CONDITION

Hearing loss - infants

Infant hearing loss is reduced hearing in one or both ears that may affect early communication and language development.

WHAT IT IS
Reduced hearing in one or both ears during infancy

BODY SYSTEM
Ears, hearing, and communication development

MAIN SYMPTOMS
Failed screening, limited startle, poor sound response, delayed babbling

WHAT CAUSES IT
Genetic changes, infections, ear blockage, injury, or unknown causes

HOW IT IS DIAGNOSED
Diagnostic ABR, OAE, tympanometry, and age-appropriate hearing tests

MAIN TREATMENT
Hearing technology, communication support, and treatment of reversible causes

CAN IT BE CURED?
Sometimes - temporary blockage or infection can resolve

IS IT AN EMERGENCY?
Sometimes - after head injury or with serious infection signs

LONG-TERM OUTLOOK
Early support helps communication; hearing levels may remain or change

Overview

Hearing loss in an infant means that the baby does not hear some or all sounds as clearly as expected. It can affect one ear or both ears. The loss may be mild or more significant, and it may be temporary or permanent.

Some babies are born with hearing loss. Others develop it during infancy because of infection, illness, injury, medication effects, or problems in the middle ear. In some babies, no cause is found.

Hearing gives babies access to voices, speech, music, and sounds around them. Reduced access to sound can affect speech and language development, but the effect is not the same for every child. Hearing in only one ear, or missing only certain pitches, can still make it harder to locate sounds or understand speech in noisy places.

Newborn hearing screening helps identify babies who need further testing. A screening result is not a diagnosis. Babies who do not pass need a diagnostic hearing assessment, while babies who pass may still need later testing if concerns arise.

Early access to language is important. This may involve spoken language, sign language, or both, based on the baby's hearing, family, culture, and needs.

Symptoms

Hearing loss is often difficult to notice in a young baby. Babies may respond to movement, touch, facial expressions, or low-pitched vibrations even when they do not hear all sounds.

Possible signs include:

These signs do not prove that a baby has hearing loss. Tiredness, distraction, development, and temporary middle-ear fluid can change how a baby responds.

Some babies with permanent hearing loss show no clear signs at home. This is why follow-up testing after an abnormal screen matters. It is also possible for hearing loss to appear or progress after a baby has passed newborn screening.

- Not passing newborn hearing screening in one or both ears
- Not startling or changing activity in response to a sudden sound
- Not calming, waking, or turning toward a familiar voice
- Responding to some sounds but not others
- Turning consistently toward the same side
- Babbling less than expected or losing sounds previously used

Causes and risk factors

Hearing loss is described according to where the hearing pathway is affected.

Conductive hearing loss happens when sound cannot move efficiently through the outer or middle ear. Earwax, fluid behind the eardrum, infection, or a structural difference can cause it. Some conductive loss is temporary and treatable.

Sensorineural hearing loss involves the inner ear or hearing nerve. It is often permanent. Genetic changes are a common cause, including changes that occur even when no relatives are known to have hearing loss.

Mixed hearing loss combines conductive and sensorineural loss.

Auditory neuropathy spectrum disorder occurs when sound reaches the inner ear but is not sent consistently along the hearing nerve. A baby may detect sound but have difficulty understanding its timing or pattern.

Other causes and risk factors include:

Having a risk factor does not mean that a baby will develop hearing loss. Some babies with hearing loss have no recognised risk factors.

Testing for congenital CMV is time-sensitive because testing within the first few weeks of life can help distinguish infection present at birth from infection acquired later.

- Congenital cytomegalovirus, or CMV, acquired before birth
- Certain infections during pregnancy or infancy
- Premature birth or a stay in intensive care
- Severe jaundice, low oxygen levels, or meningitis
- Differences in the ear, skull, or face
- Medicines that can damage hearing, called ototoxic medicines
- Significant head injury
- A family history of permanent childhood hearing loss

Diagnosis

Newborn hearing screening usually uses one or both of two tests. Neither test hurts the baby.

An otoacoustic emissions test , or OAE, places a small soft probe in the ear. It measures faint sounds produced by the inner ear in response to clicks or tones. Fluid, debris, or movement can affect the result.

An automated auditory brainstem response , or AABR, uses small sensors on the baby's head to measure how the hearing nerve and brainstem respond to sound.

Not passing a screen does not necessarily mean permanent hearing loss. Temporary fluid, background noise, or an unsettled baby can affect screening. However, the result should not be ignored or repeatedly screened without moving to diagnostic testing when recommended.

A diagnostic assessment is performed by a pediatric audiologist, a hearing specialist trained to test babies and children. It may include:

ABR testing records the brainstem's response to sounds at different volumes and pitches. Young babies can often be tested while naturally asleep. Older infants may sometimes need

sedation so that movement does not interfere with the result; the testing team discusses the benefits and risks beforehand.

Results describe the type, degree, and pattern of hearing loss in each ear. An ear, nose, and throat specialist may examine the ears. Depending on the findings, further assessment may include genetic testing, CMV testing, scans, eye checks, or evaluation for other health conditions.

- Diagnostic auditory brainstem response, or ABR
- OAE testing
- Tympanometry to check eardrum movement and middle-ear fluid
- Observation of responses to sounds as the baby develops
- Later behavioral hearing tests using speakers or earphones

Treatment and management

Management is tailored to the type of hearing loss and the baby's communication needs. Families usually work with an audiologist, an ear, nose, and throat specialist, and early-intervention professionals.

Temporary conductive hearing loss may improve when fluid or infection resolves. Persistent middle-ear problems may need monitoring or treatment, sometimes including small ventilation tubes placed through the eardrum.

