

The 2008

Libby Harricks

Memorial Oration



Libby Harricks Memorial Oration number 10

Honouring the Deafness Forum's first president & profoundly deaf achiever

Elisabeth Ann Harricks AM 1945 – 1998



deafness forum of australia

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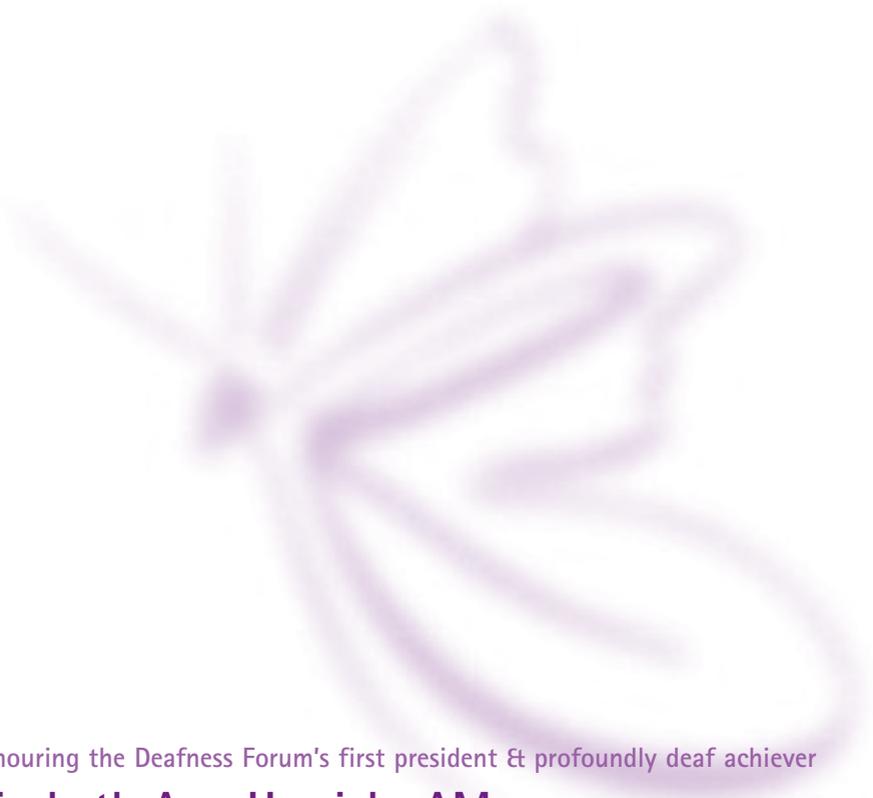
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Introduction to the 10th Libby Harricks Memorial Oration

Dr Jenny Rosen, Chairman, Libby Harricks Memorial Oration Committee



Libby Harricks developed profound hearing impairment as a young wife and mother after being born and educated as a normally hearing person. After establishing skills to manage her own hearing difficulties she became a committed advocate for hearing impaired people. Libby was a founding member and long-term President of SHHH Australia Inc (Self Help for Hard of Hearing People), and the first President of Deafness Forum, the national peak body in deafness. She travelled widely throughout Australia lobbying on behalf of hearing impaired people, and raising awareness of their needs. Amongst her many activities, Libby represented the needs of hearing impaired people on the Sydney 2000 Olympics Access Committee. In recognition of her work on behalf of hearing impaired people, in 1990 Libby was made a Member of the Order of Australia.

Libby died in 1998. To honour her work, Deafness Forum established the Libby Harricks Memorial Oration Series. The aim of the Oration Series is to continue her commitment to achieving appropriate recognition, awareness, and access, for hearing impaired people. To further this aim, the Oration Series is also published by Deafness Forum in Monograph form.

Emeritus Professor Di Yerbury presented the inaugural Oration, '*Hearing Access Now!*' in Sydney in 1999. This was followed in 2000 by Professor Bill Gibson's Oration on tinnitus and Meniere's Disease which was delivered at the Sydney-based International Federation of Hard of Hearing Conference. In 2001 in Canberra, Senator Margaret Reid discussed '*The Politics of Deafness*'. In 2002, Professor Paul Mitchell presented findings of the Blue Mountains Hearing Study, a major demographic study which addresses the prevalence and impact of hearing loss in a representative older Australian community, at the XXVI International Congress of Audiology in Melbourne. As the keynote address to a full day hearing access seminar at Macquarie University in Sydney in 2003, Donna Sorkin summarised progress in disability law and hearing loss from an international perspective.



Dr Peter Carter spoke on issues relating to Aboriginal ear health at the 3rd National Deafness Sector Summit in Brisbane in 2004. For 2005, we moved to the Blue Mountains, and Alex Jones gave the first of the Orations to be presented in Auslan. Entitled '*Deafness and Disability Transformed: An Empowering Personal Context*' his Oration indeed had a very powerful impact. For 2006, Professor Harvey Dillon presented his paper '*Hearing Loss: The Silent Epidemic*' as a keynote address for the 4th National Deafness Sector Summit in Perth. In 2007 in Albury, Rick Osborn enthralled the 9th National Rural Health Conference with insights relating to '*Hearing and Communication – A Primary Concern in Aged Care.*'

The series speaks for itself in carrying forward Libby's commitment to raising awareness of issues relating to hearing loss, and in being consistent with the aims of Deafness Forum. We have been extremely fortunate with a series of outstanding Orators presenting on a wide range of relevant topics. It has also been possible to provide the opportunity for audiences across Australia to hear these Orators, as well as to enable continuing availability via the printed Monograph series. I would like to acknowledge the invaluable continuing support of the Libby Harricks Memorial Oration Committee, and of the Deafness Forum national secretariat. I would also like to acknowledge the generosity of our Oration sponsors Australian Hearing and Australian Communication Exchange, in enabling the presentation of this Oration, and the preparation of its companion printed Monograph. Without their help this Oration series would not be possible.

This year, we are delighted to combine the 2008 Libby Harricks Memorial Oration with Deafness Forum's 5th National Deafness Sector Summit. Equally, we are pleased to present both a speaker and a topic to take best advantage of this year's site in the National Capital, Canberra.

It is now my pleasure and privilege to present to you the Orator for 2008, Associate Professor Robert Cowan. Bob is well-known to many of you as Chief Executive Officer of the HEARing Co-operative Research Centre. A member of Professor Graeme Clark's cochlear implant team since 1985, he is currently a Principal Research Fellow in the Department of Otolaryngology, University of Melbourne. He is a Member of the Institute of Company Directors, and a Fellow of Audiology Australia (ASA) and the American Academy of Audiology. He was Deputy Chair of the CRC Association from 2002 – 2005, and currently serves on the Government's Hearing Services Consultative Committee.

Bob was selected as 'Australian Professional of the Year 2004' by Professions Australia. He holds a PhD in Audiology, MBA in Technology Management, Graduate Diplomas in Audiology, Technology Management and Health Economics, MSc in Kinesiology and Honours BSc in Physiology. Bob is an internationally recognised expert in cochlear implants and audiology, with over 100 peer-reviewed publications. He holds a number of technical patents and has extensive experience in managing government, research and commercial grants, and industry contract research, as well as managing three CRC Program grants.

I can think of no-one more qualified to inform us on his topic '*Access, equity and hearing loss in Australia in 2008*'

Would you please welcome Professor Robert Cowan.

Access, Equity and Hearing Loss in Australia in 2008

Professor Robert Cowan



Introduction

I am truly honoured to have been invited by the Deafness Forum to deliver the 2008 Libby Harricks Memorial Oration.

I first came to Australia in 1982 to complete a Postgraduate Diploma in Audiology at the University of Melbourne. After three years in New Zealand working in clinical audiology, I was indeed fortunate to be invited to join Graeme Clark's research team in Melbourne. Over the past twenty years, I've been involved in hearing healthcare as a researcher, clinician, and professional, including some fifteen years as President and Federal Councillor of Audiology Australia. In these various roles, I have met and worked with some truly inspirational people, one of whom was Libby Harricks. Libby was tireless in her efforts to raise public awareness of hearing loss in the community, and I was therefore delighted when the Committee asked me to speak on access, equity and hearing loss as the topic for this year's oration. I only hope that my small contribution can help to further Libby's dreams and the work of the Deafness Forum.

