Spend to Save

INVESTING IN OUR HEARING IMPROVES LIVES AND IS COST EFFECTIVE

ADULT HEARING LOSS – A GLOBAL CHALLENGE

Addressing hearing loss is one of the most challenging issues faced by health and social care systems globally today. Hearing loss challenges our ability to communicate and relate to family, friends and partners, to lead productive lives with employment which uses our abilities, maintains good health, independence and autonomy as we age.

- **Currently 1 in 3 people over 65 and over half of people over 85 will have disabling hearing loss.**
- **Nearly 30 million people will have profound or complete hearing loss in both ears, World Report on Hearing.** *(WHO, WRH 2021)*
- **By 2050 over 700 million people globally will have disabling hearing loss.** *(WHO, 2024)*

Faced with this massive increase in the number with hearing loss in the coming decades the challenge is so urgent that The World Health Organisation *(WHO)* World Report on Hearing *(2021)* called for countries to integrate strategies for Ear and Hearing care into health care systems.

The positive news is that we have never been more effective in enabling people to continue hearing or restore lost hearing. Hearing Aids are worn more routinely and with greater satisfaction *(EHIMA, 2024)* and as the WHO noted; "Cochlear implant is one of the most successful of all neural prostheses developed to date." *(WRH, WHO 2001).*

HEARING AIDS AND COCHLEAR IMPLANTS ARE EFFECTIVE AND COST EFFECTIVE

- Regular hearing aid use was associated with lower risks of mortality than in non-hearing aid users in US adults with hearing loss. *(Choi et al., 2024)*
- Hearing aids improve mental health, physical abilities, cognitive abilities, and employability. *(Amieva, et al., 2015; Contrera et al 2015; Kochkin, 2010; Dept of Health/NHS England 2015; Ferguson et al., 2017; Mahmoudi, et al., 2018)*
- The use of hearing aids is associated with less cognitive decline. *(Deal, 2015; Amieva, et al., 2015; Mahmoudi, et al, 2018, Bucholc, et al., 2022; Cantuaria, et al., 2024)*
- CI In adults reduces depression and improves cognitive functioning. *(Amieva, et al., 2018; Mosnier, et al., 2014; Archbold, 2014)*
- CIs ensure better hearing, improved individuals' quality of life, ability to communicate verbally and their ability to function independently. *(Cuda 2024; Ng, et al., 2016)*
- The latest hearing technologies, including hearing aids and implants, have been shown to improve the lives of those with hearing loss and to be cost effective. *(Gatto et al., 2024; Lamb, et al, 2015; Morris, 2012; Bond, 2009; WHO, 2021; Kervasdoué & Hartmann, 2016; Dawes, et al. 2024.)*

CICA
COCHLEAR IMPLANT INTERNATIONAL COMMUNITY OF ACTION.AISBL

THE IMPACT OF HEARING LOSS IN ADULTS

Hearing loss impacts every facet of life but its impact is underestimated and is not addressed by health systems globally. This impact includes:

- Hearing Loss is the number one cause of Years Lost to Disability *(YLD)* in those over 70 in Western Europe *(Davis, 2016)*, is the fourth most common cause of YLD globally *(Global Burden of Disease, 2024)*, is the most prevalent sensory disorder in the United States, the third leading cause of disability in Americans over 70, and the sixth leading cause of YLDs in America. *(Haile et al., 2024)*
- Mid-life hearing loss may account for up to 7% of preventable dementia cases world-wide and is potentially a modifiable risk factor. *(Livingston, et al, 2024)*
- Older age people with hearing loss are at greater risk of social isolation and reduced mental well-being and health. *(Shulka et el., 2020, Shield, 2019; Pichora-Fuller, et al, 2015)*
- There is a strong correlation between hearing loss, cognitive decline and mental illness. *(Lin 2011, 2013, Livingston et al., 2024)* and premature death *(Friburg, 2014; Contrera, 2015)*
- Those with hearing loss have higher rates of unemployment and underemployment *(Kochkin, 2007)* and greater chance of receiving a disability pension. *(Jørgensen et al., 2022)*
- Those with hearing loss are more likely to have lower earnings *(Jørgensen et al., 2024)* and the earnings are, on average, around 85% of those of the hearing population in Europe. *(Shield 2019)*
- Older people with hearing loss are two and half times more likely to experience depression than those without hearing loss *(Mathews 2013)* and are also at increased risk of major depression. *(Amieva et al., 2015; Davis 2011)*
- Hearing loss is associated with greater use of medical and social services overall. *(Xiao, 2018; O'Niell, 2016)*

