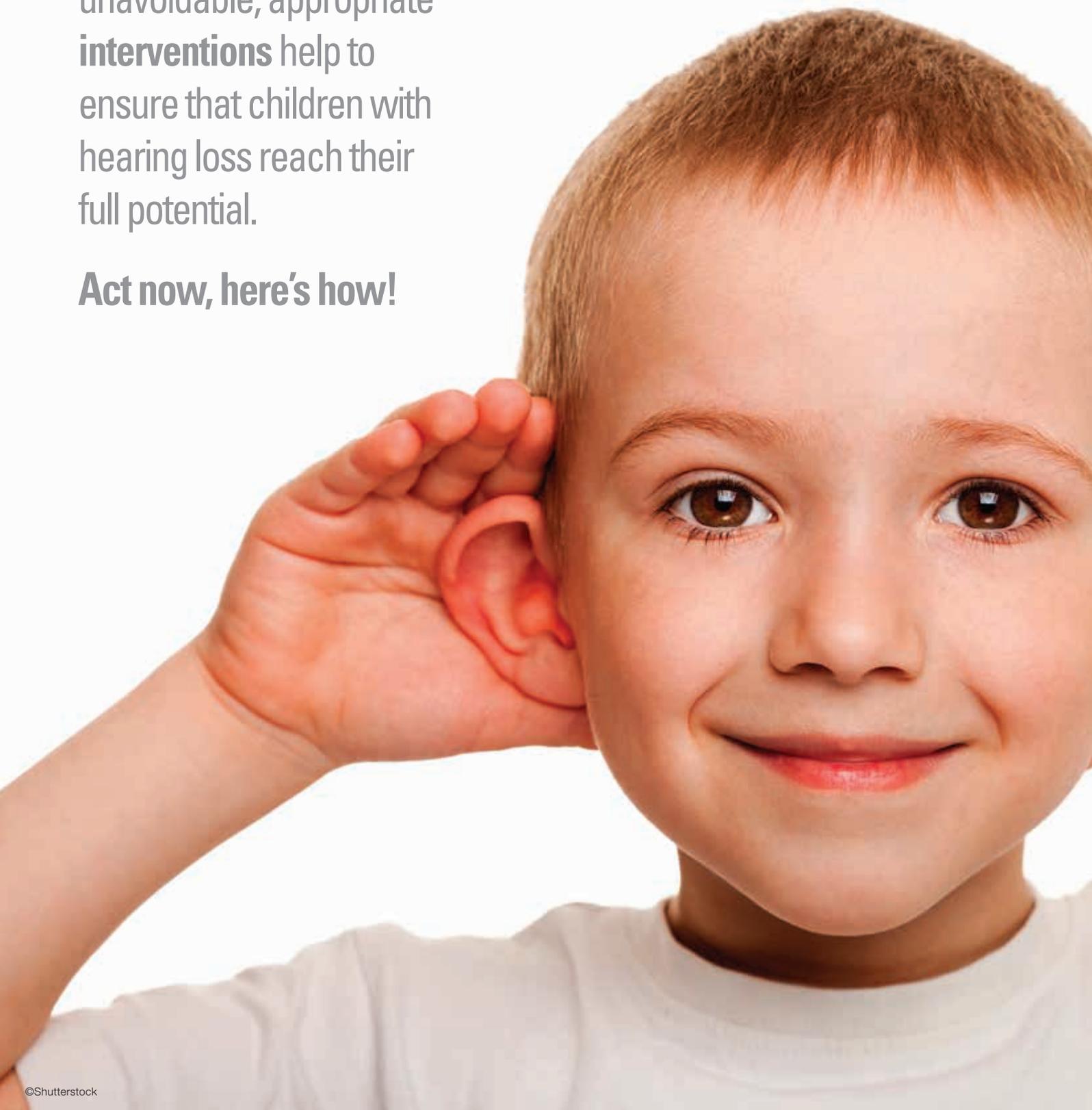


# CHILDHOOD HEARING LOSS

ACT NOW, HERE'S HOW!

**60%** of childhood hearing loss is preventable; when unavoidable, appropriate interventions help to ensure that children with hearing loss reach their full potential.

**Act now, here's how!**



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CHILDHOOD HEARING LOSS

# CHILDHOOD HEARING LOSS

ACT NOW, HERE'S HOW!