At the outset, it's pertinent to reflect on the words of the Inaugural Libby Harricks Memorial Orator, Professor Di Yerbury AM, who raised the flag of access – noting that "You and I and the community as a whole can make hearing access a major public issue". So, in framing this oration, I thought to reflect on the voyage over the past nine years, how far have we really come, and where should the road take us in future in our bid to ensure access and equity to services for people who are deaf, have a hearing impairment or have an acute or chronic disorder of the ear.

The issue of "access and equity" can of course be thought of in the first person – what hearing healthcare services do I personally need, are they available, who do I go to access such services and importantly, how much do I have to pay?



Although each of our personal situations are relevant and important, we are here to reflect on the broader aspects of access and equity for our community, what services are needed by which segments of the population, what services are available through organisations and agencies, and the payment schemes under which these services are made available.

In a perfect world, infinite "supply" of hearing healthcare resources would match "demand" for those resources, and our government would pick up the tab (although ultimately the taxpayer's largesse signs the cheque). But we are all very aware that the demands on our healthcare dollars far outstrip the available resources. Every day we hear of a new epidemic facing us or our children, be it skin cancer, obesity, diabetes, or more recently the recurrence of diseases such as tuberculosis long thought eradicated, but now reappearing due to the failure of many parents to adequately immunize their children. How is government to balance the supply and demand equation across so many equally deserving requests for scarce healthcare dollars? Why is hearing healthcare any more deserving of an increased proportion of our healthcare expenditure than breast cancer research and services or paediatric obesity programmes?

Government seeks to address this question by identifying "national health priorities", which rank healthcare needs on the basis of prevalence, morbidity, mortality, and importantly, the additional aspect of economic cost-benefit analysis for the individual and our community.

In 2002, Brian Holden and I, as respective CEOs of the Vision and Hearing Cooperative Research Centres submitted a proposal to have "vision and hearing healthcare" considered as national health priorities. That proposal was ultimately not accepted. Similarly, in 2004, the Deafness Forum presented a paper to the HREOC Forum on Health Access for People with Disabilities arguing the case for hearing to be recognised as a grossly underestimated public health problem in Australia.



In 2006, in an effort to raise the awareness of the serious nature of hearing loss and its effects on the community, the Cooperative Research Centre for Cochlear Implant and Hearing Aid Innovation (CRC HEAR), together with the Victorian Deaf Society (VicDeaf), commissioned Access Economics to produce Listen hear!, the first ever study of the economic cost and impact of hearing loss in Australian. My presentation will draw on its findings to make an argued case for recognition of hearing loss as a national health priority and to highlight specific issues of access and equity.

Impact of Hearing Loss

To understand the basis for the economic impact of hearing loss, we need a clear picture of the relationship between hearing and communication. Figure 1 illustrates our auditory pathway, from reception of the sound waveform by the ear, transmission through the middle ear, sensation by hair cells in the hearing organ (cochlea), and neural transmission along the VIIIth cranial nerve to the temporal lobe of the brain.

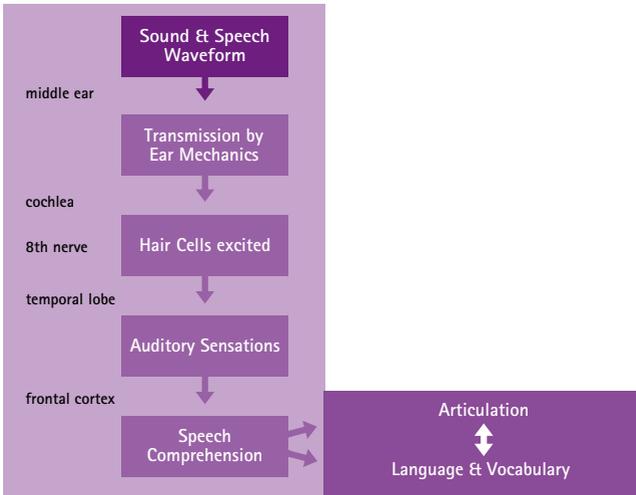
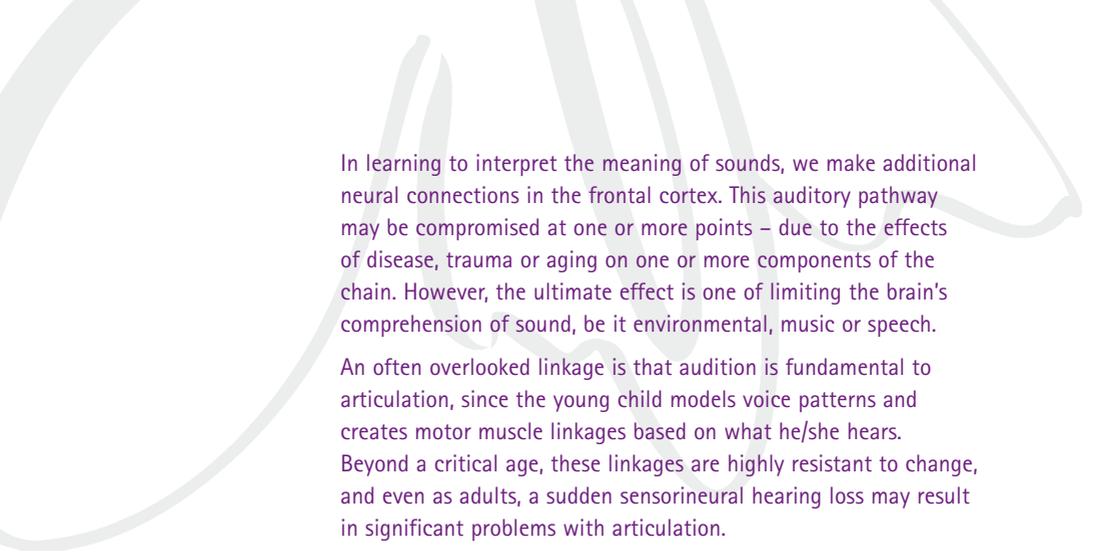


Figure 1: Illustrative diagram of auditory pathway



In learning to interpret the meaning of sounds, we make additional neural connections in the frontal cortex. This auditory pathway may be compromised at one or more points – due to the effects of disease, trauma or aging on one or more components of the chain. However, the ultimate effect is one of limiting the brain's comprehension of sound, be it environmental, music or speech.

An often overlooked linkage is that audition is fundamental to articulation, since the young child models voice patterns and creates motor muscle linkages based on what he/she hears. Beyond a critical age, these linkages are highly resistant to change, and even as adults, a sudden sensorineural hearing loss may result in significant problems with articulation.

More important however, is the linkage of speech comprehension to our development of language(s). Together, these skills are essential for effective communication, which in turn underpins our ability to effectively participate in the broader society – through education, work and social interaction. A problem in the functioning of the auditory pathway results in a failure in the communication chain, which ultimately affects the ability of the individual to participate. In particular, the effect of a hearing loss in children is to limit their development of speech and language, resulting in serious limitations to lifelong education and employment prospects.

We recognize that Australia is well-served in terms of the availability of hearing technology, both acoustic hearing aids and cochlear implants. However, as shown in Figure 2, neither a hearing aid nor a cochlear implant serve to repair or restore the functional damage to the auditory system. A hearing aid acts to amplify the sound signal, or specific components of it, pre-processing the auditory signal to overcome either a conductive or sensorineural hearing loss. A cochlear implant is fundamentally different, in that it bypasses the damaged cochlea to electrically stimulate the hearing nerve. Although both technologies have been clearly shown to improve communication for the majority of adults and children who use them, neither approach restores the physiological functioning of the auditory system.

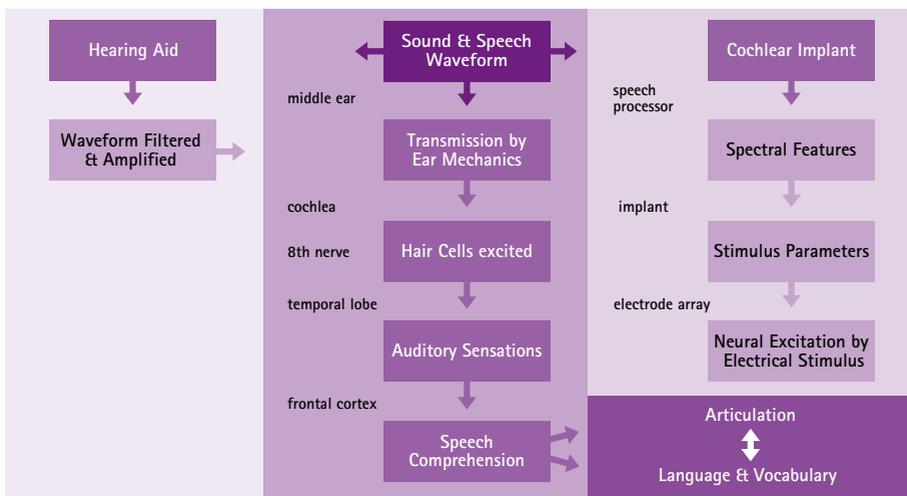


Figure 2: Illustrative diagram of auditory pathway with amplification

Clearly, in considering hearing healthcare services, interventions that can prevent hearing loss from occurring in the first place should have equal importance to those that improve effective communication capabilities through technological solutions.

