

## Turning up the volume on hearing loss in South Africa



Estimates of the world's population living with disabling hearing loss, defined as >40 dB in the better-hearing ear in adults (>15 years) and >30 dB in children (0 - 14 years), currently run to 360 million people worldwide.<sup>[1]</sup> Of even more concern is that the majority of those affected live in the low- and middle-income communities of the developing world (South Asia, Asia-Pacific and sub-Saharan Africa (SSA)).<sup>[2]</sup> As South Africa (SA) falls within SSA, increasing awareness and raising advocacy are key to addressing the problem at a national level. The challenge in addressing this global burden lies not only in early identification in high-risk groups (both children and adults), but also in the provision of early interventions.

Hearing loss is reported to be the most prevalent sensory disorder in childhood, affecting approximately 6/1 000 live births in developing countries annually (compared with 2/1 000 in developed countries).<sup>[3,4]</sup> This figure increases further when preventable hearing loss from the long-term effects of untreated otitis media in children is included.<sup>[5]</sup> The latter condition is very prevalent in SSA, with more than 50% of cases occurring in children under 10 years of age.<sup>[6]</sup> The long-term sequelae of childhood hearing loss, congenital or acquired, are well documented, with delays in development of speech, language and cognitive skills often resulting in slow learning and poor schooling early on,<sup>[7,8]</sup> and problems with employment and societal integration in the long term.<sup>[4]</sup>

Hearing loss in adults accounts for 91% of global deafness sufferers, one-third of whom are over 65 years of age, the remaining two-thirds being in the economic prime of life.<sup>[1]</sup> Hearing impairment in adults leads to social isolation, stigmatisation and economic disadvantage. Presbycusis or age-related hearing loss is often underdiagnosed and undertreated, even though the elderly are considered a high-risk group.<sup>[9]</sup> Additionally, recent studies show hearing loss to be independently associated with an increased prevalence of poor cognitive function and incident dementia when people with hearing loss are compared with individuals of the same age with normal hearing.<sup>[9]</sup> Other high-risk groups include patients taking various drugs that can cause ototoxicity, including antituberculosis drugs, chemotherapeutic agents and antiretrovirals (ARVs), aetiologies particularly relevant in SA medical practice.<sup>[10]</sup>

Early identification through screening programmes can effectively reduce the burden of deafness by 50%, but this is restricted to a large extent by socioeconomic factors.<sup>[11]</sup> In developed communities, service delivery models from screening to diagnosis work effectively in all high-risk populations through institution-based programmes in communities with existing infrastructure and access to healthcare. These models need to be adapted to allow for the deficiencies of healthcare systems in the developing world. While SA has a comparatively well-developed infrastructure within SSA, critical shortages of trained professionals and poor resources still exist.<sup>[12]</sup>

An example of the above is the early hearing detection and intervention pathway (EDHI) in SA. In the developed world, national protocols successfully screen more than 90% of newborns through universal newborn hearing screening (UHNS).<sup>[3]</sup> UHNS proposes that screening for hearing loss must occur no later than 1 month of age; diagnosis should follow shortly thereafter, to be finalised by 3 months of age, and referral for early intervention should be in place no later than 6 months of age. In SA the inverse ratio holds, with close to 90% of babies not having hearing

screening<sup>[3]</sup> despite local Health Professions Council of South Africa guidelines suggesting the above diagnostic sequence.<sup>[13]</sup> Theunissen and Swanepoel<sup>[14]</sup> surveyed the national status of EDHI, and estimated that only 7.5% of public sector hospitals nationally provided some form of infant hearing screening and <1% provided universal screening, highlighting the lack of implementation of screening systems to detect infant hearing impairment. Lack of appropriate equipment and staff shortages were key shortcomings.

In addition, there are currently no screening programmes for adult high-risk groups, screening instead being done at the discretion of healthcare providers.<sup>[10]</sup>

Interventions principally involve rehabilitation and aim to prevent the disability posed by restricted hearing loss from becoming one that limits participation in society at large. They include family-orientated support services, special education and access to social integration. Specific rehabilitation includes the provision of amplification devices such as hearing aids and/or cochlear implants. Störbeck<sup>[4]</sup> reported that <2.5% of babies with newborn hearing loss will receive hearing aids, and <10% will have access to early intervention. Additionally, in SA the age of hearing-aid fitting for infants with hearing loss is generally delayed despite the presence of isolated screening programmes.<sup>[15]</sup> International guidelines recommend that cochlear implantation as early as possible (within the 12 - 36 months window) provides the best chance of achieving and maintaining age-appropriate spoken language skills into and through the school years.<sup>[16]</sup> Costs remain the major drawback to widespread use of regular implantation; nevertheless there are six cochlear implant programmes in SA (two public and four private), and interest in their expansion is growing.

With severe shortages of audiologists and ear, nose and throat (ENT) specialists across Africa,<sup>[12]</sup> screening options for primary prevention need to be modified. Community-based infant hearing screening should feature in mother and child care visits such as those for immunisations,<sup>[8,11]</sup> and school-based screening should be provided for older children. In addition, mothers, healthcare workers and teachers should be educated accordingly.

As universal adult hearing screening is not sustainable, high-risk groups should be prioritised. Community-related projects already in existence, such as medical units that cater for high-risk groups, are a simple and often untapped resource within which hearing screening programmes can be initiated. Education of patients and healthcare workers in these medical units (e.g. ARV clinics) is necessary to facilitate hearing screening during regular visits.

Screening programmes with validated, easy-to-use, available automated technologies, where referral for appropriate intervention is possible, are optimal and sustainable. Technologies such as smartphones and tablets readily lend themselves to this strategy and can potentially be implemented widely.

Government should do more to implement and support EDHI pilot programmes, and prioritise centres that will facilitate accountable EDHI programmes nationally.<sup>[14]</sup>

All eligible patients should be adequately informed of the possibility of implantation, without prejudice to their socioeconomic and financial status. Non-governmental organisations and industry should campaign to increase funding for more government-based cochlear implant programmes to cater for people without economic means.

## Conclusion

Current global health efforts by the World Health Organization and the Prevention of Blindness and Deafness campaign have created some awareness, but the vast majority of people in need are not being reached. Addressing the global burden of hearing loss means addressing the inequities facing the population most affected as much as addressing the sensory disability. More initiatives are needed from governments and global health groups to improve health and social systems and reduce disease related to poverty. In addition, custodians of hearing health (audiologists, ENT specialists, paediatricians, general practitioners) need to collaborate with industry and governments to capitalise on advances in technology that can provide sustainable service delivery.

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*S Afr Med J* 2015;105(1):31-32. DOI:10.7196/SAMJ.9218