The way humans perceive their world is mediated through sensory experiences. Of all the senses, it is hearing which fundamentally facilitates communication and fosters social interaction, allowing people to forge relationships, participate in daily activities, be alerted to danger, and experience life events.

Around 360 million people – 5% of the world's population – live with hearing loss which is considered disabling; of these, nearly 32 million are children. The vast majority live in the world's low-income and middle-income countries.

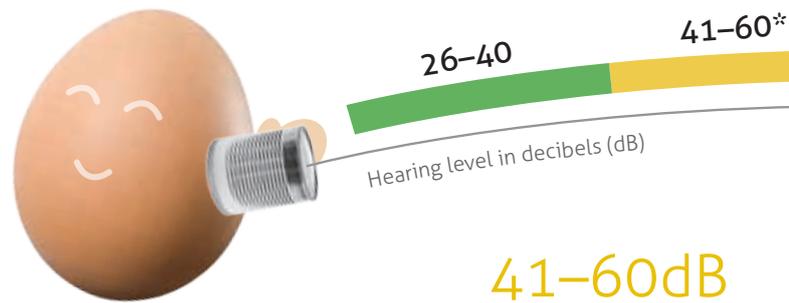
For children hearing is key to learning spoken language, performing academically, and engaging socially. Hearing loss poses a barrier to education and social integration. As such children with hearing loss can benefit greatly from being identified early in life and offered appropriate interventions.

The World Health Organization (WHO) estimates that around 60% of childhood hearing loss could be avoided through prevention measures. When unavoidable, interventions are needed to ensure that children reach their full potential through rehabilitation, education and empowerment. Action is needed on both fronts.



# What is the impact of hearing loss if not addressed?

While the most obvious impact of childhood hearing loss is on language acquisition, the condition also has consequences for overall literacy, the development of social skills and attitudes, including self-esteem. Untreated hearing loss is often associated with academic underachievement which can lead to lower job performance and fewer employment opportunities later in life. For a child, difficulties in communication may result in feelings of anger, stress, loneliness and emotional or psychological consequences which may have a profound effect on the family as a whole. In low-resource settings in which a child would already be at higher risk of injury, hearing loss can place a child in unsafe situations due to decreased alertness. In a broader



26-40dB

## Slight/mild

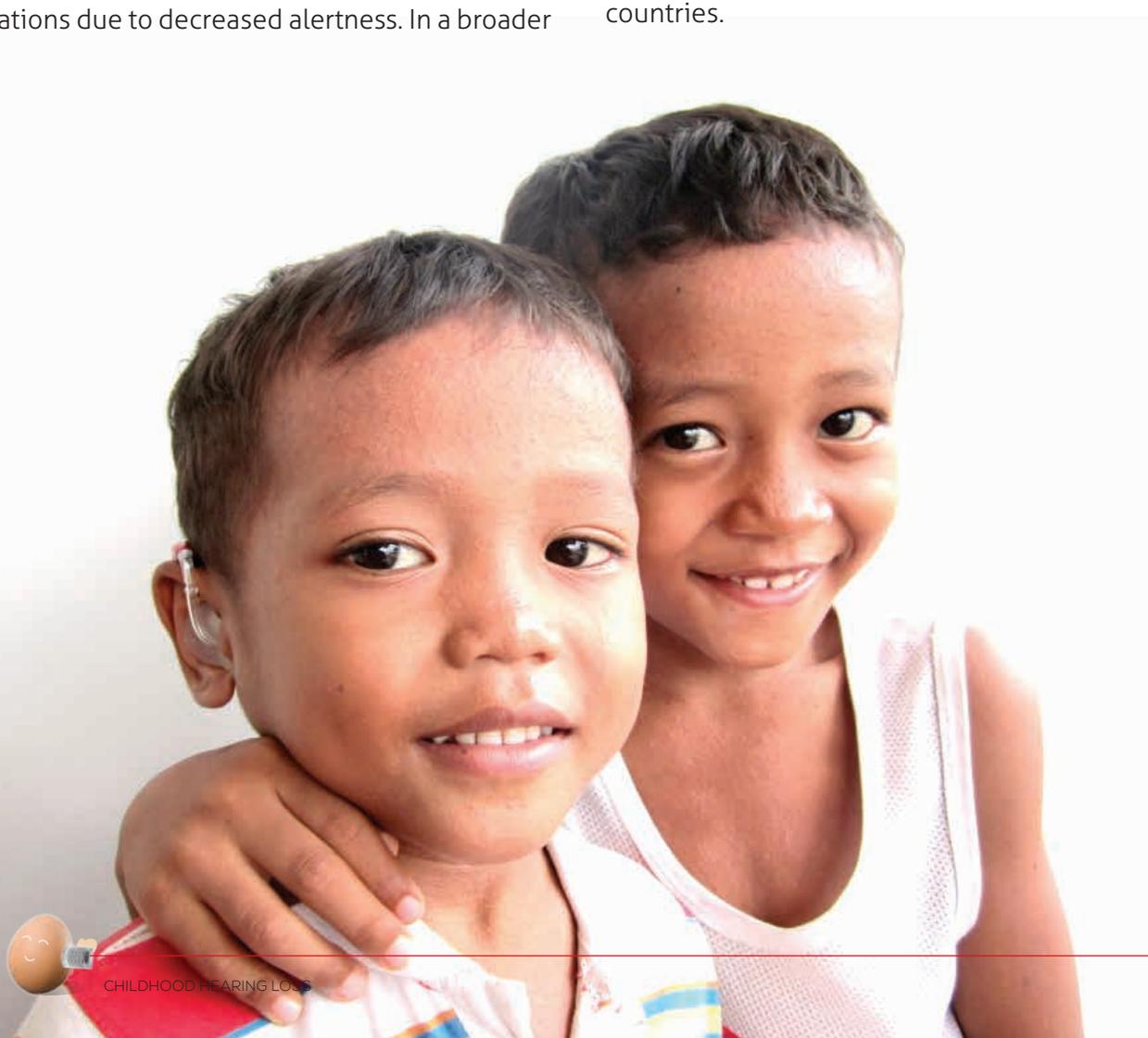
A child with this level of hearing loss will have trouble hearing and understanding soft speech, speech from a distance or speech against a background of noise.