An obvious solution is to bypass audition altogether, and to restore communication through an alternative modality such as use of sign language, in which visual symbols replace auditory symbols in establishing a basis for language, and also a means for articulation.

There is no question that sign language is an effective means of communication for many in the Deaf Community, and that many individuals have made significant achievements in education and employment. As such, resources must be made available to enhance both sign education and provision of sign interpreters. However, many studies of bilingualism and multiculturalism have identified a significant issue in the reticence of the vast majority of the general community in learning additional languages. A failure to speak the mainstream language is identified as a major hurdle for linguistic minorities in interfacing with and accessing resources in the broader community, and this applies equally to the signing population as one such linguistic minority.

Prevalence – the “demand” for hearing services

Returning now to the issue of “demand”, we can categorise demand by analysing when hearing loss may occur during a natural lifetime, as represented in Table 1.

Table 1. Hearing loss type and stage of development

Type of Loss	Infants (< 2 yrs)	Children (3–14yrs)	Young Adults (15–30yrs)	Middle Age (31–50yrs)	Senior (51–70yrs)	Aged (>71yrs)
Congenital	✓	✓				
Acquired						
conductive	✓	✓	✓			
sensorineural	✓	✓	✓	✓	✓	✓

Hearing loss may be present at birth (ie congenital), for example as a result of genetic abnormalities, maternal infections such as rubella, or a range of birthing issues such as severe jaundice, and this occurs in roughly 1 per 1,000 live births. Some congenital losses may only become fully evident in later years, for example with progressive syndromic hearing losses such as Usher's syndrome.

As was discussed from Figure 1, congenital and other early onset hearing impairment occurring prior to language acquisition will have a major influence on whole-of-life outcomes for infants and young children. A significant body of literature now exists that has established that early identification, through universal newborn screening programs, and subsequently effective management of hearing loss is critical to developing near-normal speech and language and later educational outcomes¹.

¹ Yoshinaga-Itano et al, 2002



Based on data from Australian Hearing (2005), the prevalence per 1000 ranges from 0.5 at birth to 2.2 at 5 years of age, 3.4 at 10 years of age, and 3.7 at 14 years of age. Based on these data, Australia has of the order of 10,000 children under fifteen with mild or greater hearing loss; a quarter of these are severely or profoundly deaf².

This figure and proportional prevalence is expected to remain fairly stable over the coming decades.

Hearing loss may be "acquired" at any stage of the individual's life. The prevalence of acquired hearing loss is proportionately far greater than congenital loss, affecting approximately one in every five people. This figure includes both acquired sensorineural hearing loss resulting from damage to or disease of the cochlea and/or neural auditory pathways, and acquired conductive hearing losses resulting from damage to or disease of the external or middle ear during childhood or as an adult.

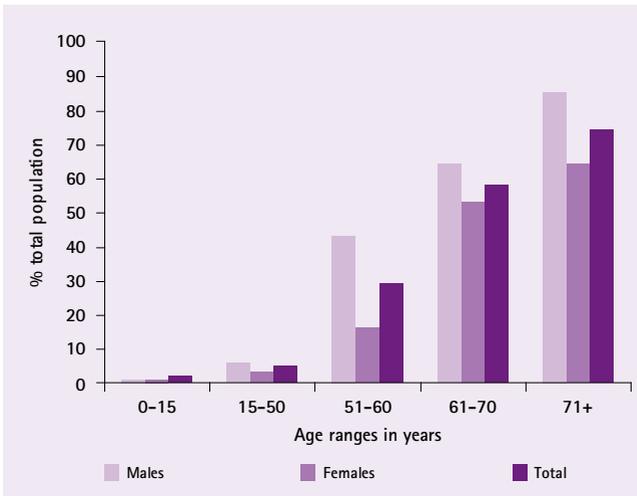


Figure 3: Distribution of hearing loss with age
Source: Mitchell – Blue Mountains study + ABS population survey

² Australian Hearing 2005

It has also been well-documented that indigenous Australians, in particular children, have a higher prevalence of middle ear disease resulting in transient or permanent hearing loss than that of the general population, and this has been recognised by government as a healthcare priority within the framework of indigenous health.

Although acquired hearing loss may occur at any time during an individual's life, it has also been well recognised that prevalence is age-dependent, as shown in Figure 3.

In 2005, there were an estimated 3.55 million Australians with hearing loss (as measured in the worse ear). Of these, 10,268 were children aged up to 14 years (0.29% of the total) and 3,535,963 were adults 15 and over. Of these, 49.5% were of working age. As shown in Figure 3, hearing loss occurs more frequently in males than females across all age groups. The degree of hearing loss is predominantly mild, although approximately a third (34%) of people with hearing loss are of a moderate or worse degree.

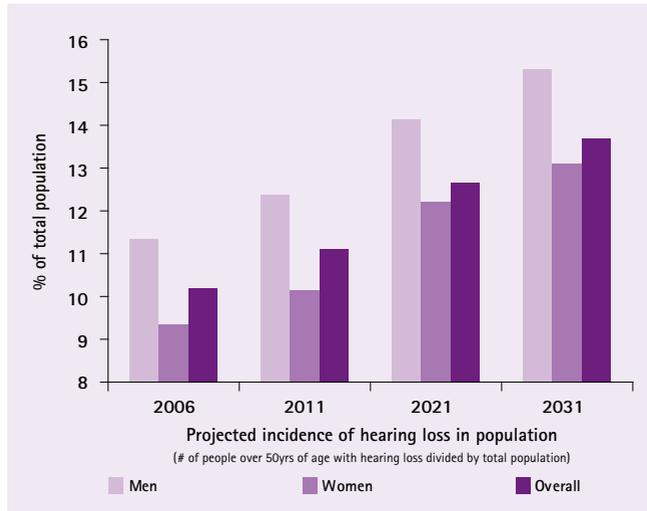


Figure 4: Projected distribution of hearing loss
Source: Mitchell – Blue Mountains study + ABS population survey



Prevalence increases significantly with age, and this is an important factor in predictions concerning a growing prevalence of acquired hearing loss.

Australia's population is, through a combination of changes in birth rates and longevity, experiencing a significant upward demographic shift in age. The net effect of this shift in demographics is clearly shown in Figure 4.

As shown, the population of adults with hearing thresholds greater than 25dB (ie outside the range of "normal hearing") is expected to more than double to nearly 8,000,000³ over the next 30 years. Older – increasingly hearing impaired – people will represent a growing proportion of our community, with prevalence predicted to rise to some one in every four Australians, and six of every ten people over the age of sixty⁴. This generation, due to improved lifelong healthcare and nutrition, are also likely to be both more active and have higher expectations for their continuing health and social involvement. These factors will create increasing demands and markets for hearing healthcare.

However, the increase in predicted prevalence is not due solely to the effect of an ageing population. All of us will be aware that the "volume" of everyday life has continued to increase.

The World Health Organisation has recently recognized that background noise, at a level insufficient to result in temporary or permanent cochlear hearing loss from exposure to loud sound (ie noise-induced hearing loss), may still be sufficiently loud to create downstream negative health consequences.

Many cities and public agencies have launched noise-alert problems, and increasingly, the level of noise in our environment and society is being recognised as a serious negative quality of life issue.

³ Access Economics 2006

⁴ Wilson et al, Hearing impairment in an Australian population, NH&MRC 1998

Of greater concern are reports of a projected rising incidence of noise-related acquired sensorineural hearing loss in young adults, resulting from inappropriate listening habits to personal stereos and other sound sources. By inappropriate, we mean the interaction between the amplitude of the sound signal, the length of any one exposure to that signal, and the frequency of exposure to loud signals. A good analogy is one of safe sun practices – where one needs to consider the strength of the sun (usually measured by the time of day), the duration (in hours) of any one exposure, and the frequency of exposure (eg days per week).

