

Preventing hearing loss in primary healthcare



Carolina Der
ENT Surgeon and Otologist, Universidad del Desarrollo, Luis Calvo Mackenna Hospital, Clínica Alemana, Santiago, Chile



Diego J Santana-Hernández
ENT Surgeon, CBM's Senior Global Advisor for Ear and Hearing Care, Santa Cruz de Tenerife, Spain

The World Health Organization (WHO) estimates that half of all causes of hearing loss can be prevented through public health measures.¹ There are no specific figures available about what proportion of those public health interventions can be channelled through, or carried out, at Primary Health Care (PHC) level. However, the authors of this article firmly believe that the prevention of hearing loss at this level of care can and should have the greatest impact:

- Small children and mature adults are the most frequent users of PHC services,² and not just in low- and middle-income countries (LMICs). WHO estimates at 60% the proportion of causes of hearing loss which are preventable in children under 15 years of age across the world (up to 75% in LMICs).¹
- Since the beginning of recorded history, young children have outnumbered their elders, but this demographic trend has now changed. The number of people aged 65 or older is projected to grow from an estimated 524 million in 2010 to nearly 1.5 billion in 2050, with most of the increase in developing countries.³ Although most of the hearing loss acquired by people in this age group may not be completely avoided, awareness about other causes of hearing loss and early detection by PHC workers will prevent complications and reduce the severity of age-related hearing loss (presbycusis). This will improve the quality of life of mature adults.
- Primary healthcare workers (PHWs) are the first line of healthcare. This is particularly relevant in LMIC settings where paediatric and geriatric services are not readily accessible.
- In many settings in LMICs, PHWs are often the only health workforce available, and PHC is the only level of care available in every country.
- PHWs who are not specialised in Ear and Hearing Care (EHC) can play an important role in preventing hearing loss.

Practising audiometry testing using hearTest™.
GUATEMALA



ISLAY MACINTYRE

Measures and interventions for the prevention of hearing loss are multifactorial and multilevel initiatives that involve all levels of healthcare, but this article focusses only on preventive measures which are within the scope of community and PHC levels. It describes the different situations in which PHWs can contribute to preventing hearing loss throughout the lifespan: firstly, in young children, when prevention is particularly important; secondly, when patients of any age seek advice about problems related to ear or hearing, or have complaints that carry a risk of hearing loss.

Note: Vaccination programmes are another way in which PHWs can help to prevent hearing loss. This is covered in the article on page 4 of this issue.



ROBIN YOUNGS

Community health worker advocating for ear health. NEPAL

Pre- and postnatal consultations

Family planning, genetic counselling, prenatal and postnatal care are usually included in a country's primary healthcare. These give PHWs the opportunity to help prevent hearing loss.

1 Family planning and genetic counselling

Family planning: This can help patients avoid undesired adolescent pregnancies. Adolescent pregnancies can be associated with prematurity and low birth weight,⁴ which are high risk factors for congenital hearing loss.⁵

Genetic counselling: This can be used to identify consanguinity between prospective parents and to explore the existence or suspicion of hereditary hearing loss among their relatives. These are recognised risk factors for being born with congenital hearing loss. Genetic counselling does not necessarily imply or require the existence of specialist services such as karyotyping, which are expensive and not always available. A brief interview with the parents-to-be may be sufficient.

2 Prenatal care and maternal health

Prenatal care is already embedded into PHC services, as a means to control the progress of normal pregnancies. It can be helpful to detect conditions (treatable or not) which could affect the hearing or ear development of the unborn baby.

The following infections should be identified or suspected prenatally by PHWs:

- Syphilis
- Toxoplasmosis
- Rubella
- Cytomegalovirus (CMV)
- Herpes.

PHWs can identify these conditions before the baby is born, treat them when feasible, and diagnose any complications as soon as possible after birth. Early treatment of these conditions, when available, can avoid or reduce the occurrence of hearing loss.