AWARENESS OF AND ACCESS TO HEARING TECHNOLOGY REMAINS POOR

- 4 in 10 of respondents in the USA, 69% of the population in Germany and 41% of the population of the UK hadn't heard of CI. *(EHIMA 2022)*
- Research based on the Global Burden of Disease report estimates that there is an 83% unmet need for hearing aids globally. *(Orji, 2020)*
- The criteria for cochlear implantation vary considerably across countries. *(Archbold, 2014, Lamb 2016a)*
- Only one in 10 people in Europe and 1 in 20 people globally who could benefit from a cochlear implant does so and low-income and ethnic groups show lower take up. *(Raine, 2013; 2016, De Raeve et al., 2020; WHO WHR 2021; Swords, 2024)*

> ***While hearing aid usage is increasing slowly over time, more work must be done in terms of raising awareness among the general public and primary healthcare providers about the consequences of untreated hearing loss.***
> *EHIMA 2024*

INVESTING IN EAR AND HEARING CARE GIVES A RETURN ON INVESTMENT

In addition to the positive benefits for individuals and their families addressing the impact of hearing loss saves society money. The WHO World Report on Hearing concludes that:

Investment in greater and effective use of hearing aids, implantable hearing devices and hearing care could give a return on investment globally that for every US$1 invested a return of around US$16 could be achieved.
(WHO, WRH 2021; Tordrup et al., 2022).

> ***With unilateral cochlear implants, estimations based on actual costs in a high-income setting showed a return of 2.59 International dollars for every 1 dollar invested". For an "upper-middle-income setting, the return on investment ratio was estimated to be 4.09 International dollars.***
> *(WHO, WRH 2021)*

THE COST OF NOT ADDRESSING HEARING LOSS

WHO concluded that globally unaddressed hearing loss poses an annual global cost of **US$ 980 billion** for adults and children.

This includes;

- Health-Care Sector: costs are around **$314 billion** and include health-care costs for children and adults.
- Lost Productivity: costs related to unemployment and premature retirement among people with hearing loss is conservatively estimated as **$182.5 billion** annually.
- Societal Costs: the result of social isolation, communication difficulties and stigma result in a further **$456.5 billion** each year. *(WRH, 2021, Tordrup et al., 2022)*

Other studies support their conclusions;

- The cost of reduced quality of life due to unaided hearing loss of **25 dB** and above was estimated to be **224 billion euros**; for Europe as whole. *(Shield, 2019)*
- In England the costs associated with unaddressed hearing loss were estimated at **£30.13 billion** per year, including medical and social costs. *(Archbold et al., 2014)*
- In France, the estimated cost of not addressing hearing loss was **23.4 billion euros**. *(Kervasdoué & Hartmann, 2016)*
- In the US additional medical costs of unaddressed hearing loss were estimated between **$3.3 billion** and **$12.8 billion**. *(Huddle et al., 2017)*
- For individuals with severe late onset of hearing loss (60 years old) lifetime costs in the US were estimated to be **$154,536**. The annual societal costs for the US population overall were estimated to be **$37 billion**. *(Cejas, et al., 2024)*

HEARING TECHNOLOGY IS INCREASINGLY USED AND VALUED

- People with hearing loss feel less stigma in wearing hearing aids and users are more satisfied and report increasing usage with an increase in take up of hearing aids from **29%** in 2016 to **33%** in 2020 and again to **36%**, reported in Europe. *(Shield, 2019; EHIMA, 2024)*
- People with hearing loss put a very high economic value on the benefit of their cochlear implant. The majority **(60%)** valued their cochlear implants above **£150** a month. *(Ng, et al., 2016)*

THE BENEFITS OF ADDRESSING HEARING LOSS

- The cost of NOT providing hearing technologies has been shown to be greater than the cost of providing them to health systems once the full costs are taken into account. *(Cejas, et al., 2024; Neve et al., 2001; WRH 2021; O'Neill, et al., 2016; Kervasdoue & Hartmann, 2016).*
- The total benefits of CI exceeded the total cost, leading to a net benefit of CI in adults and seniors of **€275,000** and **€76,000**, respectively over their lifetime. *(Neve, et al., 2021)*
- In high income countries with most access to hearing technologies, for example Denmark, the cost associated with use of other services by those with hearing loss, including primary care and inpatient stays, is lower. *(Lamb, et al., 2016b)*
- Investment in CI gives a return on investment of **16 USD** to every **1 USD** invested.

