

WHO Ad-hoc consultation on hearing devices technology transfer in LMICs

Disease burden: Hearing loss is the most prevalent sensory disability globally. 360 million persons in the world are affected by disabling hearing loss. This represents approximately 5.3% of the world's population. Majority live in developing countries.¹ It is estimated that current hearing aid production meets only 10% of the global need and only 3% of the need in developing countries.²

Hearing loss and deafness: A person who is not able to hear as well as someone with normal hearing is said to have a hearing loss. Hearing loss can vary in degree from mild, moderate, severe to profound. A person with profound hearing loss³ has difficulty in hearing all sounds including very loud sounds, such as shouted voice and is often termed as deaf.

A variety of causes can lead to hearing loss. They include:

- hereditary factors;
- peri-natal factors;
- infectious diseases, such as rubella, meningitis, otitis media;
- age related hearing loss;
- noise induced hearing loss;
- ototoxic medications;
- trauma

The management of hearing loss varies according to the cause and degree of loss. Some of the conditions are amenable to treatment through medical and surgical means, whereas others require amplification and other modalities, such as hearing and speech therapy, lip reading and sign language training.

Impact of hearing loss: The impact of hearing loss is evident at all stages of life from birth to adulthood, but is maximum when hearing loss is encountered early in life during the stages of language development.

¹ MBD, WHO: Estimates for disabling hearing loss, 2012.

² World report on Disability, WHO 2011

³ Mackenzie I and Smith A. Deafness—the neglected and hidden disability. *Annals of Tropical Medicine & Parasitology*, 2009;**103**(7):1-7.

Hearing loss in children can delay development of language and cognitive skills, which may hinder progress in school. In adults, hearing loss often makes it difficult to obtain, perform and keep jobs. Hearing loss also makes it more difficult for the person to escape poverty by hindering progress in school or in the workplace and by isolating him/her socially.⁴ In the elderly, untreated hearing loss affects communication, contributes to social isolation, loss of autonomy and is associated with anxiety, depression and cognitive decline.⁵

Current landscape:

Users: A large number of persons with hearing loss can benefit from the use of well-fitted hearing aids. It is estimated that in developing countries,⁶ about 20% of people who have hearing loss need hearing aids. It is estimated that current hearing aid production meets only 10% of the global need and only 3% of the need in developing countries. The prohibitive cost of the devices and batteries as well as the non-availability of fitting and repair services have made their use unattractive to policy makers in developing countries.⁷

Manufacturers: Majority of hearing aids are manufactured and marketed by commercial organizations based in the developed world. Great leaps have been made in refining the technology that goes into the device and a large variety of hearing aids are now available in the market, which include analogue and digital aids. Different models are available and fitted according to the patient's preference, needs, suitability and the cost. These include body worn, behind the ear, in the ear and in the canal types of aids. Despite this, the costs of hearing aids remains high, in both, the developed and developing nations. Some countries, such as India, South Africa, Brazil and Colombia are involved in assembly of hearing aids. (Information regarding China's hearing aid industry is still being gathered)

⁴Deafness and Hearing Impairment, WHO Fact Sheet N°300 April 2010.

⁵ Parham K, McKinnon BJ, Eibling D, Gates GA. Challenges and opportunities in presbycusis. *Otolaryngology-Head and Neck Surgery* 2011; 144(4): 491-495.

⁶ World report on Disability, WHO 2011

⁷ Hearing Aids Services: Needs and Technology Assessment for Developing Countries: report of a WHO/CBM workshop; WHO 1999.

Though this has lowered the cost of devices being provided within the countries, but these are mostly restricted to the individual countries and overall costs of suitable devices remains high and their availability low in most middle and low income countries across the world.

Hearing aid services across the world: many developed countries offer hearing aid services as part of their health schemes (such as the NHS in UK). Some other countries, such as India provide hearing aids to persons in need through their Ministries of Health and Social Welfare. However, in large parts of the world, there are no government sponsored or other services available for hearing aids. The reasons for these are probably:

1. High costs of devices and lack of local manufacturing capabilities.
2. Lack of audiological services for fitting (including ear mould) and maintenance of hearing aids.
3. Recurrent costs with batteries that need to be replaced regularly and frequently

Addressing these issues: A number of NGOs have been working in this field and have projects that provide hearing devices to persons who need them, these include international agencies such as CBM, Impact foundation and some manufacturers of hearing aids.

WWHearing was set up in 2006 in collaboration with WHO, in order to enable provision of hearing aid services to underserved communities across the world. WWHearing was involved in establishing a purchase consortium and presently is working to develop a rapid fit process for provision of hearing aids.

WHO activities: Acknowledging the great need for hearing aids and the existing gap in services, WHO developed and revised the guidelines for hearing aid services in developing countries in 2004. WHO was also instrumental in the setting up of the WWHearing initiative and has an MOU with this organization. The aim of these activities is to improve access to hearing care through availability of hearing aid services in low and middle income countries.

Role of technology transfer for improving access to hearing aid services: Despite the high need for hearing aid services, hearing aids still remain inaccessible to a large percentage of those requiring these devices in low and middle income countries. The role of this consultation would be to identify the most appropriate digital technology which permits a rapid fitting of the aid for use in the field and to facilitate access to this technology in resource-poor settings, through the process of technology transfer. The technology for rapid fitting including provision of suitable ear moulds and alternatives to conventional batteries can be made accessible through involvement of manufacturers in the LMICs or through a tiered pricing system. Longer lasting or solar rechargeable batteries can help to improve the long-term device use.

The areas of focus for technology transfer would be:

1. provision of appropriate device and ear moulds;
 2. training of human resources in fitting, maintenance and patient counselling;
- providing access to suitable alternatives to conventional batteries.

Goals of the consultation:

1. To discuss current global situation with regard to hearing loss, hearing aid availability and fitting.
2. To review the current activities with respect to availability and access to hearing aids across the world.
3. To outline the challenges faced in accessing and fitting of hearing aids in LMICs
4. To identify currently available technologies which can be appropriate for use in LMICs through technology transfer, including:
 - a. rapid fitting of hearing aids,
 - b. longer lasting and cheaper batteries.
5. To start developing preferred product profiles for **hearing aid technologies** suitable for LMICs.
6. To identify potential partners.
7. To develop a roadmap with timelines and deliverables for making these devices accessible in LMICs.

Expected outcomes of the consultation:

1. Major challenges limiting accessibility to hearing aid services in LMICs identified.
2. Suitable technologies and mechanisms to promote access to hearing aid technologies in LMICs identified.
3. Strategy developed for adequate resource mobilization.
4. Key partners identified.
5. Roadmap developed.
6. Preferred product profiles for hearing aid technology suitable for technology transfer to LMICs that need to be developed identified (they will be developed following the consultation).