Blamey Saunders hears – an innovative profit-for-purpose initiative

Blamey Saunders hears is an Australian audiology company set up to improve hearing health for Australians. The Founders, Professor Peter Blamey and Dr Elaine Saunders, who both have distinguished careers in hearing research, audiology, hearing aids and cochlear implant research and who are both ATSE Clunies Ross recipients, are committed to continuing development of world leading hearing aids, here in Australia, and to providing them in a manner that overcomes barriers of cost and distance. The company holds a Commonwealth Government Accelerating Commercialisation Grant (AC, AusIndustry). The company has developed a client centred model of hearing care that enables the client to have as much or as little help as they like. The model centres around a self-fit hearing aid system (IHearYou®), that is used by thousands of people around Australia and internationally.

Blamey Saunders hears provides primary hearing health care online and face-to-face, and tertiary level hearing health care through our audiology clinics. The client journey is simple and easy: It begins with a triage step that is much more than a pass fail hearing test, it is an informative test of hearing ability, designed to help the client make choices. The client takes a clinically validated online test of hearing for speech sounds (the Speech Perception Test). The test results provide the client with information on which sounds of speech they hear well and which sounds of speech they confuse. The results are held in a data base, and Blamey Saunders may use the data to put the initial settings in the hearing aids. Clients who purchase hearing aids can further personalise them with the attractive hearing aid programming system combined with their computer or smart phone, or one of the company's tele-audiologists can do this remotely. If the client has an internet connection; they don't even need to leave home.

The cost of the combined service and hearing aid provision to the client is less than half of the more traditional model for equivalent devices and services. The scalable business model avoids the need for expensive facilities, and avoids client travel costs. Of course, some people seek the traditional model, or require more complex care. This tertiary level care is provided in two full audiology service clinics in Sydney and Melbourne, and more are planned in other capital cities.

The IHearYou® system was awarded the 2015 Australian Good Design Award for Social Innovation.

Blamey Saunders hears has been in business since 2008, has thousands of customers, and has a proven track record of excellence, growth, and profitability.

Blamey Saunders hears has made premium quality hearing aids much more affordable. In general, the hearing aid industry in Australia involves a lot of cross subsidies. Thus, although the Government does supply "free to client hearing aids" clients may be encouraged to "Top Up" to a highly priced device. The Blamey Saunders hearing aids are sold without government subsidy, direct to client, at a sum less than many hearing aid retailers charge for "Top up" hearing aids. Clients in remote areas particularly benefit from the remote access service.

Blamey Saunders hears provides an economic primary health care delivery model. As our centrally located team uses the internet to support people everywhere, the concentration of expertise enables tertiary level problem solving at a primary care cost, and with immediate access. Working with Blamey Saunders is not just working with a local audiologist – our clients are in contact with a diverse team of professionals who are only a phone call or an email away.

The importance of treating adult acquired hearing loss early

The evidence is clear that hearing difficulties must be addressed sooner rather than later to avoid downstream issues in mental health, isolation, loss of income, and premature departure from the work force. The association between untreated hearing loss and an increased risk of dementia is proven. Most people with hearing difficulties do not seek solutions promptly, but wait years, potentially until they are eligible for free hearing aids. By then their problems are more complex and more costly to solve.

The downstream costs of untreated hearing loss are significant. Recent studies have confirmed that older people with hearing loss experience accelerated cognitive decline, and increased rates of incident dementia. They are also at increased risk of falling and hence, injury. Furthermore, hearing loss is linked to increased rates of depression; and depression has been shown to increase the likelihood of a patient developing a chronic physical illness such as heart disease or having a stroke. There is also strong evidence that hearing loss decreases ability to self-manage chronic conditions, seek effective treatment, or be reached by public health campaigns. These factors all represent significant health care costs for individuals and in aggregate for the Australian economy.

Cognitive Decline and Falls Risk associated with hearing loss

We all fear cognitive decline and the possible onset of dementia as we age, and the healthcare system has good reason to fear the magnitude of these problems too. Currently, over 300,000 Australians have dementia, with approximately one person being diagnosed every 6 minutes – 1,700 cases per week. By 2050, this figure is expected to reach 7,400 per week (Access Economics *Fight Dementia* 2004). In New South Wales hospitals, the average cost of care per episode was $7,720 for a patient with dementia versus $5,010 for a patient without dementia (Australian Institute of Health and Welfare, 2013). These generally higher care costs are predicted to see spending on dementia exceed that of any other health condition by the 2060s (Access Economics, 2004). To put some perspective on the total health and residential care costs of this disease, the 2004 report from Access Economics modelling the impact of delaying onset of Alzheimer's (the most common form of dementia) found that a 50% reduction in new cases each year from 2005 (equivalent to delaying onset by about 5 years) would result in 48.7% fewer cases by 2050, equivalent to an estimated $105 billion in cumulative savings. Just a 5% reduction would give cumulative savings of $10.3 billion over the same period. An estimated 57% of these savings were predicted to be in the health and residential care sectors (Access Economics 2004).

Research shows that cognitive decline and incident dementia are independently associated with hearing loss in older adults (Lin 2012, Lin et al 2013).

Frank Lin (MD, PhD, assistant professor, otolaryngology, geriatrics, and epidemiology, Johns Hopkins University, Baltimore, Maryland), principal author of the two main papers demonstrating a link between hearing loss and cognitive decline, has stated that broader health initiatives are needed to inform the public and medical providers about the links between hearing loss, dementia and falls, and about how to adequately address hearing loss through a combination of measures including use of hearing aids (Lin 2012). Lin says, "Our findings emphasize just how important it is for physicians to discuss hearing with their patients and to be proactive in addressing any hearing declines over time (Kirkwood 2013)."