41-60dB

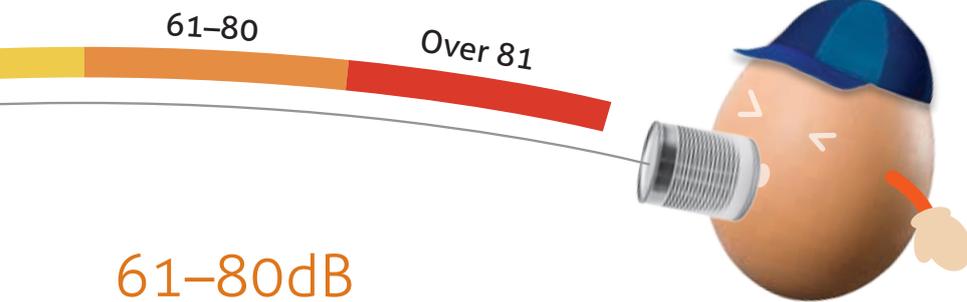
## Moderate

A child with this level of hearing loss will have difficulty hearing regular speech, even at close distances.

context, untreated hearing loss affects the social and economic development of communities and countries.



# loss grades



## 61–80dB

### Severe

A child with this level of hearing loss may only hear very loud speech or loud sounds in the environment, such as a fire truck siren or a door slamming. Most conversational speech is not heard.

## Over 81dB

### Profound

A child with this level of hearing loss may perceive loud sounds as vibrations.

\*In the case of moderate hearing loss, the range for children is from 31–60 dB.

A number of factors determine what the impact of hearing loss is on an individual. These include:

- Age of onset: The initial years of life are the optimal period for speech and language development. The impact of hearing loss is greatest in those who are born with or develop hearing loss soon after birth.
- Degree of hearing loss: This may range from mild to profound. The higher the severity, the greater the impact.
- Age of identification and intervention: The sooner a child is identified with hearing loss, and the earlier he/she receives support services, the greater the opportunity for learning spoken language. The Joint Committee on Infant Hearing recommends that all children with hearing loss should receive intervention by six months of age. Early identification and intervention are also credited with significantly reducing the increased education costs associated with hearing loss, and improving earning capacity, in later life.
- Environment: The overall living environment, including access to services, significantly influences the development of a child with hearing loss. Children with hearing loss who have access to hearing technology such as hearing aids and cochlear implants, sign language and special education are often able to participate on an equal basis with their peers who hear normally. Parent and family support groups facilitate social inclusion of children with hearing loss.