A number of studies have reported the potential for increased hearing loss resulting from use of personal stereo systems by young people. Figure 5 shows results from a survey of 128 young adults in terms of the self-reported perceived loudness at which they listened to their systems. As shown, a significant proportion of the sample reported listening at loud levels. In laboratory tests, MP3 players set at the upper ranges of their volume settings have been shown to exceed 100dB SPL, dependent on earphone style used.

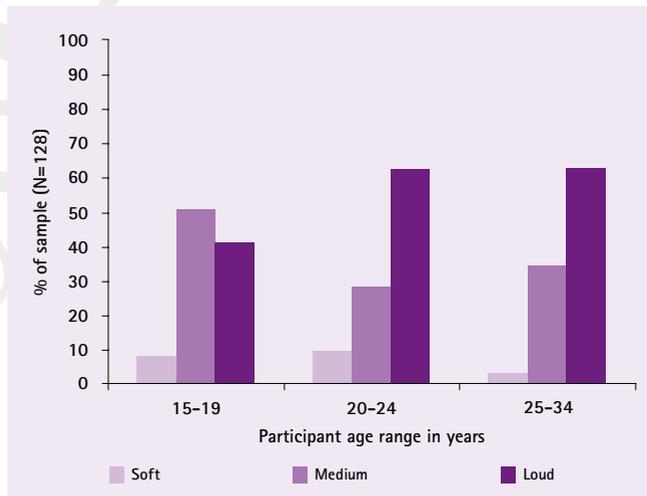


Figure 5: Self-reported perceived loudness of MP3 players by sample population



A critical finding was that some 93% of the sampled population indicated that they were aware that listening to loud sounds could potentially damage their hearing. The results did show a strong gender difference, with young women and young men equally represented in the high exposure group. Assessing the same population for duration of device use, and frequency of device use resulted in self-reported outcomes as shown in Figures 6(a) and (b).

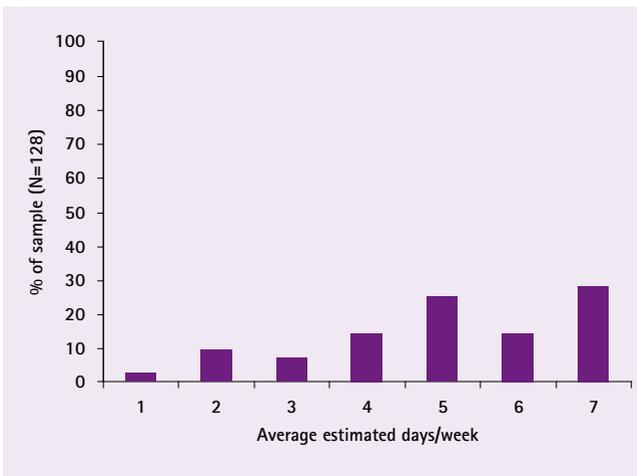
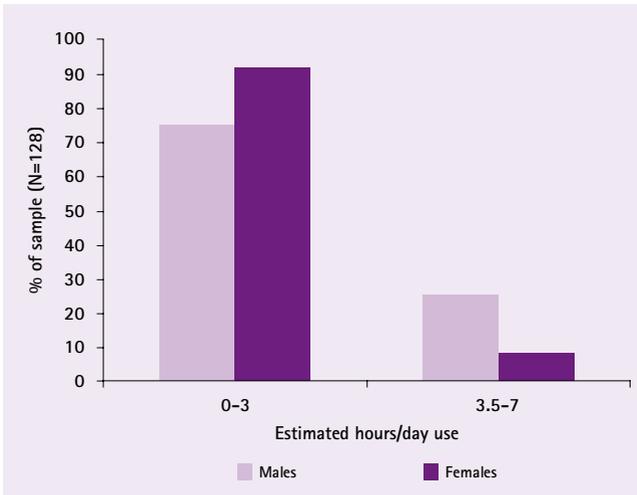


Figure 6(a) & (b): Self-reported estimate of duration and frequency of use of MP3 players

Taking self-reported loudness, duration of device use, and frequency of device use into consideration, approximately 28% of the sample population were identified as potentially being at risk from inappropriate listening behaviours. A significant further finding was that 12% of the sample population reported tinnitus frequently, and a further 5% reported having continuous tinnitus.

One could argue that a simple solution would be to simply turn down the volume, and as we are aware, manufacturers of some MP3 players and other personal stereo systems have included sound-limiting technology in their devices. In this regards, it was somewhat sobering to reflect on the sample population findings as shown in Figure 7 in regards to use of such sound-limited.

As shown, despite being aware of the potential risk to their hearing, a significant proportion of the sample population would not use output limiting technology. An age effect was noted, which suggests that campaigns aimed at raising awareness levels in younger adults could be beneficial.

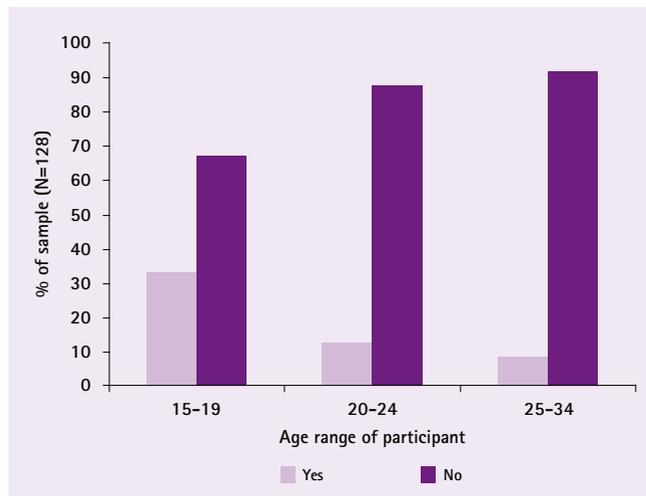


Figure 7: Self-reported use of output limiting technology



Having digressed into the factors predicting an increase in prevalence of hearing loss, (ie an increase in the “demand” side of our equation), it is useful now to consider how the prevalence of hearing loss compares to the currently-recognised national healthcare priorities, and this is shown in Figure 8. As shown, the prevalence of hearing loss is second only to that of musculoskeletal problems.

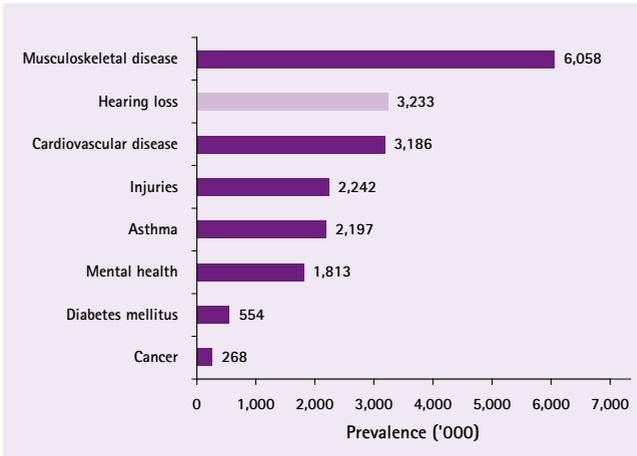


Figure 8: Prevalence of hearing loss in comparison to national health priorities
Source: "Listen Hear", Access Economics 2006

However, in such comparisons, due regard must be given to the fact that although undiagnosed pathologies of hearing loss may be life threatening (eg acoustic neuroma, cholesteatoma), and that hearing loss may be associated with other life threatening conditions (eg diabetes, stroke, elevated blood pressure) or with social isolation that may lead to other significant health risks (eg higher sickness impact profiles or poorer social relations), no direct causality has been reported between hearing loss and increased mortality.

As such, a direct comparison of prevalence is unlikely to convince government of the case for hearing loss to be similarly ranked to those matters with demonstrated and clearly-evident mortality and morbidity.

Health costs – the “supply” of hearing services

In considering the issue of “supply”, we can initially tabulate the range of services that those with a hearing loss may require during a natural lifetime.