3 Postnatal care

Globally, in 2019, 81% of births were assisted by skilled health professionals, which generally includes a general doctor, nurse or midwife;⁶ however, the proportion of births that take place in health facilities

Continues overleaf ➤

varies considerably across the world, from 99% in Western Europe to only 57% in sub-Saharan Africa, which also varies between urban areas (78%) and rural areas (48%).⁶ Although these figures highlight the urgent need to improve maternal and perinatal health coverage, they also indicate the relevance and key role that PHWs could potentially have in the prevention and early identification of hearing loss:

Early detection of hearing loss: In health facilities, newborn early detection programmes can be implemented, taking advantage of the hours or days during which the baby remains in a controlled health setting before being sent home. Outside these facilities, at PHC level, there are hearing screening techniques, some of them inexpensive, which can be carried out by PHWs. These include physiological (objective) measures, high-risk registers, family questionnaires and assessments of behavioural response. However, for hearing screening activities at PHC level to be sustainable, there needs to be an established screening programme. This programme should be multidisciplinary and include objective screening and diagnosis.⁷

Knowledge of high-risk factors: High-risk factors associated with hearing loss in babies and young children should be known and recognised by all PHWs. These are:⁵

- Family history of permanent childhood hearing loss
- Neonatal care involving any of the following:
 - intensive care of more than 5 days
 - assisted ventilation
 - exposure to ototoxic medications, such as certain antibiotics (gentamicin, tobramycin, amikacin, streptomycin, etc.), loop diuretics (furosemide), cancer treatment (chemotherapy), etc.
 - hyperbilirubinemia (jaundice) that requires exchange transfusion
- In-utero infections that could have damaged the baby's hearing (see above).
- Craniofacial anomalies close to, or involving, the ear.
- Postnatal infections associated with hearing loss, including confirmed bacterial and viral meningitis.
- Certain syndromes are associated with hearing loss. PHWs should keep this in mind when presented with combinations of unusual physical findings (e.g. differently coloured eyes, a white forelock, low vision, etc.) associated with hearing loss.

When faced with a baby or young child presenting those risk factors, PHWs should refer them to specialist EHC services as soon as possible, for diagnosis confirmation and appropriate management.

Advice on hearing conservation: PHWs can also provide advice to help preserve babies' hearing, such as the promotion of breastfeeding, immunisation, and good habits for ear and hearing health.⁸

Preventing hearing loss: when a patient seeks help for hearing problems

This is the simplest situation in which a PHW can help prevent hearing loss. They can:

- Check the patient's impression that their hearing has diminished and/or validate caregivers' concerns regarding a child's hearing, speech, language or developmental delay.⁹
- Explain to the patient or caregiver that early actions can help prevent hearing loss, or reverse it, or prevent it from becoming more severe; early intervention can also contribute to re/habilitate persons with hearing disability and improve their quality of life.



ANDREW SMITH

Beware that, for some patients, the main presenting symptom is tinnitus (noises in the ear). Tinnitus is frequently associated with hearing loss, therefore the first thing to do is to check the person's hearing. However, PHWs should keep in mind that tinnitus may also have many other different causes which need to be explored by an ear, nose and throat (ENT) doctor when possible.

Training session in primary ear and hearing care. NIGERIA

Preventing hearing loss: when a patient seeks help for ear problems

The following ear conditions require hearing evaluation (including bone conduction whenever possible) after the patient has undergone medical and/or surgical treatment, whether that treatment takes place at PHC or specialist care level:¹⁰

- Impacted ear wax
- Foreign bodies in the ear
- Otitis externa (inflammation of the outer ear)
- Ear trauma (either self-inflicted with cotton-buds, hairpins, etc., or other types)
- Recurrent Acute Otitis Media or AOM (more frequently found in children)
- Otitis Media with Effusion (OME) which does not disappear after three months of follow-up (this is the most frequent cause of hearing loss in children)
- Chronic Suppurative Otitis Media (CSOM)
- Dry tympanic membrane perforation which persists after six months of follow-up
- Tympanic membrane retraction or pockets (all types)
- Presence or suspicion of cholesteatoma (all cases need to be referred to an ENT department)
- Children who have had complications from middle ear disease (retro-auricular fistula, mastoiditis, facial palsy, meningitis, brain abscess, etc.).