(WHO, WRH, 2021)

- The use of hearing aids and cochlear implants increases employability and earning power. One study showed a rise of **$10,021** on average and increased employability for long term users of CIs. *(Clinkard, 2015)*
- Cochlear implantation was associated with a significant increase in median yearly income compared to before implantation **$42,672** vs **$30,432** – a 40% increase. *(Monteiro et al., 2012)*
- A long-term study in Norway found people without hearing loss earned **13.2%** more per year than people with hearing loss. *(Jørgensen et al., 2024)*

> "
> ***I was aware of [CIs] but never considered because of costs and not aware that medical insurance provided….and at 60 years didn't even think that I had a chance.***
>
> *Patient quoted in Bierbaum, M et al., 2020*

RECOMMENDATIONS

By 2050, nearly 2.5 billion people are projected to have some degree of hearing loss, and at least 700 million will require hearing rehabilitation. *(WHO, 2024)*

Never have there been so many effective and cost-effective opportunities to address ear and hearing care for this growing global number with hearing loss:

- **National Adult Hearing Screening programmes should be introduced to ensure that people are more aware of hearing loss and take action early to improve health and wellbeing and prevent additional challenges and costs later**
- **Funding of hearing technologies should take into account the high cost of NOT treating hearing loss by including the overall savings for health, social care and welfare systems of states**
- **Public health strategies should include Action Plans on Hearing Loss to make hearing loss a focus of public health services**
- **A review of candidacy criteria for cochlear implants and hearing aids in those states with restrictive measures**
- **Innovative service models should be developed to include the latest innovations in remote services so that hearing technology can be delivered even more cost effectively.** *(WHO, 2024)*

> ***I feel that so much of my previous life and true self has been restored, regaining my pride and ability to contribute actively in society on an equal basis.***
>
> *Adult with cochlear implants*

REFERENCES

Amieva H, et al., (2015). Self-reported hearing loss, hearing aids, and cognitive decline in elderly adults: A 25-year study. Journal of American Geriatrics Society, 63(10), 2099-2014.

Amieva H, et al., (2018). Death, depression, disability and dementia associated with self-reported hearing problems: A 25-year study. Journals of Gerontology, Series A, Biological Sciences and Medical Sciences, 73(10), 1383-1389.

Archbold, S, et al., (2014). The real cost of hearing loss. Nottingham, England: The Ear Foundation.

Bierbaum, M et al., (2020). Barriers and Facilitators to Cochlear Implant Uptake in Australia and the United Kingdom. Ear and Hearing 41(2): p374-385, March/April 2020.

Bond, M et al., (2009). The effectiveness and cost effectiveness of cochlear implants for severe and profound deafness in children and adults: A systematic review and economic model. Health Technology Assessment, 13(44), 1-330.

Bucholc, M, et al., (2022). The impact of hearing impairment and hearing aid use on progression to mild cognitive impairment in cognitively healthy adults: An observational cohort study. Alzheimer's Dement. 2022; 8:e12248.

Cantuaria ML, Pedersen ER, Waldorff FB, et al., (2024). Hearing Loss, Hearing Aid Use, and Risk of Dementia in Older Adults. JAMA Otolaryngol Head Neck Surg. 2024;150(2):157–164. doi:10.1001/jamaoto.2023.3509

Cejas, I., Barker, D. H., Petruzzello, E., Sarangoulis, C. M., & Quittner, A. L. (2024). Costs of Severe to Profound Hearing Loss & Cost Savings of Cochlear Implants. The Laryngoscope, 134(10), 4358-4365. https://doi.org/10.1002/lary.31497

Choi, Janet S, et al., (2024). Association between hearing aid use and mortality in adults with hearing loss in the USA: a mortality follow-up study of a cross-sectional cohort. Lancet Healthy Longev 2024; 5: e66–75. DOI:https://doi.org/10.1016/S2666-7568(23)00232-5

Clinkard, D. et al., (2015). The economic and societal benefits of adult cochlear implant implantation: A pilot exploratory study. Cochlear Implants International, 16(4),181-185.

Contrera, K et al., (2015). Association of hearing impairment and mortality in the National Health and Nutrition Examination Survey. JAMA Otolaryngol Head Neck Surg, 141(10), 944-946.