Table 2. Service type and Stage of Development

Type of Loss	Infants (< 2 yrs)	Children (3–14yrs)	Young Adults (15–30yrs)	Middle Age (31–50yrs)	Senior (51–70yrs)	Aged (>71yrs)
Diagnostic	✓	✓	✓	✓	✓	✓
Medical						
GP	✓	✓	✓	✓	✓	✓
Specialist	✓	✓	✓	✓	✓	✓
(re)Habilitation	✓	✓	✓	✓	✓	✓
Educational	✓	✓	✓	✓	✓	✓

Given that hearing loss may occur at any stage during our lifetime, it is evident that the full spectrum of hearing healthcare services needs to be readily available to all ages of clients. In particular, we have already identified that increased resources in education of children and young adults may be critical to preventing an increased incidence of noise induced hearing loss.

Traditionally, medical/surgical intervention and hearing aids have been the primary remediation for conductive and mild-severe sensorineural hearing problems. Despite rapid improvements in technology and programmes supporting access, uptake has been limited, with estimates of only one in every five individuals who could benefit actually using either a hearing aid or cochlear implant. Identified reasons include problems in tailoring the fitting and insufficient or inappropriate rehabilitation for individual characteristics and needs.



Hearing aids and cochlear implants address peripheral hearing loss (ie outside of the brain or central auditory system). However, for many Australians, the primary communication problem may be cognitive in nature. For example, age-related problems and the ability to separate and recognise speech in noisy environments. The latter "figure ground" hearing loss affects more than one in 200 school age students, significantly reducing their ability to learn. In addition, tinnitus, which may be either peripheral or central in origin, and often accompanies a hearing loss, affects the individual's ability to concentrate and internally separate meaningful sound from internal noise. The causes of many of these problems are not well understood nor those that suffer from them easily identified. In future, a better understanding of the causative mechanisms of tinnitus and other cognitive impairment may create the prospect of better diagnostic tools and more effective intervention.

Part of the challenge of maximising effective hearing and device uptake is the cost of and availability of the specialist personnel required to diagnose, manage device selection and fitting, and the subsequent intervention. Figure 9 shows the range of medical and allied health personnel involved in the hearing health management lifecycle for implanted devices and the potential rebalancing of effort needed to create good outcomes in the future.

Referring to this figure, the first step in hearing intervention is an accurate diagnosis. Where a device is needed, the most appropriate device must be chosen from an increasing palette of options. Device fitting requires considerable expertise and effort, particularly where an implant is required.

The initial fitting and programming of the device to best match any residual hearing capacity and need is a critical and currently labour intensive step. Considerable user training may then also be required to help optimise the devices contribution to overall communication. Finally, there is a need for ongoing optimisation to cope with rapidly changing work and social environments – and over longer timeframes, with physiological change.

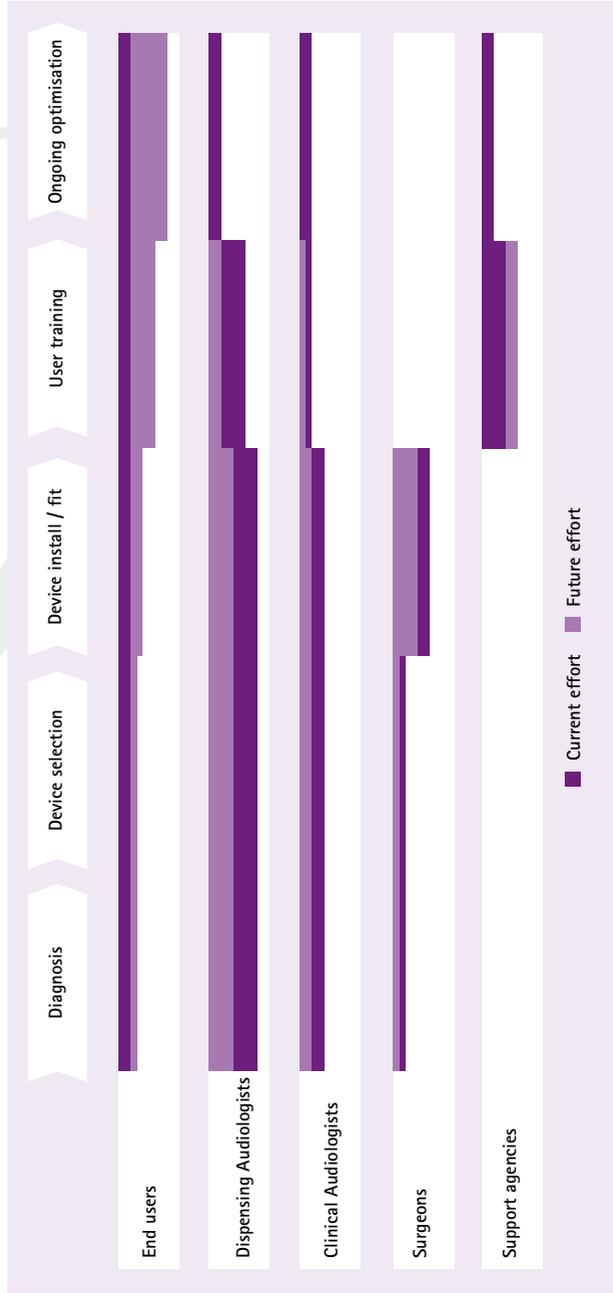


Figure 9: Hearing health management lifecycle: device model



Where there is a failure anywhere in this lifecycle, the device will not meet performance expectations. In the case of external aids, a number of studies have reported that 25% of users simply put them aside because they *don't* deliver promised performance.

The demands on highly trained personnel to meet the challenges of increasing device choice and complexity and increasing patient expectation are considerable. Concurrently, the numbers of Australians with hearing loss is expected to dramatically increase. Consequently, it is projected that demand for hearing services will outstrip the workforce capacity. For example, as improved technology has expanded candidature, the numbers of individuals obtaining cochlear implants has grown much faster than available clinical resources.

The challenge is therefore not only to create technology and devices that help people hear and communicate better – but to deliver innovative tools and “smart” devices that can radically reduce the specialist effort required right through the hearing device lifecycle.

Figure 9 also suggests where this potential may lie – including increasing the ability of end users to take a more active role in device fitting and optimization. This will increasingly require the collaboration of support agencies, and more active participation in rehabilitation of both professionals and experienced volunteers.

Meeting the challenge of retaining and maximising effective hearing demands advances in all these streams in order to ensure solutions are ones that significantly enhance communication and users want to and will use.

Having identified a range of necessary services, we can then estimate their costs in Australia using methodology developed by the Australian Institute for Health and Welfare (AIHW) and the National Centre for Health Program Evaluation. This approach measures health services utilization and expenditure (both public and private) for specific diseases and disease groups. The Listen Hear report incorporated such an analysis of health expenditure costs reported for hearing loss, and this is shown in Figure 10.

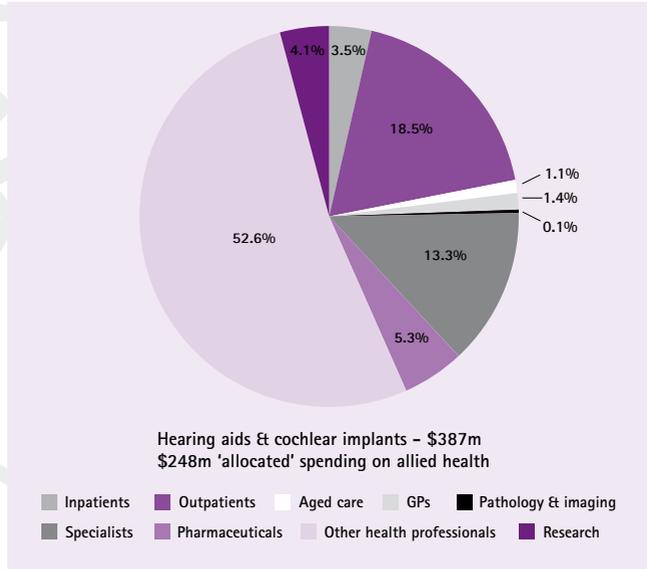


Figure 10: Hearing health expenditure by cost type, 2005

Overall health expenditure for people with hearing loss was \$248 million in 2005, equating to some \$70 per person with hearing loss per annum, and representing some 5.7% of the total spend on Australian healthcare.

The majority (53%) of the health expenditure is for services provided by allied health and non-medical health professionals, including audiology and speech therapy services (\$130 million). Outpatient services for ear examinations, medical assessment of ear disease and procedures accounted for 19%, whereas medical specialists represented only 13% of the total expenditure. Inpatient costs, for example for surgeries to correct middle ear problems, perforations, implant surgeries (not devices) and other ear surgery represented between 3.5–5.3% of the total. Expenditure on GP visits and aged care were low, each just over 1%.

