancers) (13%)

(ii) Costs to health system

Access Economics estimated that the costs to the health system of adult hearing impairment (over 15 years of age) was approximately \$208 million per annum.

In conducting this analysis, Access Economics based its estimates on health care consumption provided by the Australian Institute of Health and Welfare. These data excluded the costs of a variety of health problems that the research increasingly associated with impaired hearing. Research associating hearing impairment with other health outcomes includes:

- elevated risk rates for diabetes and high blood pressureⁱ
- a higher incidence of strokeⁱⁱ
- increased rates of heart attackⁱⁱⁱ
- higher mortality rates, especially among men^{iv}
- elevated rates of all cause morbidity
- on average have three additional health conditions than the general population
- reduced functions in activities of daily living^v
- overall poorer physical and mental health related quality of life, particularly among women^{vi}
- consumers rate hearing impairment as the most restrictive condition that they experienced after chronic pain and restriction in physical activity
- substantive evidence on the social exclusion and stigmatization of people with hearing impairment

These data similarly demonstrate that health system costs associated with hearing impairment are significantly greater than existing estimates. Specifically it is known that people with impaired hearing:

- use GPs three times more often than other members of the community
- subsequently consume a much higher number of prescription medicines and
- are up to 15 times more likely to require home support services^{vii}

Access Economics noted that the costs of hearing health care were approximately \$400 million per annum.

Costs of workers' compensation were in the order of \$30 million per annum.

ⁱ Mitchell P. (2002). *The prevalence, risk factors and impacts of hearing impairment in an older Australian community: The Blue Mountains Hearing Study (The 4th Libby Harricks Memorial Oration)*. Canberra: Deafness Forum.

ⁱⁱ Mitchell IBID

ⁱⁱⁱ Hogan et al. 2001 IBID

^{iv} Apollonio, I., Carabellese, C., Frattola, L. & Trabucchi, M. (1996). Effects of sensory aids on the quality of life and mortality of elderly people - A multivariate analysis. *Age and Ageing*. 25: 89-96.

^v Wilson et al. 1992 IBID

^{vi} Wilson et al. 1992 IBID

^{vii} Wilson et al. 1992 IBID