The widely reported 2012 study carried out by Lin found that a mild hearing loss of 25 dB had an effect on cognitive scores approximately equivalent to seven years of ageing. An independent and linear correlation between hearing loss and the risk of developing incident dementia has also been

demonstrated (Lin 2012, Lin et al 2013). When compared to individuals with normal hearing, a patient with a mild (Pure Tone Audiometry 25-40 dB), moderate (PTA 41-70 dB) or severe hearing loss (PTA > 70 dB) had a two-, three-, or five-fold increase in likelihood of developing incident dementia, respectively (Lin 2012).

Social isolation is well known to be a risk factor for cognitive problems, and the document *Towards a Dementia Prevention Policy for Australia: Implications of the Current Evidence* (Farrow 2010), published by the Dementia Collaborative Research Centres and Alzheimer's Australia, lists several measures of social engagement as being associated with a lower risk of dementia, including participating in more social activities, not feeling lonely, and being part of larger social networks. While the scope of Lin's study was not to explain why hearing loss and cognitive decline are linked, he does note the connection between social isolation and cognitive decline, and also the possibility that the brain may be forced by hearing loss to devote more energy to processing sound, hence losing some of its capacity for memory and thinking (Lin et al 2013).

Mental Health

Hearing loss in older adults has been tied to more hospitalisations and both poorer physical and poorer mental health. In another study at the Johns Hopkins Medical centre, the lead investigator, Dane Genther, MD said that "Policy makers really have to consider hearing loss and its broader health impact, when making decisions, particularly for older people." Several studies have shown that those with hearing loss are at higher risk of developing depression (Arlinger 2003), a further burden on the health system with the treatment cost for depression in Australia exceeding $600 million each year (Department of Health and Ageing 2013). 12% of total days spent by patients in hospitals in 2003-04 were due to mental health, with principal diagnosis of depressive disorders accounting for 36% of mental health related hospital separations in 2004-05 (Australian Bureau of Statistics 2006). A number of studies, and organisations including The National Heart Foundation (Australia) and the World Health Organisation have recognised that depression increases the likelihood of developing a chronic physical illness such as cardiovascular (heart) disease, coronary heart disease, and stroke (VicHealth 2007).

Level of Health Knowledge, Self-Management and Cost of Care

Hearing loss may also increase both the risk and impact of other chronic health conditions, leading to decreased levels of patient self-management, lower levels of health knowledge, and increased health care costs in the long term, and hence a risk to the very principles of the NDIS. The UK organisation Deafness Cognition and Language Research Centre (DCAL) note that:

> *Long-term conditions are not experienced in isolation ... (and) are concentrated in older groups. This means that a large proportion of this population will have a hearing loss and at least one other long-term condition. Of this group, many will not have recognised or addressed their hearing loss, which can make it much more difficult to manage other long-term conditions.* (DCAL, n.d, p.8)

DCAL (n.d. p.12) go on to explain that people with a hearing loss, "experience greater difficulties in accessing health services", "receive a lower standard of healthcare", and "may avoid going to see their GP because of communication problems." "They are more likely to report that they have been left unclear about their condition because of communication problems with a GP or nurse." "Even where patients are able to access health services, hearing loss has a negative impact overall on self-management of long-term conditions."

Poor ability to communicate may also increase the risk of developing long term conditions, according to DCAL (n.d. p.27): "People with hearing loss ... may not be reached by public health information and programmes. This may lead to increased rates of smoking, obesity or high blood pressure, resulting in a higher risk of developing some long-term conditions, particularly cardiovascular disease and diabetes."

"Earlier diagnosis or better management (of hearing loss) ... could lower the rate of hospital admissions," (DCAL, n.d. p.12), and, "could reduce social isolation and remove barriers to accessing health services, leading to a reduction in the risk and impact of other long-term conditions ... and cost savings" (DCAL, n.d. p.27).

Furthermore, because "It can be more difficult to diagnose either hearing loss or dementia where the other condition is present [and] If people with dementia are unable to communicate effectively this can cause behavioural and psychological problems [and] Ineffective management of hearing loss can make symptoms of dementia worse and/or appear worse." (DCAL, n.d. p.22), "Effective management of hearing loss would also mean savings in terms of reduced hospital admissions and specialist care. People with dementia who are over 65 are using up to one quarter of hospital beds at any one time [In the UK]. This suggests that there is scope for significant savings." (DCAL, n.d. p.24).

The provision of hearing services under the National Disability Insurance Scheme (NDIS)

It is encouraging to see the increased eligibility criteria for determining access to, and service needs of, deaf and hearing impaired people. In particular, people with longstanding hearing loss who fall outside the eligibility criteria for the government programme through Australian Hearing Services, but who rely on hearing aids. However, there is still a reluctance or lack of financial capacity to get hearing aids. Blamey Saunders hears is trying to alleviate the problem by reducing the cost of hearing aids and creating effective, efficient scalable models of service, but wider access to hearing aid funding is recommended. This model also reduces delays in service provision.

The internet and the Smart Phone are key to accessibility of hearing services, including in rural and remote areas. Blamey Saunders hears has clients in remote areas of Australia (and ex-patriate Australians based overseas), and is the only client-centred choice in an industry based on a clinician-centred model.

An advantage of the Client Centred aspect of the NDIS is that the client can choose the most appropriate service. This principal of choice may create the need for impartial advice. Many hearing aid clinics bundle products and services together, making the cost of the device and of the service non-transparent; this is in addition to the cross subsidising.

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