Preventing hearing loss: when a patient seeks care for unrelated symptoms

In some cases, patients will consult primary healthcare services for symptoms that may seem to have no direct link to ears or hearing, but they are actually at risk of hearing loss. Even if hearing loss may not seem an immediate priority at the time of consultation, due to the severity of the main complaint, it is important to take action on avoidable causes in order to prevent hearing loss.

PHWs should keep in mind the risk of hearing loss when patients consult for the following reasons:

- Dizziness or vertigo
- Head trauma, especially a basal skull/temporal bone fracture requiring hospitalisation
- Meningitis
- Measles
- Mumps
- Autoimmune conditions
- Cancer (neoplasia) treatment (chemotherapy, radiotherapy, etc.)
- Conditions which require the use of ototoxic drugs (see article on page 8)
- Chronic health conditions: HIV-AIDS, tuberculosis, diabetes, hypertension, vascular diseases, tobacco, neurodegenerative disorders, etc.

Awareness and screening activities: preventing hearing loss throughout the lifespan

PHWs can raise awareness of risk factors for hearing loss and, when possible, can also screen for hearing loss and help prevent further damage. As some avoidable causes of hearing loss are more prevalent at specific ages (see Figure 1), the focus of activities will vary depending on the age group targeted:

Children

- Promote vaccination and good habits for healthy ears.
- Raise awareness of the important link between sound stimulation and the acquisition of language and communication skills in babies and young children. Early detection and intervention result in better communication skills.
- Explain the impact that even a temporary hearing loss will have on a child's academic achievements and behaviour at school.
- Promote early intervention to facilitate communication for children with permanent hearing loss, as well as additional help in the classroom in their later years, irrespectively of the degree and type of hearing loss.

Teenagers

- Promote healthy habits related to noise exposure, in particular recreational noise, to avoid hearing loss.¹¹
- Contribute to early suspicion and diagnosis of hearing loss, in order to promote behavioural changes for hearing conservation before communication is affected.

Adults

- Raise awareness of occupational hearing loss and promote behavioural change as well as enforcement of local legislation on the matter.
- Advocate for policy-makers and employers to contribute towards personal protection for workers and safer working environments.¹²

Mature adults

Specific to mature adults is the condition presbycusis, or hearing loss related to ageing. One out of every three persons over 65 years of age has a disabling hearing loss,¹ and many more have mild or unilateral hearing loss in this age group. Although presbycusis cannot be prevented, PHWs can help promote early diagnosis and raise awareness about the use of hearing devices.¹³ This will greatly improve patients' quality of life and help prevent social isolation as well as mental health problems linked with unaddressed hearing loss.¹⁴

