



## Health Tips

Hearing loss is a gradual and painless process. Once damaged, it cannot be restored. Thus, we should always take good care of our ears and hearing, and those of our children's.

## Be Aware of Hearing Loss

Good hearing is essential for full enjoyment of living. It not only enables us to feel the joy of listening to children's carefree laughter, birds' pleasant singing or a soothing piece of music, but also allows us to communicate and connect with our family, friends and other people. In contrast, hearing impairment and deafness, without remediation, is strongly associated with social isolation and depression that negatively affect people's quality of life. As shown in Table 1, there are different grades of hearing impairment. While those with grade 2 impairment (moderate) may still be able to hear and repeat words spoken in raised voice at 1 metre, those with grade 4 impairment (profound impairment, including deafness) are unable to hear even at shouted voice.<sup>1</sup>

**Table 1: Grades of hearing impairment**

Grade	Corresponding audiometric ISO* value	Performance	Recommendations
<b>0 – No impairment</b>	25 dB or lower (better ear)	<ul style="list-style-type: none"> <li>◆ No or very slight hearing problems</li> <li>◆ Able to hear whispers</li> </ul>	
<b>1 – Slight</b>	26 - 40 dB (better ear)	<ul style="list-style-type: none"> <li>◆ Able to hear and repeat words spoken in normal voice at 1 metre</li> </ul>	<ul style="list-style-type: none"> <li>◆ Counselling</li> <li>◆ Hearing aids may be needed</li> </ul>
<b>2 – Moderate</b>	41 – 60 dB (better ear)	<ul style="list-style-type: none"> <li>◆ Able to hear and repeat words spoken in raised voice at 1 metre</li> </ul>	<ul style="list-style-type: none"> <li>◆ Hearing aids usually recommended</li> </ul>
<b>3 – Severe</b>	61 – 80 dB (better ear)	<ul style="list-style-type: none"> <li>◆ Able to hear some words when shouted into better ear</li> </ul>	<ul style="list-style-type: none"> <li>◆ Hearing aids needed</li> <li>◆ If no hearing aids available, lip-reading and signing should be taught</li> </ul>
<b>4 – Profound, including deafness</b>	81 dB or greater (better ear)	<ul style="list-style-type: none"> <li>◆ Unable to hear and understand even a shouted voice</li> </ul>	<ul style="list-style-type: none"> <li>◆ Hearing aids may help understanding words</li> <li>◆ Lip-reading and sometimes signing essential</li> <li>◆ Additional rehabilitation needed (e.g. cochlear implant)</li> </ul>

Note: \* ISO stands for International Organization for Standardization.  
Source: World Health Organization.

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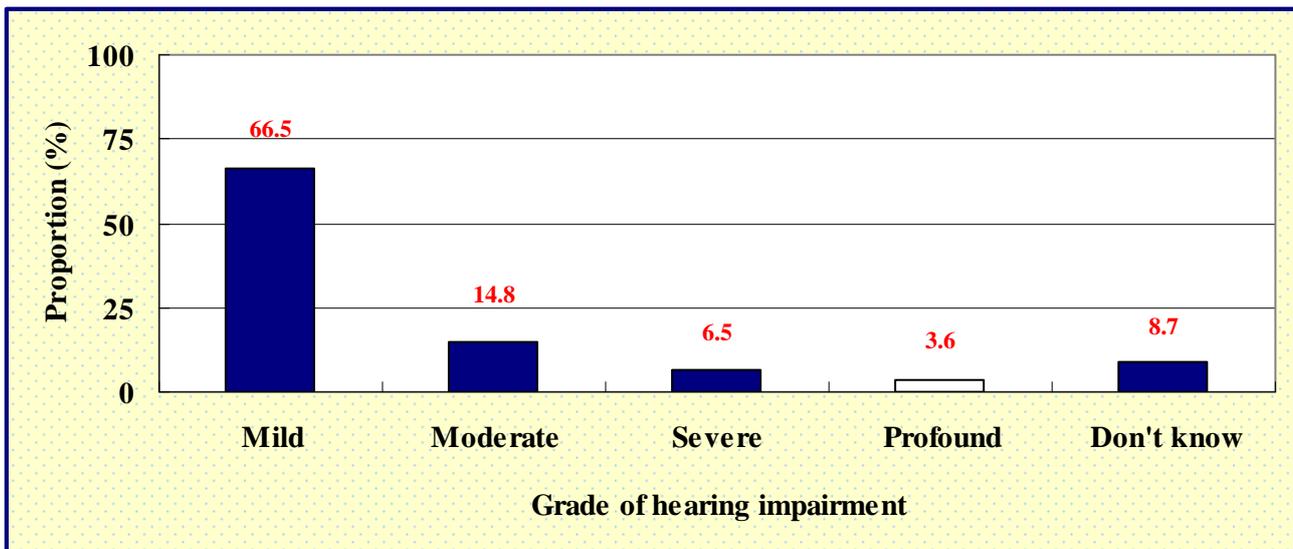
## Global Perspective

