

Mama, I can't hear you

Saumya is a mother of bonny two-year-old baby boy. The child is growing well, except the fact that he has a limited vocabulary. This worries Saumya but her fears are put to rest when she hears that in her husband's family children speak late. How late, she wonders at times, because the baby is already two and most of the times he expresses himself in monosyllables, even gesticulates wildly at the objects of his desire. After enough contemplation, she went ahead and had an appointment with ENT specialist who diagnosed that the child was suffering from impaired hearing which was hampering the development of his speech. Needless to say she was shocked.

A baby's sensory organs like—hearing, vision and senses of touch, taste and smell are literally the windows to the world. When a sensory organ, particularly the ear or auditory system, does not function fully or at all it can compromise or stymie language acquisition, education and socialization.

Are you listening?

- ❑ The ear is responsible for hearing and balance and is made up of three parts - the outer ear, middle ear, and inner ear. The middle ear comprises of the ear drum and tiny bones of hearing. The inner ear has nerve cells which collectively form the nerve of hearing. This hearing nerve carries the signals to the hearing centres in the brain.
- ❑ To put it simply, hearing happens through vibration. When something makes a noise, it sends vibrations, or sound waves, through the air.
- ❑ The human eardrum is a stretched membrane, like the skin of a drum. When the sound waves hit your eardrum, it vibrates. This vibration is transmitted via the bones of hearing to the inner ear. In the inner ear, the nerve cells convert this vibration into electrical signals which are carried by the hearing nerve to the brain. The hearing centres in the brain interpret these vibrations as sound.
- ❑ To function properly, the middle ear must be at the same pressure as the outside world. This is taken care of by the eustachian tube, a small passage that connects the middle ear to the back of the throat behind the nose.

Hearing loss

Hearing loss can happen for multiple reasons. The middle ear may be affected by a physiological problem that prevents sound from traveling through the middle ear. Or, if the nerve cells in the inner ear are weakened, then the vibration that reaches the inner ear may not be effectively transferred to the brain.

Middle ear

Something as common as middle ear infection may be responsible for impaired hearing among preschoolers. If you are parent of a toddler there is a high probability that you have rushed to your paediatrician with your ear-tugging, inconsolable infant in tow.

Why children develop ear infections more frequently in the first 2 to 4 years of life

- Their eustachian tubes are shorter and more horizontal than those of adults; this allows bacteria and viruses to find their way into the middle ear more easily. Their tubes are also narrower and less stiff, which makes them more prone to blockage.
 - The adenoids, which are gland-like structures located in the back of the upper throat (behind the nose) near the eustachian tubes, are large in children and can interfere with the opening of the eustachian tubes.
 - Children's immune systems aren't fully developed until the age of 7. Therefore, they have more trouble fighting infections.
 - Bottle fed children and those exposed to secondary smoke may have increased middle ear infections
- ❑ **Besides otitis media, or middle ear infection, skin growth behind the eardrum**, which creates a benign lesion called cholesteatoma can cause hearing loss too. While some cases are congenital, often damaging inflammation and tissue build up that comes along with chronic ear infections are the culprit. Surgery to remove the growth often yields good hearing results. Although, occasionally a second operation is needed.
 - ❑ **Another frequent cause of hearing loss during a child's early years is head trauma** resulting from falls, rough play or other accidents.

Inner ear

It is estimated that 2 to 3 of every 1000 children born will have an inner ear weakness resulting in some degree of hearing loss. Unfortunately less than half of such children are identified early enough to allow timely intervention. The causes of inner ear weakness are multiple and may either be due to a problem in the formation of the inner ear during early pregnancy or due to the effect of an illness or medication administered after the child is born.

Although inner ear deafness is permanent, timely identification and intervention will ensure that the baby's hearing loss does not go undetected and that appropriate measure are undertaken to ensure that he/she can hear all types of sounds at normal levels. This will ensure that the child eventually develops normal speech.

From your mouth to your baby's ear

What your child hears from people around her is critical for her speech and language development, communication and learning is a well-known fact. Yet, children with listening difficulties due to hearing loss or auditory processing problems continue to be an under-identified and underserved population.

The first few years of life are critical for the development of the hearing and speech centres in the brain, as this is the time when the brain has the ability to learn. It is therefore vital that any hearing impairment is detected early so that any intervention is delivered before the brain begins to lose its power of learning.

Louder please

- ❑ Children with hearing loss often cannot hear quiet speech sounds such as "s," "sh," "f," "t," and "k" and therefore do not include them in their speech. Thus, speech may be difficult to understand.

- ❑ Children with hearing loss may not hear their own voices when they speak. They may speak too loudly or not loud enough and have a high speaking pitch or may mumble words.
- ❑ Children with hearing loss have difficulty with all areas of academic achievement, especially reading and mathematical concepts

What You Can Do

Recent research indicates that children identified with a hearing loss who begin services early may be able to develop language (spoken and/or signed) on a par with their hearing peers. If a hearing loss is detected in your child, early family-centered intervention is recommended to promote language (speech and/or signed depending on family choices) and cognitive development.

If you suspect that your child may not be hearing properly, you should consult your ENT or hearing specialist at the earliest. Age appropriate hearing tests will be carried out to check the status of your child's hearing and if necessary, appropriate measures will be discussed. An audiologist, as part of an interdisciplinary team of professionals, will evaluate your child and suggest the most appropriate audiologic intervention program.

Currently the internationally accepted standard for early detection of hearing impairment is through newborn and child hearing screening. Sophisticated machines are available that can be used to test the hearing level of a newborn or very young child within a few minutes with the child asleep. This is extremely helpful in reassuring parents that their child's hearing is normal. This practice is carried out routinely and is considered mandatory in developed countries. Many centres and hospitals in India now also offer this facility and their numbers are increasing.