Cuda et al., (2024). Improving quality of life in the elderly: hearing loss treatment with cochlear implants. BMC Geriatrics, (2024). 24:16. doi.org/10.1186/s12877-023-04642-2

Davis, A. (2011). National survey of hearing and communication.

Davis A et al., (2016). Aging and hearing health: The life-course approach. Gerontologist, 56, Suppl2, S256–S267.

Dawes, P., et al. (2024). Do people with cognitive impairment benefit from cochlear implants? A scoping review. European Archives of Oto-Rhino-Laryngology https://doi.org/10.1007/s00405-024-08719-5

Deal J et al., (2015). Hearing impairment and cognitive decline: A pilot study conducted within the atherosclerosis risk in communities neurocognitive study. Am J Epidemiol, 181(9), 680-690.

De Raeve L, Archbold S, Lehnhardt-Goriany M, Kemp T. Prevalence of cochlear implants in Europe: trend between 2010 and 2016. Cochlear Implants Int. 2020 Sep;21(5):275-280. doi: 10.1080/14670100.2020.1771829. Epub 2020 May 31. PMID: 32476613.

Department of Health and NHS England. (2015). The action plan on hearing loss. London: Department of Health and NHS England.

Duthey, B (2013). A public health approach to innovation. Update on 2004 Background Paper 6.21 Hearing Loss.

EHIMA (2022). Marke Trak Survey.

EHIMA (2024). Getting the numbers right on Hearing Loss Hearing Care and Hearing Aid Use in Europe Joint AEA, EFHOH, EHIMA report. 2024.

Friberg, E, et al. (2014). Sickness absence and disability pension due to otoaudiological diagnoses: Risk of premature death – a nationwide prospective cohort study. BMC Public Health, 14, 137.

Ferguson MA, Kitterick PT, Chong LY, Edmondson-Jones M, Barker F, Hoare DJ. Hearing aids for mild to moderate hearing loss in adults. Cochrane Database of Systematic Reviews 2017, Issue 9. Art. No.: CD012023. DOI: 10.1002/14651858.CD012023.pub2.

Gatto, A., Tofanelli, M., Valentinuz, G. et al. (2024). Cochlear implant cost analysis in adults: a European narrative review. Eur Arch Otorhinolaryngol 281, 4455–4471 https://doi.org/10.1007/s00405-024-08591-3

Global Burden of Disease (2024). Global incidence, prevalence, years lived with disability (YLDs), disability-adjusted life-years (DALYs), and healthy life expectancy (HALE) for 371 diseases and injuries in 204 countries and territories and 811 subnational locations, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2024 Ferrari, Alize J et al. The Lancet, Volume 403, Issue 10440, 2133 - 2161

Haile, LM, et al., USA Hearing Loss Collaborators Global Burden of Disease Collaborators;. (2024). Hearing Loss Prevalence, Years Lived with Disability, and Hearing Aid Use in the United States From 1990 to 2019: Findings From the Global Burden of Disease Study. Ear Hear. 2024 Jan-Feb 01;45(1):257-267. doi: 10.1097/AUD.0000000000001420.

Huddle MG, Goman AM, Kernizan FC, Foley DM, Price C, Frick KD, Lin FR. (2017). The Economic Impact of Adult Hearing Loss: A Systematic Review. JAMA Otolaryngol Head Neck Surg. 2017 Oct 1;143(10):1040-1048. doi: 10.1001/jamaoto.2017.1243. PMID: 28796850.

Jørgensen et al., (2022). Hearing loss, sick leave, and disability pension: findings from the HUNT follow-up study. BMC Public Health (2022) 22:1340. https://doi.org/10.1186/s12889-022-13760-2

Jørgensen, et al., (2024). Hearing Loss and Annual Earnings Over a 20-Year Period: The HUNT Cohort Study. Ear & Hearing, August 14, 2024. DOI: 10.1097/AUD.0000000000001554

Kervasdoué J, Hartmann L. (2016). Economic impact of hearing loss in France and developed countries: A survey of academic literature 2005-2015. Available: https://www.ehima.com/wp-content/uploads/2016/05/FinalReportHearingLossV5.pdf

Kochkin, S. (2007).The impact of untreated hearing loss on household income. Better Hearing Institute.

Kochkin, S. (2010). The efficacy of hearing aids in achieving compensation equity in the workplace. The Hearing Journal, 63(10), 19–28.