Hearing impairment is a worldwide problem. In 2005, the World Health Organization (WHO) estimated that there were 278 million people globally with moderate to profound hearing loss in both ears; more had mild hearing loss. While 80% of hearing impaired and deaf people worldwide live in low- and middle-income countries, about one quarter of hearing impairment cases begin during childhood. Due to a growing global population and longer life expectancies, the number of people with hearing impairment is expected to rise.<sup>2</sup>

## Local Situation

According to the Child Health Survey 2005/2006 conducted by the Department of Health (DH)<sup>3</sup>, the prevalence of doctor-diagnosed hearing impairment among children aged 0-14 years was 0.5% (0.5% for boys and 0.6% for girls). Of those children who had hearing impairment as diagnosed by a doctor, over half (54.7%) were first diagnosed before 5 years old. Regarding the severity of hearing impairment, 24.9% of them had moderate to profound hearing impairment (Figure 1).

**Figure 1: Grade of hearing impairment in children aged 0-14 years who had doctor-diagnosed hearing impairment**



Source: Child Health Survey 2005/2006.

In 2006/2007, the Census and Statistics Department conducted a territory-wide survey on persons with disabilities and chronic diseases. The survey drew representative samples from both land-based non-institutional population and residents in institutions with residential services to estimate the number and prevalence rate of persons with selected types of disabilities, including hearing difficulty. In the study, 'persons with hearing difficulty' were defined as those who had been diagnosed as having hearing impairment under medical assessment tests or perceived themselves as having long-term difficulty in hearing. Results showed that about 92 200 persons had hearing difficulty, yielding a prevalence rate of 1.3% among the total population. Females and persons aged 60 and above had a higher prevalence rate of hearing difficulty than their respective

counterparts. Among those persons who reported having hearing difficulty, 9.3% claimed that they were unable to hear at all; 25.9% required a specialized hearing aid in order to be able to hear well (Table 2).<sup>4</sup>

In Hong Kong, the Central Registry for Rehabilitation also collects and compiles information on people with disabilities, including hearing impairment, through relevant government departments and non-governmental organizations. As at 30 September 2010, the Registry reported that there were 13 761 registrants with hearing impairment. Among them, 83.8% were classified as having moderate or more serious hearing impairment (i.e. grade 2 hearing impairment or above - having a corresponding audiometric ISO value of 41 dB or above).<sup>5</sup>

**Table 2: Persons with hearing difficulty by sex, age group and degree of severity**

	No. of persons	Percentage	Rate*
<b>Sex</b>			
Male	42 600	46.3%	1.3
Female	49 500	53.7%	1.4
<b>Age group (years)</b>			
Less than 15	1 500	1.6%	0.2
15-29	2 100	2.3%	0.2
30-39	3 100	3.3%	0.3
40-49	5 900	6.4%	0.5
50-59	9 300	10.1%	0.9
60 and above	70 200	76.2%	6.1
<b>Degree of severity</b>			
Unable to hear at all	8 600	9.3%	0.1
Required a specialized hearing aid in order to be able to hear well <sup># †</sup>	23 900	25.9%	0.3
Not required a specialized hearing aid <sup>†</sup>	59 700	64.8%	0.9
<b>Overall</b>	<b>92 200</b>	<b>100.0%</b>	<b>1.3</b>

Notes: \* As a percentage of all persons in the respective sub-groups.

<sup>#</sup> Including those persons with hearing difficulty who indicated that no improvement could be made even with a specialized hearing aid.

<sup>†</sup> Referring to the situation of the better ear.

Source: Persons with disabilities and chronic diseases. Special Topics Report No.48. Census and Statistics Department; 2008.