Expenditure was 61% on males, and 39% on females, consistent with prevalence proportionality. While there is a greater prevalence of occupational hearing loss in working age men, this is balanced by greater longevity of women in later life.



It is relevant to note that the figures do not include the costs of hearing aids or cochlear implants, and estimated expenditure on for the same year (2005) shows a figure of \$377 million, comprising an expenditure (in 2005) of some \$10 million for cochlear implant devices, \$243 million for hearing aids through the Office of Hearing Services Program, and an estimated cost of \$134 million for hearing aids provided to the private market.

It is important to note that this analysis also excludes procedures and treatments for otitis media, which the AIHW classifies as a respiratory condition.

However, expenditure varies significantly with age, as shown in Figure 11. Notably, some 27% of the health expenditure is directed to provision of services for children up to the age of 14 years, despite this group representing only 1% of those persons with hearing loss. This equates to some \$6,511 per child per annum.

As discussed previously, the impact of congenital or early onset hearing loss in infancy can have whole-of-life impact, and adequate expenditure on early diagnostic programmes and rehabilitation is critical to offsetting this potential impact. In considering equity, we recognize that many hearing healthcare services, in particular for children, but as well for seniors and pensioners, are government-subsidized through state public health agencies or by the Commonwealth through Australian Hearing.

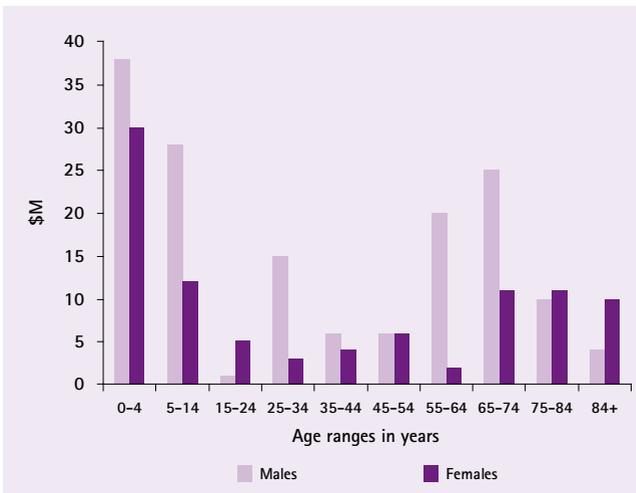


Figure 11: Hearing health expenditure by age and gender, 2005

However, our analysis indicates an inequity in the resources for those persons with hearing loss in early adulthood and mid-life. Although one could argue that young and middle-aged adults, who suffer an acquired hearing loss as an adult, should be in a position to fund their own hearing healthcare services, the situation of young congenitally deaf adults is quite a distinct case.

While Australian Hearing provides an international benchmark in terms of its provision of hearing healthcare to children with hearing loss, this support ceases when the previous client becomes a young adult. Deafness Forum, and other agencies, have consistently argued the case that paediatric clients of Australian Hearing should continue to have access to hearing healthcare services, and our evaluation of costs would appear to support the contention that there exists an inequity of access to services for this special group.

Continuing our argument for hearing loss to be considered as a national health priority, we can then compare the health system expenditure for hearing healthcare with the national health priority areas, and this is shown in Figure 12.

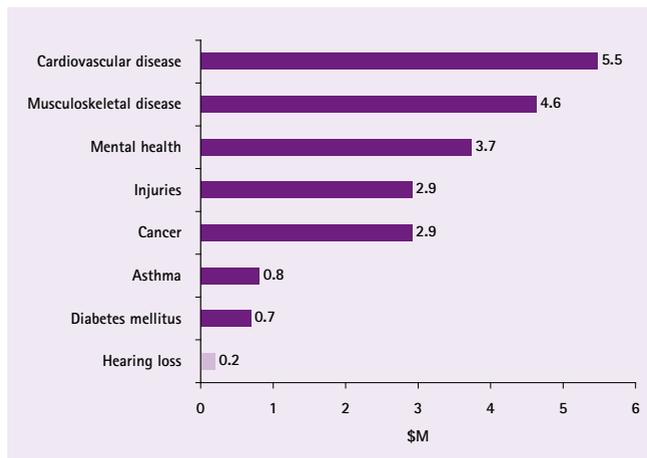


Figure 12: Hearing loss health expenditure compared to national health priorities (2001)
Source: "Listen Hear", Access Economics 2006



Comparatively, health expenditure on hearing loss is less than 1% of the total expenditure on the national health priority areas, and only 0.35% of total allocated recurrent health expenditure in Australia.

Using prevalence figures and allocated recurrent health expenditure, we can then construct a comparative table of per annum expenditure, identifying a spend of \$62 per person with hearing loss per annum, as compared with an average of \$10,904 per person with cancer, and an average of \$2,064 per person with mental illness.

Economic Impact – the case for hearing loss as a national health priority

So far, we have considered the issue of prevalence of hearing loss and hearing healthcare services and costs. However, a more cogent analysis is one that considers not only the healthcare expenditure, but also the real financial costs associated with the condition of hearing loss as experienced by the reported proportion of the Australian population we have identified. This was the principal analysis of the Listen Hear report⁵, which identified the total economic cost of hearing loss to Australia to be on the order of \$23bn per annum.

The direct financial cost of hearing loss was shown to be \$11.75bn per annum – equivalent to 1.4% of Australia's GDP. This was subdivided into specific components as illustrated in Figure 13. Lost productivity, resulting from reduced workforce participation and early retirement of people with hearing loss contributed 57% of all direct financial costs (\$6.7bn per annum).

Nearly half of the population with hearing loss are of working age (15-64 years), and as acquired hearing loss is cumulative with age, the analysis presented in Listen hear! focused on employment rates of the working population aged between 45 and 64 years.

Employment rates were reported to be 20.5% lower for men with hearing loss and 16.5% lower for women with hearing loss as compared to their normally-hearing peers.

The principal productivity cost arises due to lower employment rates for people with hearing loss over 45 years of age and a subsequent loss in earnings.

⁵ Access Economics, 2006

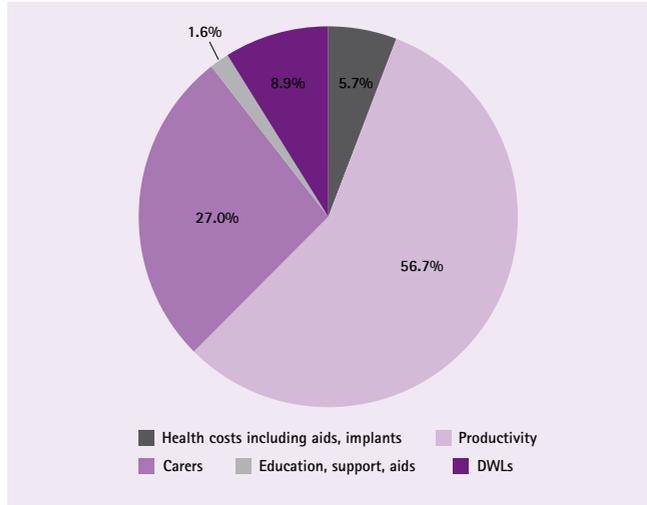


Figure 13: Hearing loss, financial cost summary 2005 (% total)
 Source: "Listen Hear", Access Economics 2006

As shown in Figure 13, the costs of informal carers, who provide assistance for people with hearing loss to communicate, was the second largest component, representing 27% of the total costs (or \$3.2 billion). This figure was calculated using replacement costs. Deadweight losses from reduced taxation accounted for 8%, and their healthcare services already described for a further 6%. Of the total, only some 1.6% (\$191m) of the real financial costs were expenditure on educational and support services, including services to the Deaf Community.

The real direct financial costs were paralleled in the Listen Hear report by an additional \$11.3bn per year in disability and lost well-being due to hearing loss, representing some 3.8% of the total burden of disease from all causes of disability and premature death in Australia. Importantly, this analysis did not include downstream costs of additional health problems which can often result from the distress and depression triggered by the social isolation of hearing loss and its communication problems⁶.

⁶ Mitchell, P. The Blue Mountains Hearing Study, 2002. Libby Harricks Memorial Oration, Deafness Forum



As a final consideration in our case for hearing loss as a national health priority, we can compare the Disability Life Years for hearing loss with those of the other National Health Priorities, and this comparison is shown as Figure 14.

