

# Hearing Aid Technology



Baby with a BTE hearing aid (sits behind the ear) which is connected to a custom-fit earmold (sits inside the ear).

## How does a hearing aid work?

A hearing aid receives sound through a *microphone*, which converts the sound waves to electrical signals and sends them to an *amplifier*. The amplifier increases the power of the signals and then sends them to the ear through a *speaker (also known as a receiver)*. Though today's hearing aids have these three basic parts, they are supported by sophisticated sound processing features, making them into tiny but powerful computers!

A hearing aid is programmed specifically for a child's hearing loss. There is no one-size-fits-all hearing aid. It takes careful adjustment by a pediatric audiologist to ensure a correct fit.

## Styles of hearing aids

The style of a hearing aid refers to how and where it is worn. Babies and children are fit with *Behind-The-Ear (BTE)* hearing aids. For young children who have are learning speech and language, BTE hearing aids are the most appropriate technology, as they have the greatest flexibility in providing adequate access to sound stimulation for the development of the hearing center in the brain. BTE hearing aids come in a variety of colors and sizes and can fit a wide range of hearing losses.



A RITE hearing aid (left) and two examples of CIC hearing aids. These styles are sometimes appropriate for much older children/teenagers/young adults.

Another style is *In-The-Ear (ITE)* hearing aids, which *may* be an option for older children or teens. ITEs are custom made and fit inside the ear. These can be fit for mild to moderate hearing losses and are available in additional styles: In-The-Canal (ITC) and Completely-In-The-Canal (CIC). Another option for older children and teens are *Receiver-In-The-Ear (RITE)* hearing aids. This hearing aid also sits behind the ear but because the receiver (or speaker) is placed inside the ear canal, the casing behind the ear is smaller. And because there is a thin wire instead of a thicker ear mold tube, this style is more discreet, which some teens prefer.



A bone conduction hearing aid, secured by a headband.

## Bone conduction/bone anchored hearing aids

The hearing aids described above will not work for children with microtia/atresia (small or absent external ear/ear canal). Children with microtia/atresia can use hearing aids that sit outside of the ear structures and send amplified sound via the bones of the skull. This type of transmission is called bone conduction. For babies and young children, this type of hearing aid is secured to the head with a headband. As children grow, they might be considered a candidate to have parts of the hearing aid surgically implanted.