## Causes of Hearing Loss

There are a number of causes of hearing loss, the relative significance of which differs for different age groups. Children may already have impaired hearing before they were born due to hereditary or congenital causes, such as infections or exposure to ototoxic drug(s) while in their mothers' wombs. Some others have their hearing damaged during birth, such as due to lack of oxygen during delivery or being traumatized at birth. Hearing loss after birth can be attributable to ear and other infections (such as otitis media, measles), ear diseases (such as Meniere's disease, acoustic neuroma), injuries to head or ear (such as skull fracture, traumatic perforation of ear-drum), inappropriate use of ototoxic drugs (such as some antibiotics) or exposure to ototoxic chemicals (such as heavy metals including lead and mercury; solvents such as toluene and styrene which is used extensively in the manufacture of plastics and

rubber). At any age, either prolonged or one-time exposure to loud noise (sounds at or above 85 dB - equivalent to the noise from city heavy traffic) can cause gradual or immediate loss of hearing. The risk of hearing loss also increases with aging due to wear and tear on the hair cells in the inner ear, which send sound signals to the brain. Although there are various causes of hearing impairment or deafness, WHO estimates that at least half of all deafness and hearing impairment globally is avoidable through prevention, early detection and proper management (such as early treatment of ear infections, ear surgery or use of hearing aids).<sup>2</sup>



### *Are You Aware That ...*

The top volume on your MP3 player (that often measures to 105 dB) can hurt your hearing.

Ask yourself the following two questions to see whether the volume of your MP3 player is too high.

1. *Do your earbuds prevent you from hearing what is going on around you?*
2. *Can someone sitting next to you hear the music seeping out of your earbuds?*

If you answered "YES" to either of these questions, you should turn down the volume and keep the volume no higher than 60% of full level. Use the MP3 wisely and limit the listening time. Do not listen to music through earphones in noisy environments e.g. in noisy streets or public transportation, so that you do not need to increase the volume level to mask out background noise.<sup>6</sup>

## Healthy Hearing for Life

Hearing loss is a gradual and painless process. Once damaged, it cannot be restored. Therefore, we should always take good care of our ears and hearing, and those of our children's (Box 1). In children, especially in their first few years of life, even mild hearing loss can affect their ability to

speaking and understand language. As for older children, hearing problems can have a huge effect on how they socialize with others and perform in school. Thus, it is of utmost importance to protect children from hearing loss and to detect hearing loss early so that proper management could be made.

### Box 1: Suggestions on reducing the risk of hearing loss

#### *From Loud Noise*

- ◆ Avoid noise by walking away or limiting time spent in noisy environments. Know which noise level can cause damage (i.e. those at or above 85 dB). Experts recommend no more than 15 minutes of unprotected exposure to sounds that are 100 dB or above.<sup>7</sup>
- ◆ Use music player wisely. Keep the volume no higher than 60% of full level. Limit the listening time and take regular breaks. Do not listen to music using the player for over one hour each time.<sup>6</sup>
- ◆ Limit the number of noisy devices in operation at any one time (e.g. do not raise the volume on the television or music players when using power tools such as vacuum cleaner or power mower).
- ◆ Block out noise by wearing appropriate hearing protection device, even for short exposures. In general, ear plugs should provide sufficient protection for exposure to noise levels below 100 dB. For exposures between 100 and 110 dB, ear muffs should be used. If exposures exceed 110 dB, both ear plugs and ear muffs should be worn.<sup>7</sup>
- ◆ Consider regular hearing tests if working in a noisy environment for early detection of any hearing problems and take appropriate steps to prevent further hearing loss.

#### *From Ear and Other Infections*

- ◆ Get vaccinated as per doctor's advice. For example, children should be vaccinated against childhood diseases including measles, mumps, rubella, pneumococcal and influenza infections.
- ◆ Do not swim in dirty water.
- ◆ Dry ears carefully after bathing.
- ◆ Treat ear infections early to prevent damage to the middle ear.

#### *From Injuries*

- ◆ Protect head with well-fitted helmet while motorcycling/cycling or playing contact sports such as boxing and rugby.
- ◆ Wear seatbelts when traveling by car.
- ◆ Take all precautions while scuba diving to prevent barotrauma of the ears.
- ◆ Avoid putting anything in ears.

#### *From Ototoxic Drugs and Chemicals*

- ◆ Take medications only as directed.
- ◆ Observe occupational health and safety practices and take all precautions when handling chemicals.

**Sound Ruler<sup>9</sup>**

Parents and carers should regularly monitor whether their infants and young children reach the hearing development milestones as they grow (e.g. by 3-6 months: smile when spoken to or turn head towards a sound; by 12 months: imitate some sounds and produce a few words such as 'mama' or 'bye-bye'; by 24 months: understand simple 'yes-no' question or point to picture when asked to). If parents and carers have any concerns, they should talk with a doctor or other health professional as soon as possible. Parents and carers should also beware of some noisy toys that may pose a treat to children's hearing, such as squeaky rubber toys, talking dolls or vehicles with horns and sirens. Furthermore, they should help children develop a good listening habit, educate them how to protect their hearing from ear infections and injuries, and provide them with hearing protection devices when necessary.