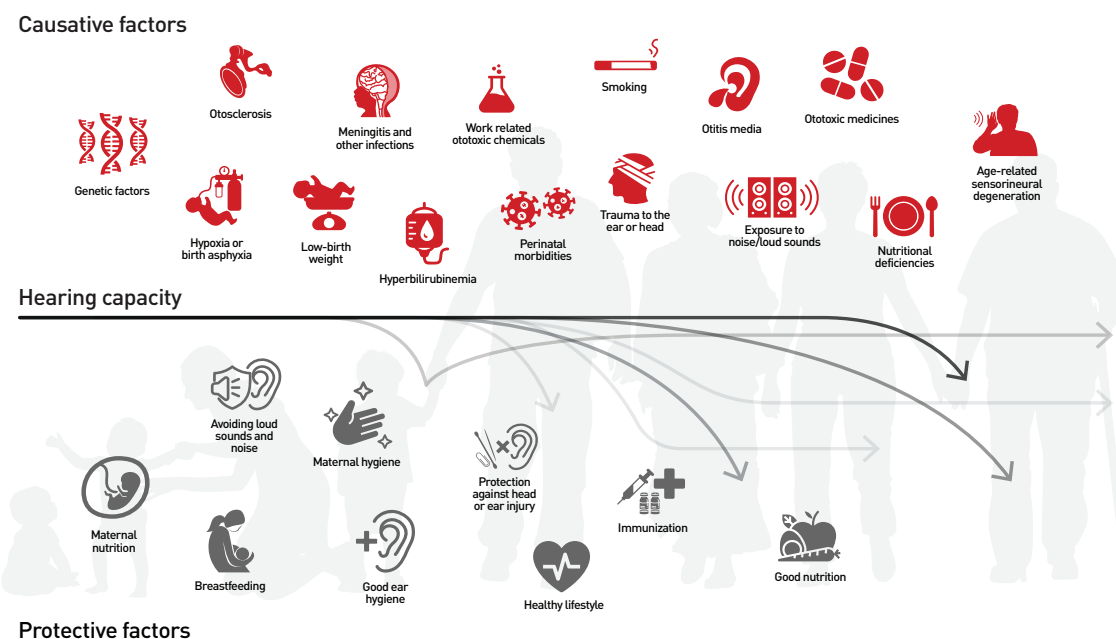
Conclusion

Very often, when designing and implementing a programme for EHC at national or sub-national level, the first cadres of health workers taken into consideration are the specialist professionals (ENT specialists, audiologists, etc.). However, primary healthcare, as the only level of care available in every country, is the entry point and a core component of any successful EHC programme established within national health systems and services. As can be seen in this article, primary healthcare workers can, and should, play an essential role in awareness raising, in the prevention of ear diseases and in early intervention for the re/habilitation of hearing loss. This will contribute towards a more inclusive society for all.

References

- 1 World Health Organization. Deafness and hearing loss: Key facts. <https://bit.ly/3jDSXgb> (as per information available on 22nd November 2021)
- 2 Petterson S et al. The State of Primary Care in the United States: A Chartbook of Facts and Statistics. Washington, DC: Robert Graham Center, 2018. <https://bit.ly/3BmxK00>
- 3 World Health Organization. Global Health and Aging. Geneva: WHO, 2011. Page 2. <https://bit.ly/3vNcNpm> (as per information accessed on 05/08/2021)
- 4 BioMed Central. "Teen moms more likely to have premature babies, study finds." ScienceDaily. ScienceDaily, 9 July 2010.
- 5 Joint Committee on Infant Hearing. Pediatrics 2007; 120(4): 898–921.
- 6 Unicef Data. Global delivery care coverage and trends. Updated March 2020. <https://bit.ly/2ZtrrDD>
- 7 See Community Ear and Hearing Health (2014) vol 11 issue 15, on the theme 'Early detection of hearing loss in newborn and preschool children'.
- 8 See: Santana-Hernández DJ. Community Ear and Hearing Health (2013) vol 10 issue 13: 6–8. <https://bit.ly/3w4iioF>
- 9 See also: McCracken W et al. Community Ear and Hearing Health (2017); 14(18): 5–6. <https://bit.ly/3CIIZHh>
- 10 See also: Community Ear and Hearing Health (2012) vol 9 issue 12, on the theme 'Addressing ear and hearing problems at primary level'.
- 11 Garg S and Goel P. Community Ear and Hearing Health journal (2019); 16(20): 8–10. <https://bit.ly/3CAJnlP>
- 12 Valencia-Mayer C and Santana-Hernández DJ. Community Ear and Hearing Health (2019); 16(20): 6–7. <https://bit.ly/3GwflrO>
- 13 See also: Community Ear and Hearing Health (2018) vol 15 issue 19, on the theme 'Hearing aid systems in low-resource settings'. <https://bit.ly/3GwUvum>
- 14 Jian F et al. Trop Med Int Health (2020); 25(6): 646–659. <https://bit.ly/3jyK8K>

FIGURE 1 HEARING ACROSS THE LIFE COURSE*



*Reproduced with permission from: World Health Organization. World Report on Hearing. Geneva: WHO, 2021. Figure 1.1, page 12. Licence: CC BY-NC-SA 3.0 IGO. <https://bit.ly/3CrB00o>