## CASE STUDY

### Cambodia

Piseth (name changed) is an eight-year old girl living in rural Cambodia. She suffers with ear infections resulting in discharge from her ear. The problem is so common in Cambodian children that villagers often consider it normal. This disease, however, causes hearing loss that may have devastating long-term effects on communication, language development and educational progress. If left untreated it can lead to serious medical complications and even death. Piseth's problems were discovered by an outreach medical team. Her condition was so advanced that not only had she lost most of her hearing on one side, the disease had also eaten away at the bone in her skull. She underwent immediate surgery to remove the infected tissue and bone. Following her operation, Piseth's ear improved and she went back to her village and school. Her progress is being carefully monitored by the medical team.

#### RELATED LINKS:

<http://www.all ears cambodia.org/index.html>

[Source: Glyn Vaughan, All Ears Cambodia]





## CASE STUDY

### Thailand

Congenital rubella syndrome (CRS) can cause hearing loss, eye and heart defects and other lifelong disabilities, including autism, diabetes mellitus and thyroid dysfunction. CRS has had a significant impact on the lives of a Thai family from Bangkok. When Chi was pregnant with her daughter Im, her husband was ill, and had a skin rash. She also fell ill with the same symptoms a few days later– the classic presentation of rubella. Chi went to the doctor and was told she would be fine. However, she was unaware that she was one month pregnant. After Im was born, her parents realized that she had problems with her vision. It soon became clear that she also couldn't hear. "Im is deaf," Chi explains "she can neither hear, nor speak." Chi hopes that with good rehabilitation, her daughter will be able to lead a healthy and happy life. The highest risk of CRS is in countries where women of childbearing age do not have immunity to the disease (either through vaccination or from having had rubella). Large-scale rubella vaccination during the past decade has practically eliminated rubella and CRS in many developed and in some developing countries. In April 2015, the WHO Region of the Americas became the first in the world to be declared free of endemic transmission of rubella. (WHO factsheet <http://www.who.int/mediacentre/factsheets/fs367/en/>)

#### RELATED LINKS:

<http://www.measlesrubellainitiative.org>

[Source: Measles and Rubella Initiative]



## What causes hearing loss in children?

Hearing loss in children has many causes, including congenital causes, meaning those which are present at birth or soon thereafter, and acquired causes, those which occur as a child ages. Hearing loss may be the result of several of these factors combined. However, it is not always possible to determine the exact cause.

Causes of hearing loss in children may include:

- ▶ **Genetic factors:** Such factors cause nearly 40% of childhood hearing loss. It has been shown that hearing loss is much more frequent in children born of consanguineous marriages or those unions between two individuals who are closely related. Congenital malformations of the ear and the hearing nerve, which may be the result of genetic factors or environmental influences, can be associated with hearing loss.





- ▶ **Conditions at the time of birth:** These may include prematurity, low birth weight, lack of oxygen known as birth asphyxia<sup>1</sup> and neonatal jaundice.
- ▶ **Infections:** During pregnancy the mother may acquire certain infections such as rubella and cytomegalovirus which lead to hearing loss in the child. In addition meningitis, mumps and measles in childhood can also result in hearing loss. Infections of the ear are quite common in children in low-resource settings. These often present with discharging ears (chronic suppurative otitis media). Beyond hearing loss, ear infections can lead to life-threatening complications.
- ▶ **Diseases of the ear:** Common ear problems may cause hearing loss in children. These include too much ear wax (impacted cerumen) and glue ear (non-suppurative otitis media) which is caused by accumulation of fluid inside the ear.
- ▶ **Noise:** Loud sounds, including those from personal audio devices such as smartphones and MP3 players which are used at loud volume for prolonged periods, may cause hearing loss. Even short high intensity sounds such as those from fireworks may cause permanent hearing loss. The noisy machinery in a neonatal intensive care unit can also contribute to hearing loss.
- ▶ **Medicines:** Medicines, such as those used in the treatment of neonatal infections, malaria, drug-resistant tuberculosis and cancers, can lead to permanent hearing loss. These medicines are ototoxic. In many parts of the world, especially where their use is unregulated, children commonly receive ototoxic antibiotics for treatment of common infections.