***Are You Aware That ...***

Since the year 2000, Family Health Service of DH and Hospital Authority neonatal units have been providing universal newborn hearing screening programmes. DH also provides hearing screening for Primary 1 to Secondary 7 students who attend the Student Health Service for annual health assessment.

Adults should be aware of the warning signs of hearing loss. These include having trouble in hearing doorbell or over the telephone; receiving complaints that the TV or radio volume has been turned up too high; frequently asking people to repeat themselves; responding inappropriately due to misunderstanding of what other people say; and having trouble following the conversation when two or more people are talking at the same time.<sup>8</sup> Moreover, if you feel fullness or pressure in the ears, experience tinnitus, have unusual discharges or bleeding from the ear, consult a doctor immediately for diagnosis and treatment.

Firecracker	<b>-150 dB</b>
	-
	-
	-
	-
	-
Ambulance siren	<b>-120 dB</b>
	-
Chain saw	<b>-110 dB</b>
Top volume on MP3 player	<b>-105 dB</b>
	-
Motorcycle	<b>-95 dB</b>
Power mower	<b>-90 dB</b>
Heavy city traffic	<b>-85 dB</b>
	-
	-
	-
	-
Normal conversation	<b>-60 dB</b>
	-
	-
	-
Refrigerator humming	<b>-40 dB</b>
	-
Whispered voice	<b>-30 dB</b>
	-
	-
	-
	-
	-
Total silence	<b>-0 dB</b>



## News Bites

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9. How Loud is Too Loud? Bethesda, MD: National Institute on Deafness and Other Communication Disorders, National Institute of Health.

A study showed an association between hearing loss and depressive symptoms in an older Chinese population in Hong Kong.

The study involved 914 community-dwelling people aged 60 years or above recruited from a network of community centres in Hong Kong between June and October 2004. Each subject was assessed using pure-tone audiometry in a soundproof environment. Measured hearing loss was defined as having a hearing threshold greater than 40 dB. To detect depression symptoms, the study used a validated Cantonese version of the Geriatric Depression Scale (GDS) with a score of 8 or above as the cutoff. Results showed that people with measured hearing loss had about 65% increased risk of having depression than those with normal hearing, after accounting for the effects of other predictive factors of depression including poor self-perceived health and gender.

Hearing loss can impair communication with people, lead to isolation and trigger depression. However, the authors concluded that use of hearing aid could reduce the negative effect of hearing loss, thereby reduce depressive symptoms and improve quality of life.

[Source: Lee ATH, Tong MCF, Yuen KCP, et al. Hearing impairment and depressive symptoms in an older Chinese population. *J Otolaryngol Head Neck Surg* 2010; 39(5): 498-503.]



## Data Brief

In Hong Kong, occupational deafness is one of the most common occupational diseases detected. Under the Occupational Deafness (Compensation) (Amendment) Ordinance 2010, employees who suffer from noise-induced hearing loss due to employment may be eligible for receiving compensation if they fulfill both the disability requirements and occupational requirements. Examples of disability requirements include: an applicant's hearing loss should amount to not less than 40 dB in each ear and the hearing loss should be due to noise in at least one ear; examples of occupational requirements include: the applicant has been employed to work in specified noisy occupations in Hong Kong for at least 10 years in aggregate or for at least 5 years in four occupations that are particularly noisy, and the applicants should have been employed under a continuous contract of employment in any specified noisy occupation in Hong Kong within 12 months prior to making the application. From 1 April 2008 to 31 March 2009, the Occupational Deafness Compensation Board received 132 applications for compensation. The applicants were predominately males (96.2%), those in the age group of 40 to under 56 (51.5%) and those previously engaged in the use of power-driven grinding, chiseling, cutting or percussive tools on rocks (43.2%).

### Statistics on applications received for occupational deafness compensation

	Number (%)
<b>Sex</b>	
Male	127 (96.2%)
Female	5 (3.8%)
<b>Age group (years)</b>	
Under 40	5 (3.8%)
40 to under 56	68 (51.5%)
56 or above	59 (44.7%)
<b>Noisy occupation</b>	
Rock grinding, chiseling, cutting or percussion	57 (43.2%)
Metal grinding	25 (18.9%)
Working near internal combustion engines, turbines, pressurized fuel burners or jet engines	22 (16.6%)
Weaving or spinning	11 (8.3%)
Others	17 (12.9%)

Source: Annual Report 2008-2009, Occupational Deafness Compensation Board.

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