Lamb, B. et al., (2015). Bending the spend: Expanding technology to improve health, wellbeing and save public money. Nottingham, England: The Ear Foundation.

Lamb, B. (2016a). Expert opinion: Can different assessments be usedto overcome current candidacy issues?, Cochlear Implants International, 17:sup1, 3-7, DOI:10.1080/14670100.2016.1161382

Lamb, B. et al., (2016b). Investing in earing technology improves lives and saves society money. Nottingham, England: The Ear Foundation.

Lin F et al., (2011). Hearing loss and incident dementia. Arch Neurol, 68(2), 214-220.

Lin, F. et al., (2013). Hearing loss and cognitive decline in older adults. JAMA Intern Med, 173(4), 293-299.

Livingston, G. et al., (2024). Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. The Lancet, Vol. 404, No. 10452. Published: July 31, 2024

Mahmoudi, E. et al., (2018). Association between hearing aid use and health care use and cost among older adults with hearing loss. JAMA Otolaryngol Head Neck Surg, 144(6), 498-505.

Matthews, L. (2013). Hearing loss, tinnitus and mental health: A literature review. Action on Hearing Loss.

Monteiro, E., et al., (2012). "Cochlear implantation: a personal and societal economic perspective examining the effects of cochlear implantation on personal income." J Otolaryngol Head Neck Surg 41 Suppl 1: S43-48.

Morris, A et al., (2012). An economic evaluation of screening 60- to 70-year-old adults for hearing loss. Journal of Public Health, 49(1), 139-146.

Mosnier, I, et al., (2014). Predictive factors of cochlear implant outcomes in the elderly. Audiol Neurootol, 19 Suppl 1, 15-20.

Neve, OM, et al., (2021). Cost-benefit Analysis of Cochlear Implants: A Societal Perspective. Ear Hear. 2021 Sep/Oct;42(5):1338-1350.

Ng, Z, et al. (2016). Perspectives of adults with cochlear implants on current CI services and daily life. Cochlear Implants International, 17 Supp 1, 89-93.

O'Neill C et al. (2016). Cost implications for changing candidacy or access to service within a publicly funded healthcare system? Cochlear Implants International, 17 Suppl 1, 31-35.

Orji A, Kamenov K, Dirac M, Davis A, Chadha S, Vos T. (2020). Global and regional need, unmet needs and access to hearing aids. Int J Audiol. 2020;59:166–172.

Pichora-Fuller MK et al., (2015). Hearing, cognition, and healthy aging: Social and public health implications of the links between age-related declines in hearing and cognition. Semin Hear, 36(3), 122-139.

Raine, C, et al., (2013). Cochlear implants in the UK: Awareness and utilisation. Cochlear Implants International, 14 Suppl 1, S32-S37.

Raine, C. et al., (2016). Access to cochlear implants: Time to reflect. Cochlear Implants International, 17 Suppl 1, 42-46.

Shield, B. (2019). Hearing Loss – Numbers and Costs-evaluation of the social and economic costs of hearing impairment. A report for Hear-It AISBL. 2019

Shukla, A, et al., Hearing Loss, Loneliness, and Social Isolation: A Systematic Review. Otolaryngol Head Neck Surg. (2020). May;162(5):622-633. doi: 10.1177/0194599820910377. Epub 2020 Mar 10. PMID: 32151193; PMCID: PMC8292986.

Swords C, et al., (2024). Socioeconomic and ethnic disparities associated with access to cochlear implantation for severe-to-profound hearing loss: A multicentre observational study of UK adults. PLoS Med. 2024 Apr 4;21(4):e1004296. doi: 10.1371/journal.pmed.1004296. PMID: 38573882; PMCID: PMC10994380.

Tordrup D, Smith R, Kamenov K, et al., (2022). Global return on investment and cost-effectiveness of WHO's HEAR interventions for hearing loss: a modelling study. Lancet Glob Health 2022; 10: e52–62.

WHO, World report on Hearing 2021.

WHO Briefing. (2024). https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss

Xiao M, O'Neill C. (2018). A comparative examination of healthcare use related to hearing impairment in Europe. Global & Regional Health Technology.

Brian Lamb MSc, Sue Archbold PhD

The work is that of the authors, funding included support through educational grants from Cochlear and AB. Working in partnership with:

COCHLEAR IMPLANT INTERNATIONAL COMMUNITY OF ACTION.AISBL

www.ciicanet.org

2025