As shown, the burden of disease resulting from hearing impairment is 3.8%, which is currently greater than that of three of the recognized National Health Priority areas – these being asthma, diabetes, and musculoskeletal conditions.

A further comparison may be done by evaluating hearing loss by degrees of severity against other medical conditions, using the burden of disability data. Mild hearing loss is comparable with mild asthma – a recognized national health priority condition.

Moderate hearing loss is comparable with chronic pain from back injury or a moderate depressive condition – again a recognized national health priority condition. Finally, severe hearing loss is comparable with more advanced diabetes – a recognized national health priority condition. It is evident that regardless of the severity of hearing loss, the impact of the disability is directly comparable with conditions currently rated to be national health priorities.

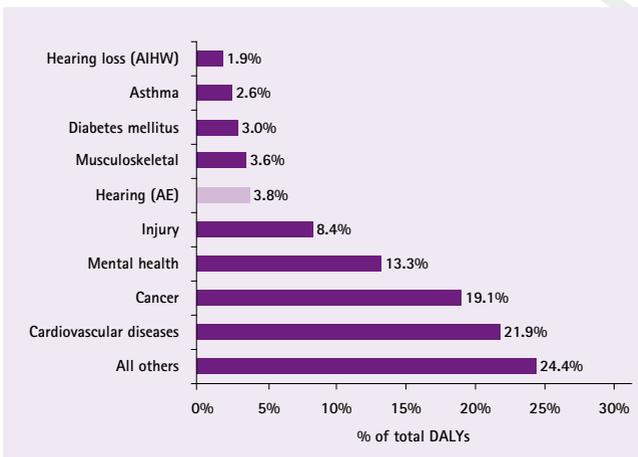


Figure 14: Comparison of DALYs with national health priorities

Source: "Listen Hear", Access Economics 2006

Summary and Concluding Remarks

In this presentation, we have addressed the demand for and supply and cost of hearing healthcare services, with a view to framing an argument for hearing loss to be recognized as a national health priority.

Data has shown the hearing loss is the second most prevalent health problem in the Australian population. Projections suggest that hearing loss in the worse ear is expected to double by 2050, increasing from 17.4% (one in six) of the population in 2005 to 26.7% (one in four) of the population.

A significant component of acquired hearing loss (37%) is due to excessive noise exposure due to inappropriate listening behaviours, and this is entirely preventable. If we are to develop new approaches to hearing protection that can limit damage from environmental sound by actively moderating incoming sound levels, we must first understand what are the current barriers to use of hearing protection by workers in industry. This has direct relevance for hearing retention in traditional industry, in the service sector (for example in call centres) and increasingly in our leisure noise exposure (for example through personal headsets).

In future, protection devices may not only improve retention, but also improve our ability to communicate in noisy environments – increasing the likelihood they will be adopted and consequently also unlocking their full economic impact potential.

It is pleasing that this issue has been identified from the Listen Hear Report, and targeted by government for additional research expenditure to identify causal mechanisms and guide behavioural change campaigns.

We have shown that hearing loss has proportionately lower expenditure in comparison to other national health priorities, but conversely, represents a comparable disease burden to at least three of these current priorities, regardless of the severity of hearing loss.

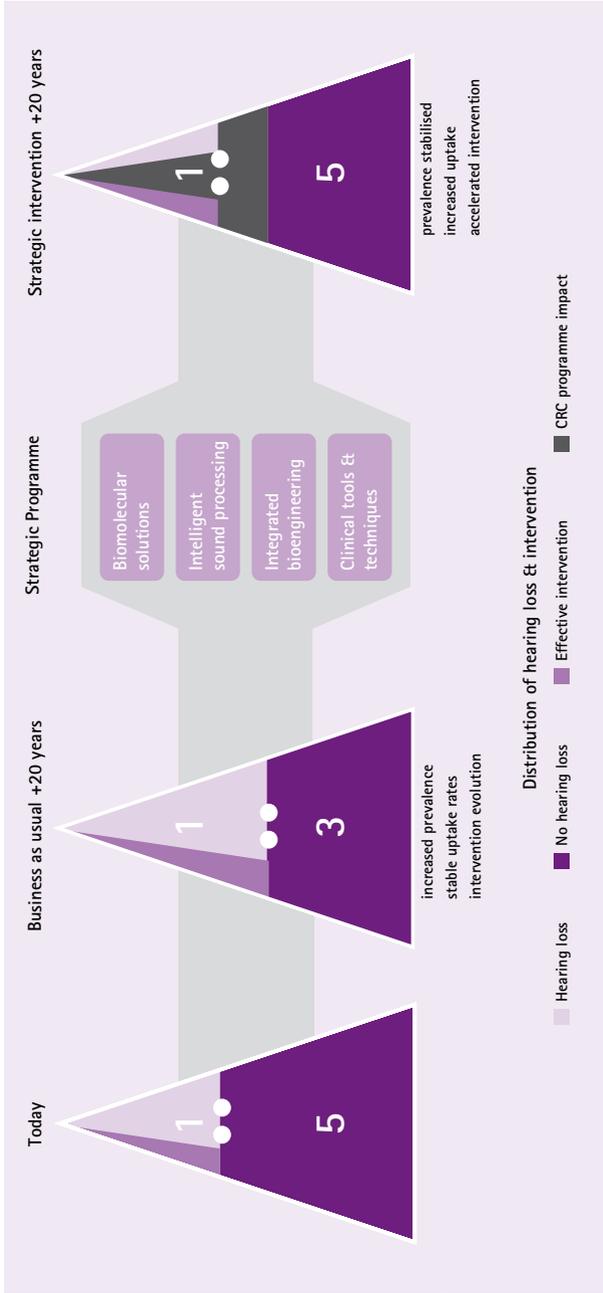
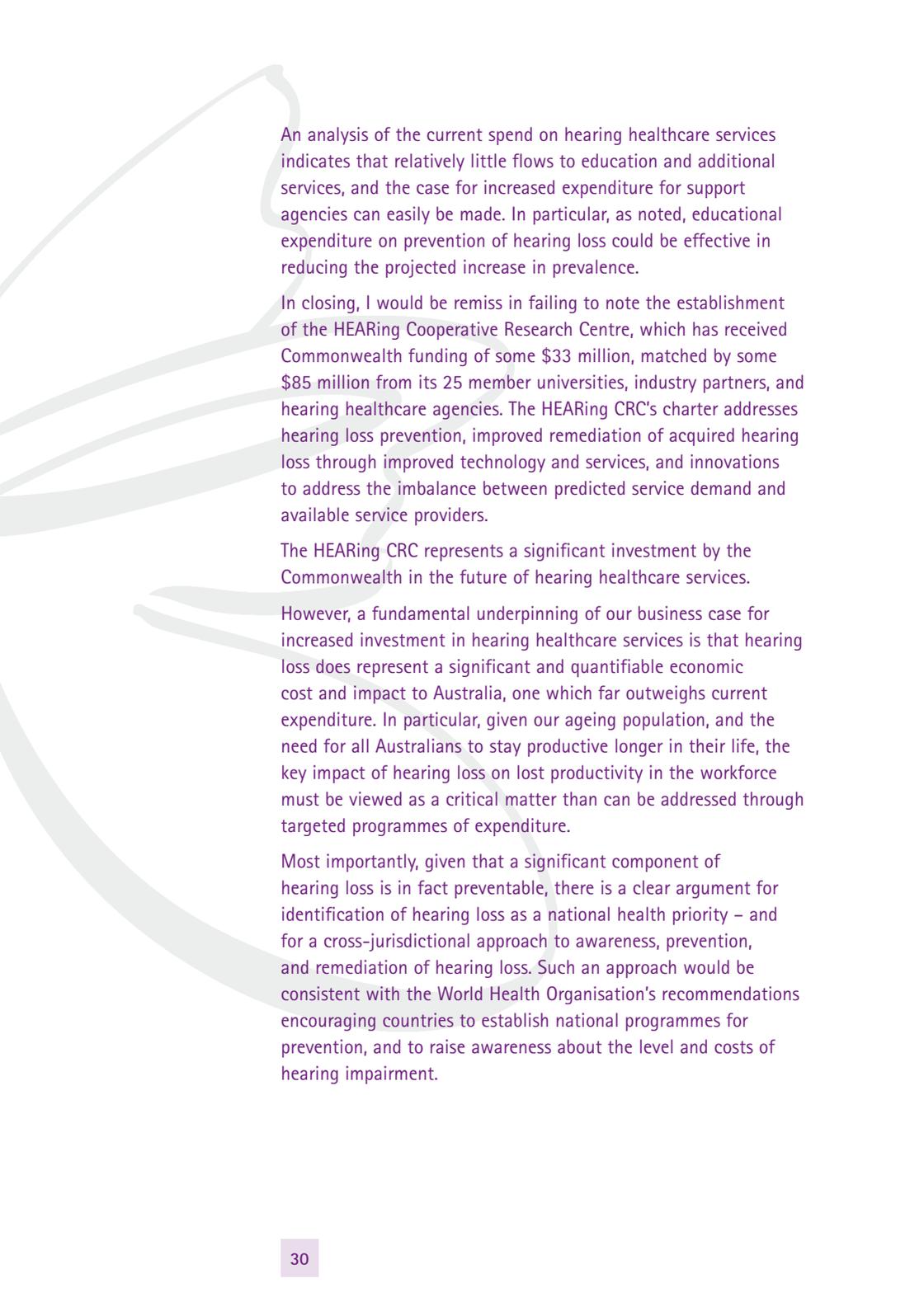