Hearing aids can make sounds louder and clearer for many types of hearing loss. They can be fitted during infancy and adjusted as testing provides more information. Frequent checks are needed because babies grow quickly and cannot report that a device feels uncomfortable or sounds different.

Bone-conduction devices send sound through the skull to the inner ear. They may be considered when the outer or middle ear cannot transmit sound well.

Cochlear implants may be an option for some children with severe or profound sensorineural hearing loss who receive limited benefit from hearing aids. An implant does not restore typical hearing. It sends electrical signals directly to the hearing nerve and requires surgery, programming, and ongoing communication support.

Treatment also focuses on reliable access to language. Options may include spoken-language support, sign language, listening therapy, or a combined approach. Learning sign language does not prevent a child from learning spoken language. Families can discuss approaches without delaying meaningful communication.

If a specific infection or medical condition is identified, specialist treatment may be considered. For example, treatment decisions for congenital CMV are time-sensitive and depend on the baby's symptoms and test results.

Complications

Hearing loss can reduce a baby's access to language during an important stage of brain development. Without effective communication support, possible effects include delays in speech, language, learning, and social interaction.

Hearing loss in one ear can make it difficult to identify where sound comes from or understand speech when there is background noise. Mild hearing loss may also have meaningful effects, especially if it is not recognised.

Some conditions that affect hearing can also affect balance or vision. A child may sit or walk later because the inner ear helps control balance. These concerns need assessment rather than being assumed to result from hearing loss.

Device problems can temporarily reduce access to sound. Ear irritation, poor earmold fit, dead batteries, or damaged equipment are common practical issues and should be addressed promptly.

These complications are not inevitable. Consistent access to language, suitable technology when chosen, and developmental support can reduce their effect.

Prevention

Not all infant hearing loss can be prevented. Inherited hearing loss and many differences present before birth are not caused by anything a parent did.

Some acquired causes may be reduced by:

Newborn screening does not prevent hearing loss, but it can shorten the time before a baby receives diagnosis and support.

- Following recommended vaccination schedules before pregnancy and during childhood
- Using careful hygiene around saliva and urine during pregnancy to reduce CMV exposure
- Protecting babies from loud noise
- Preventing head injury with age-appropriate car seats and safe sleep spaces

- Giving medicines only as directed and attending hearing monitoring when an ototoxic medicine is necessary
- Seeking care for symptoms of serious infection

Living with it and what to expect

The course depends on the cause and type of hearing loss. Temporary loss from middle-ear fluid may resolve. Permanent loss may remain stable, fluctuate, or gradually progress. Hearing can also change differently in each ear.

Regular hearing tests are important even after treatment begins. Results guide hearing-aid settings, communication support, and decisions about other technology. Babies who passed newborn screening may need repeat testing if they have certain risk factors or if concerns appear later.

As children grow, testing becomes more detailed. Their devices and communication plans may need adjustment when they start childcare or school, enter noisy environments, or develop new language skills.

At home, face-to-face communication can help. Get the baby's attention, keep your face visible, reduce competing noise, and use gestures or signs alongside speech when appropriate. These steps support communication but do not replace hearing assessment or recommended technology.

Many children with hearing loss take part fully in family, education, play, and community life. Their communication methods and support needs differ. Progress is best judged over time rather than by comparing one baby with another.

When to get medical help

Arrange prompt, routine follow-up if your baby:

Contact the baby's healthcare team promptly if hearing seems to change suddenly, especially after a significant illness or when a hearing device stops providing its usual benefit.

Seek urgent medical care after a serious head injury or if the baby has signs of a significant infection, such as being unusually difficult to wake, feeding very poorly, or having a bulging soft spot. A fever of 38°C or higher in a baby younger than 3 months also needs urgent medical assessment.

Call emergency services for a seizure, severe breathing difficulty, blue or grey skin, or

unresponsiveness. These are emergencies whether or not hearing loss is suspected.

- Does not pass newborn hearing screening
- Misses a scheduled diagnostic hearing test
- Stops responding to sounds previously noticed
- Responds to sound only from one side
- Has delayed or reduced babbling
- Has persistent ear fluid, repeated ear infections, or ear discharge
- Has a known risk factor for delayed hearing loss

Common questions

Does failing the newborn hearing screen mean my baby is deaf?

No. Fluid, debris, movement, or background noise can cause a baby not to pass. Some babies do have permanent hearing loss, so diagnostic testing is important. Repeating screening indefinitely can delay a clear answer.

Can my baby hear me if they have hearing loss?

Possibly. Hearing loss is not always complete. A baby may hear low sounds but miss high-pitched speech sounds, or hear better in one ear. Responses at home cannot show exactly what the baby hears; diagnostic testing can.

Can fluid in the ears cause hearing loss?

Yes. Fluid behind the eardrum can block sound and cause conductive hearing loss. It often improves, but persistent fluid can affect access to speech and may need monitoring or treatment.

Will my baby need hearing aids forever?

Not always. This depends on whether the hearing loss is temporary or permanent and whether hearing changes over time. Hearing aids can be adjusted, replaced, or stopped if later testing shows that they are no longer needed.

Will hearing aids make hearing normal?

Hearing aids improve access to sound, but they do not reproduce typical hearing in every situation. Benefit depends on the type and degree of hearing loss, device fit, consistent use, and ongoing adjustment.

Can a baby with hearing loss learn to talk?

Many can develop spoken language, particularly with early access to sound and communication support. Some children use sign language, and some use both sign and speech. The main goal is early, reliable access to a complete language.

Sources

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