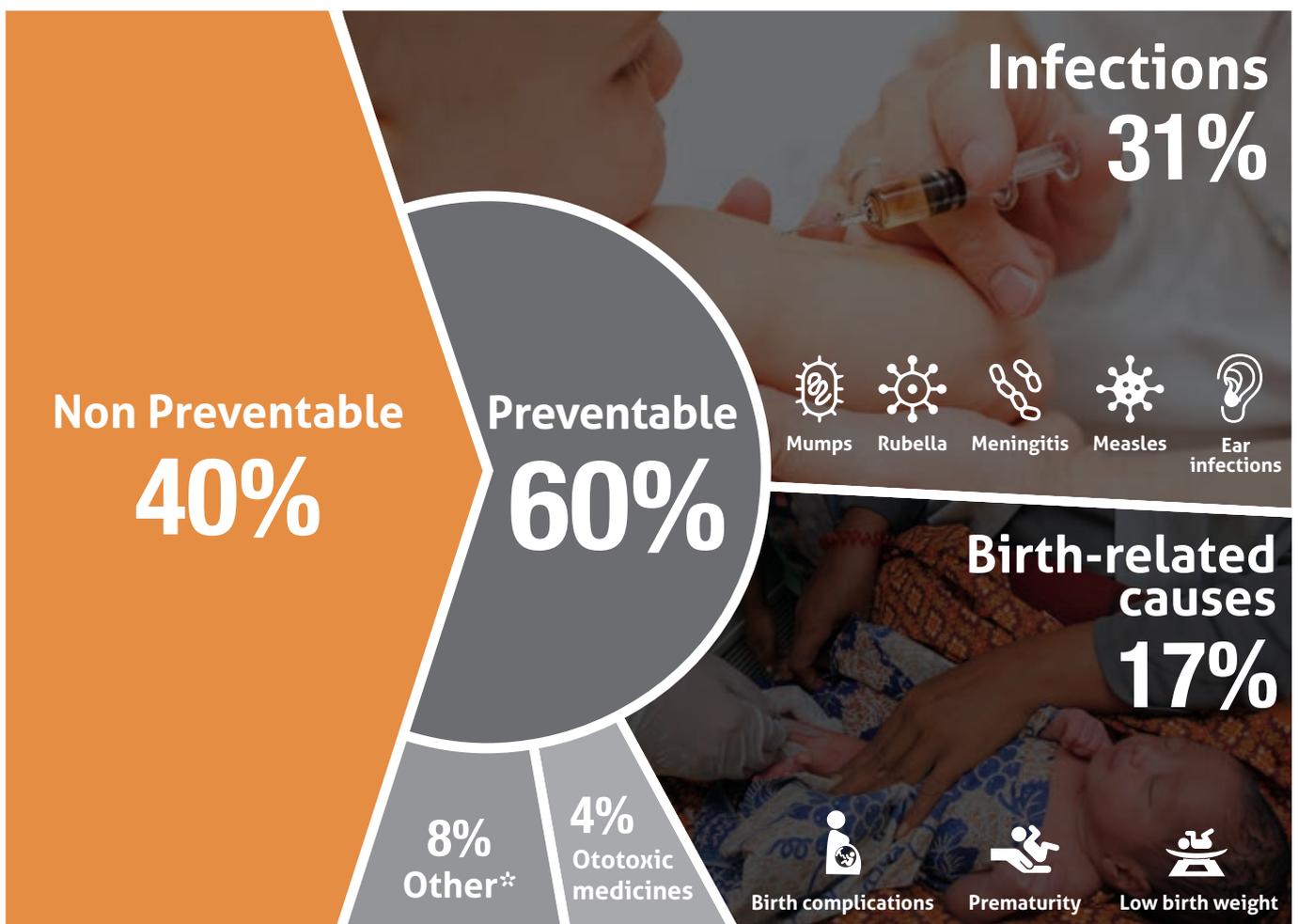
1 Birth asphyxia is the medical condition resulting from deprivation of oxygen to a newborn infant at the time of birth.

# How much of childhood hearing loss could be prevented?

WHO estimates that about 60% of hearing loss in children under 15 years of age is preventable. This figure is higher in low-income and middle-income countries (75%) as compared to high-income countries of the world (49%). The difference could be due to the overall higher occurrence of hearing loss which results from infections in low-resource settings as well as stronger maternal and child health services in high-income countries.