Figure 15: Innovation focus: reduced prevalence and enhanced uptake of improved technology





An analysis of the current spend on hearing healthcare services indicates that relatively little flows to education and additional services, and the case for increased expenditure for support agencies can easily be made. In particular, as noted, educational expenditure on prevention of hearing loss could be effective in reducing the projected increase in prevalence.

In closing, I would be remiss in failing to note the establishment of the HEARing Cooperative Research Centre, which has received Commonwealth funding of some \$33 million, matched by some \$85 million from its 25 member universities, industry partners, and hearing healthcare agencies. The HEARing CRC's charter addresses hearing loss prevention, improved remediation of acquired hearing loss through improved technology and services, and innovations to address the imbalance between predicted service demand and available service providers.

The HEARing CRC represents a significant investment by the Commonwealth in the future of hearing healthcare services.

However, a fundamental underpinning of our business case for increased investment in hearing healthcare services is that hearing loss does represent a significant and quantifiable economic cost and impact to Australia, one which far outweighs current expenditure. In particular, given our ageing population, and the need for all Australians to stay productive longer in their life, the key impact of hearing loss on lost productivity in the workforce must be viewed as a critical matter than can be addressed through targeted programmes of expenditure.

Most importantly, given that a significant component of hearing loss is in fact preventable, there is a clear argument for identification of hearing loss as a national health priority – and for a cross-jurisdictional approach to awareness, prevention, and remediation of hearing loss. Such an approach would be consistent with the World Health Organisation's recommendations encouraging countries to establish national programmes for prevention, and to raise awareness about the level and costs of hearing impairment.



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About the Deafness Forum

Introduction

Deafness Forum is the peak body for deafness in Australia. Established in early 1993 at the instigation of the Federal government, the Deafness Forum now represents all interests and viewpoints of the Deaf and hearing impaired communities of Australia (including those people who have a chronic disorder of the ear and those who are DeafBlind).

Structure

Deafness Forum is divided into four classes.

Consumer means an adult who is Deaf or has a hearing impairment or has a chronic ear disorder; or a parent of such a person.

- **Deaf** refers to people who see themselves as members of the Auslan using Deaf community by virtue of its language (Auslan) and culture.
- **Hearing Impairment** refers to a hearing loss. People with a hearing impairment (or who are hard of hearing) may communicate orally (sometimes described as 'oral deaf') or may use a sign language or other communication methods.
- **Chronic Ear Disorder** refers to such disorders of the ear as tinnitus, Meniere's Disease, Acoustic Neuroma, hyperacusis and recruitment. People with some such ear disorders may also have a hearing impairment.

All Consumers are entitled to describe themselves using whatever terminologies they prefer, and are asked to do so at the time of joining and each time they renew membership.

Consumer Association means an incorporated Association of, or for, consumers (as defined above).

Service Providers also include various other occupations that provide services to consumers who are Deaf, have a hearing impairment or have a chronic disorder of the ear.

Service Provider Association means an incorporated organisation, which has (as its principal purpose) the provision of services that promote the wellbeing of consumers (as defined above).



Objectives

The Deafness Forum exists to improve the quality of life for Australians who are Deaf, have a hearing impairment or have a chronic disorder of the ear by:

- advocating for government policy change and development
- making input into policy and legislation
- generating public awareness
- providing a forum for information sharing and
- creating better understanding between all areas of deafness.

Community Involvement

The Deafness Forum is consumer driven and represents the interests and concerns of the entire deafness sector, including:

- the Deaf community
- people who have a hearing impairment
- people who have a chronic ear disorder
- the DeafBlind community
- parents who have Deaf or hearing impaired children in their families

Libby's Story



Libby's story is one of courage and triumph over adversity by utilising the knowledge of her own severe hearing loss to help others.

Libby started to lose her hearing following a bad dose of flu in the English winter soon after her marriage in 1969. Having returned to Australia in 1970 she began to find difficulty in understanding conversation and instructions, particularly on the telephone which was very important in her profession of pharmacy.

In spite of advice to the contrary, Libby tried hearing aids and found they helped. Had she heeded the negative advice, Libby believed she might never have embarked on the road to self-help, which so enriched her own life and that of many others. She thought her two boys quickly learnt to sleep through the night and her friends remarked they had loud voices, which was the boys' mechanism for coping with a deaf mother!

The more the doctors said nothing could be done to help, the more Libby looked towards self help and so she learnt to lip read, a tool she relied on heavily in her quest to help others.

Libby's will to win led her, with the help of others, to get involved with the setting up of a support group, which became SHHH – Self Help for Hard of Hearing people. The American founder, Rocky Stone, was invited to Australia in 1982 and did a lecture tour entitled "The Hurt That Does Not Show" which cemented the bonds between the US and Australian groups and helped the local SHHH develop.

Libby, with others, then began SHHH News, a quarterly publication, and with Bill Taylor set up the first Hearing Information and Resource Centre at "Hillview", Turrumurra with support from Hornsby/Kuringai Hospital. This centre provided reliable information on, and demonstrated, assistive listening devices for hearing impaired people. Through this interest, Libby became an enthusiastic user of technology and with her handbag full of electronic aids was enabled to join in a full social life with family and public.



Libby became President of SHHH in 1986 and began to develop her role as an advocate for hearing impaired people generally.

She became involved in ACCESS 2000, under the Australian Deafness Council, and a member of the Disability Council of NSW. Her horizons broadened further as Vice President of the Australian Deafness Council and then as the first, and two terms, President of the newly formed national peak body in deafness, the Deafness Forum of Australia. In this latter role Libby made a huge contribution to bring together all the different organisations into a central body, and actively lobbied on behalf of Deaf and hearing impaired at the highest level – the archetype of a successful achiever despite her profound hearing loss.

For her work on behalf of hearing impaired people Libby was made a Member of the Order of Australia in 1990. Later she was appointed by the Government to the Board of Australian Hearing Services and was asked to represent the needs of hearing impaired on the Olympic Access Committee.

Unfortunately, Libby faced another hurdle when she was diagnosed with breast cancer in 1995. Following surgery, she continued her family and volunteer work with undiminished vigour. She would wickedly show off her wig at public functions after her chemotherapy, and talked openly of her "mean disease". She died peacefully on 1 August 1998 and was honoured by hundreds who attended her Thanksgiving Service on 6 August.

In her own words, Libby related her outlook:

"I look back over these years since I became hearing impaired and realise that any efforts that I have made have been returned to me threefold. I have found talents I never knew I had, I have gained so much from the many people I have met and worked with to improve life for people with disabilities and through self help I have turned the potential negative of a profound hearing loss into a positive sense of purpose and direction in my life".

The Libby Harricks Memorial Oration

The Libby Harricks Memorial Oration program is supported by the Libby Harricks Memorial Fund of the Deafness Forum of Australia. Donations to this fund are tax deductible.

Donations should be made payable to Deafness Forum. Additional donation forms and general information regarding deafness can be obtained from:

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"I look back over these years since I became hearing impaired and realise that any efforts that I have made have been returned to me threefold.

I have found talents I never knew I had, I have gained so much from the many people I have met and worked with to improve life for people with disabilities and through self help I have turned the potential negative of a profound hearing loss into a positive sense of purpose and direction in my life"