Over 30% of childhood hearing loss is caused by diseases such as measles, mumps, rubella meningitis and ear infections. These can be prevented through immunization and good hygiene practices. Another 17% of childhood hearing loss results from complications at birth, including prematurity, low birth weight, birth asphyxia and neonatal jaundice. Improved maternal and child health practices would help to prevent these complications. The use of ototoxic medicines in expectant mothers and newborns, which is responsible for 4% of childhood hearing loss, could potentially be avoided.

## Estimates of causes of preventable hearing loss



\*Other causes includes: congenital non-genetic malformations and other maternal prenatal causes



# Why is early identification so important?

Early identification of hearing loss in children when followed by timely and appropriate interventions can minimize developmental delays and facilitate communication, education and social development. Hearing screening programmes for infants and young children can identify hearing loss at very young ages. For children with congenital hearing loss, this condition can be detected within the first few days after birth.



©Dr Seikholet Haokip, India

Research suggests that children who are born deaf or acquire hearing loss very early in life and who receive appropriate interventions within six months of age are at par with their hearing peers in terms of language development by the time they are five

years old (in the absence of other impairments). For those children who develop hearing loss at a later age, regular pre-school and school-based hearing screening can effectively identify hearing loss soon after its onset, thereby limiting its adverse impact.

## CASE STUDY

### United Kingdom

Charlie's mother Lindsey had never heard of cytomegalovirus infection (CMV) during her pregnancy. Soon after birth, Charlie failed her newborn hearing test and it was confirmed she was deaf in her left ear. When Charlie reached three years of age, the hearing in her right ear also deteriorated. The CMV infection contracted by Lindsey during her pregnancy was determined as the cause. Charlie has now grown into a bright young girl who attends primary school and manages very well, proudly wearing a glittery pink hearing aid.

CMV infection is an important, but relatively unknown cause of hearing loss. The United States Centers for Disease Control and Prevention estimates that about 1 in 150 children is born with CMV infection and that about one in five of those infected will develop permanent problems, such as hearing loss or developmental disabilities. CMV is spread by close contact with the body fluids (saliva, urine) of an infected person. It can be completely avoided through counselling pregnant women regarding the sources of infection and hygienic practices, such as regular hand washing, avoiding sharing food, avoiding contact with saliva while kissing a child and cleaning surfaces which come into contact with a child's urine or saliva.

#### RELATED LINKS:

<http://cmvaction.org.uk>

<http://www.cdc.gov/cmV/overview.html>

[Source: CMV Action]





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©Dr Isaac Macharia, Kenya

## What are the strategies for prevention and care?

Action is required to reduce hearing loss and improve outcomes for children with hearing loss. Governments, public health agencies, social service organizations, educational institutions and civil society groups all need to collaborate in this endeavour.

In order to achieve the desired results, there is a need to:



### A. Strengthen:

▶ immunization programmes: to prevent many of the infections which lead to hearing loss, such as congenital rubella, meningitis, mumps and measles. Potentially, over 19% of childhood hearing loss could be avoided through immunization against rubella and meningitis alone.

**ACTION:** *Include these vaccines in the national immunization programmes and ensure their widespread coverage.*

▶ maternal and child health programmes to prevent prematurity, low birth weight, birth asphyxia, neonatal jaundice and congenital cytomegalovirus infection.

**ACTION:** *Improve maternal and neonatal care through*

- improved nutrition,
- awareness on hygienic practices,
- promotion of safe birth,
- prompt management of neonatal infections and jaundice.

▶ organizations of people with hearing loss, parents and family support groups.

**ACTION:** *Encourage the formation of support groups for people with hearing loss and their families.*





©Karen Kasmauski/CORBIS



## CASE STUDY

### Uganda

Sign language has had an important positive impact on the life of Patrick, a young man from a remote area of Uganda. Born deaf and with no schools for deaf children in his area, he spent most of his childhood without knowledge of sign language and thus without any communication. Most of Patrick's day was spent alone in his hut, isolated from the world. The Uganda National Association of the Deaf, a nonprofit dedicated to empowering individuals with hearing loss, organized for Patrick to undertake his first sign language class when he was 15 years old. These classes transformed Patrick's life. He is still taking the classes today and hopes to teach other deaf people in the future. Patrick's experiences were reported through a documentary called "15 and learning to speak".

#### RELATED LINKS:

Uganda National Association of the Deaf: <http://www.unadeaf.org/>

"15 and learning to speak": <https://www.youtube.com/watch?v=CNCpgrm8Gu4>

[Source: BBC Channel 4, Unreported World]



#### B. Implement:

▶ newborn and infant hearing screening and initiate appropriate interventions to identify and habilitate children with congenital or early-onset hearing loss. A newborn hearing screening programme should follow a family-centred approach.

**ACTION:** Put early intervention programmes in place, which focus on:

- appropriate interventions, ideally initiated before six months of age;
- family support, including guidance and counselling of parents;
- hearing rehabilitation through hearing aids and cochlear implants;
- suitable therapy and communication options.

▶ school-based hearing screening with the aim to identify, refer and manage common ear diseases and hearing loss.

**ACTION:** Integrate hearing screening into school health programmes and develop linkages for provision of suitable care: medical, surgical and rehabilitative.





©Chhor Sokunthea/World Bank

## CASE STUDY

### Viet Nam

Ngoc was born in Viet Nam, and soon after she was born her family noticed that she was not responding to sounds around her. When Ngoc was 15 months old, her parents took her to the doctor for a hearing test where it was confirmed she had a severe hearing loss. Ngoc's family was devastated as they had no idea how to deal with this challenge. The doctor recommended hearing aids for Ngoc and referred the family to an educational programme for children who are deaf and hard of hearing to get additional information. A non-profit organization working in Viet Nam helped to fit Ngoc with a pair of hearing aids when she was 17 months old. As the hearing aids were turned on, Ngoc immediately responded to the sounds around her. She was then enrolled into an early intervention programme where she is making great progress, and learning to listen and speak.

#### RELATED LINKS:

<http://www.childrenwithhearingloss.org>

[Source: Global Foundation for Children with Hearing Loss]



#### C. Train:

▶ primary level physicians and health workers about the relevance of ear diseases and

the need for early intervention for hearing loss and its treatment options. This would enable provision of accessible services and facilitate referral for their management. The WHO documents *Primary ear and hearing care training resource*, a set of four training manuals, and *Community-based rehabilitation: promoting ear and hearing care through CBR* are useful resources for this.

**ACTION:** Establish training programmes in primary ear and hearing care for primary level health providers.

▶ otologists, audiology professionals, other medical professionals (such as nurses), therapists and teachers to provide the required care and services. This is an important step for addressing ear and hearing problems.

**ACTION:** Set up professional training programmes to develop human resources in the field of hearing health and education for people with hearing loss.





## D. Make accessible:

▶ hearing devices: advances in the field of hearing aids and cochlear implants have considerably improved available options for people with hearing loss. Despite this, only a fraction of those who need these devices can access them, due to a lack of availability and high cost.

**ACTION:** *Develop sustainable initiatives for affordable fitting and maintenance of hearing devices, which can also provide ongoing support for people using these devices.*

▶ communication: a deaf child benefits greatly from early introduction to language. This may be in the form of rehabilitation for verbal communication, such as auditory-verbal and auditory-oral therapy. Policy-makers should also promote alternative communication means including sign language, total communication<sup>2</sup>, bilingual/bicultural (bi-bi)<sup>3</sup>, cued speech<sup>4</sup> and lip-reading approaches. Use of loop and FM<sup>5</sup> systems in classrooms and public places as well as provision of captioning on audio-visual media are important for improving accessibility of communication for people with hearing loss.

**ACTION:** *Ensure access to communication through all available means, in consultation with stakeholders, including people with hearing loss.*



## E. Regulate and monitor:

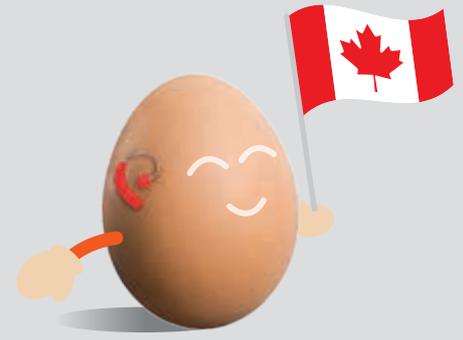
▶ the use of ototoxic medicines to minimize the dangers posed by their indiscriminate use. Where such use is unavoidable, regular audiological monitoring helps to identify hearing loss at an early stage.

**ACTION:** *Develop and implement legislation to restrict the sale and use of ototoxic medicines; and sensitize health care providers regarding hearing conservation during their use.*

▶ noise levels in the environment, especially at recreational venues and sports arenas. High-quality personal audio devices, earphones and headphones with safety features can help to reduce the risk of hearing loss due to their use.

**ACTION:** *Develop and implement regulation regarding environmental noise, including at recreational venues; implement standards for listening safely to personal audio devices.*

- 2 Total communication incorporates all means of communication; formal signs, natural gestures, fingerspelling, body language, listening, lip-reading and speech.
- 3 A philosophy of teaching that recognizes the authenticity and importance of both hearing and deaf cultures and that incorporates elements of both in the classroom.
- 4 Cued speech is a visual communication system — mouth movements of speech combine with “cues” to make all the sounds (phonemes) of spoken language look different.
- 5 FM systems are wireless assistive hearing devices which consist of a transmitter used by the speaker and a receiver used by the listener.



## CASE STUDY

### Canada

One night while Paolo (name changed) was sleeping in his mother's arms, her husband picked up a brass bell and shook it continuously. Paolo did not budge. That's when they knew something was not right. The next week a specialist at the children's hospital diagnosed Paolo's severe-to-profound bilateral hearing loss. Paolo was enrolled in a programme where he is learning to listen and speak. He received his first pair of hearing aids; and started walking: all by the time he was 10 months old. The curious little boy loved to listen and spent hours with his big sister, colouring and talking. Paolo was integrated into mainstream school and graduated as an honour student. He is now in his third year of a mechanical engineering programme. Paolo is an inspiration to all who have met him and he is proud to say that he continues to overcome any challenge set before him.

[Source: Anita Bernstein, M.Sc., LSLS, Canada]





©Courtesy of Austraining International



## F. Raise public awareness:

▶ about healthy ear care practices which can reduce ear infections. For instance, avoiding insertion of any substance into the ear can help to decrease ear problems. Ensuring that children with ear pain avoid the use of home remedies and are treated by a medical practitioner can prevent chronic ear infections and associated hearing loss.

**ACTION:** Establish awareness programmes for promoting ear and hearing care within the community.

▶ about the dangers of loud sounds by educating children at an early age about the risks associated with damaging levels of sound from personal audio devices such as smartphones and noisy entertainment venues including sporting events. This can help to modify behaviour patterns and promote safe listening, which in turn can prevent the development of noise-induced hearing loss during childhood and adolescence.

**ACTION:** Develop and implement awareness programmes targeting young children with the aim to promote safe listening habits.

▶ in order to reduce the stigma associated with hearing loss in communities. Highlighting and sharing success stories from people with hearing loss can be effective in reducing stigma associated with hearing loss, hearing devices and alternate communication methods.

**ACTION:** Engage role models to raise awareness about hearing loss prevention and care.



## CASE STUDY

### United States

Janice (name changed) failed her initial hearing screening at birth in the United States and was diagnosed with a bilateral severe profound hearing loss. She was fitted with hearing aids immediately. However, as the hearing aids did not benefit her, Janice received a cochlear implant when she was a year old. Having received therapy since the age of eight months, Janice's latest speech and language evaluation reveals normal language and mildly delayed speech skills compared to children who hear normally. She now attends a mainstreamed preschool and continues to receive individual speech therapy lessons to improve her articulation skills. Soon, Janice will join other neighbourhood children in kindergarten.

(Source: Michael Douglas, MA, CCC-SLP, LSLs, USA)



In implementing the above, strategic planning can help to reduce hearing loss and diminish its adverse impact on those who live with it. In line with the principles of the Convention on the Rights of People with Disabilities, improved hearing and access to communication facilitate education and employment and foster social inclusion and psychological well-being among people with hearing loss. Many countries have already initiated strategies in line with the Convention and have established models for prevention, identification and intervention.

Today, the causes of hearing loss are known and preventive strategies identified; technology is available to detect hearing loss at the earliest stage of life; and intervention techniques are well established. Thousands of children with hearing loss are gaining communication and other skills they will need to carry them through life, and many have the same opportunities in life as their peers who hear normally. On the other hand, millions of children are still facing the undesirable consequences of hearing loss.

## **This brief document offers the “here’s how” of acting now on hearing loss!**

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For more details refer to: [www.who.int/pbd/deafness/world-hearing-day/en](http://www.who.int/pbd/deafness/world-hearing-day/en)



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