



## Hearing Aids Settings

Hearing aid settings are specific to each individual child and give children access to speech by amplifying sounds based on their hearing levels. The ability to hear speech sounds is crucial for children to learn to listen and talk and is dependent on how well the hearing aids are programmed.

Hearing aids are programmed to make sure soft sounds can be heard, and loud sounds are not too loud. It is important to know that hearing aid programming may be different for the right and left hearing aids.

Digital hearing aids are common and used by most children. These hearing aids are programmed using a computer.

Analog hearing aids are less commonly used and are adjusted with a special tool.

The audiologist uses results from two tests to program your child's hearing aids. Your child's recent hearing test, the audiologist will use the hearing thresholds for each ear that are recorded on the audiogram, and another test called real ear to coupler difference, often referred to as the RECD.

The RECD gives information about the size of your child's ear when the earmold is in the ear.

A flexible tube is put into the child's ear with the earmold to get the measurement.

To get an accurate measurement, the child needs to remain quiet. It just takes a few seconds to get the measurement, and it does not hurt the child.

It is important to measure the RECD because the values are different for each child, even if they are the same age.

The RECD should be measured each time your child's earmolds are replaced because the RECD values change as your child grows.

Hearing aid settings are programmed when your child first gets the hearing aids, if hearing levels change, and when new earmolds are fit.

The audiologist uses special equipment called Real Ear to make sure hearing aid settings are appropriate for your child. There are different equipment manufacturers, the Audioscan Verifit



shown in this tutorial, uses a test called Speechmap. This test checks that your child's hearing aids are meeting the amplification targets. These targets are calculated from your child's RECD and hearing test results.

Tests used to check hearing aids use a measurement unit called SPL. This stands for sound pressure level. The Speechmap graph shows your child's hearing thresholds in SPL. It is similar to an audiogram, except that the soft sounds are on the bottom and louder sounds are on the top.

Low pitches are on the left and high pitches are on the right. The blue line with the x's represents the hearing levels for the left ear.

The audiologist enters your child's RECD and hearing levels into the equipment. Loudness targets are created for soft, average, and loud speech based on the information entered. The targets show on the graph as a symbol that looks like a plus sign. The audiologist adjusts the hearing aid settings to match the targets. As children grow, their hearing aids need to be adjusted louder so they can continue to hear speech sounds.

To make sure the hearing aids are not too loud, overall loudness is checked using a loud sound that sweeps from low to high pitches. This test is called Maximum Power Output, often referred to as MPO. The targets for loudness look like stars and run across the upper part of the graph. The amplification line should either match the target stars or be just below the target. This setting keeps the hearing aids from amplifying sounds too much, this is important because if hearing aids are too strong, they can damage your child's hearing.

For young children, the testing to adjust the hearing aids can be done inside the test box. For older children, the test is done while they wear the hearing aids. If your audiologist does not verify your child's hearing aid settings, or if you did not understand the graph, ask questions so that you understand and are comfortable with how your child's hearing aids are adjusted.

In this example, the green line shows the amplified speech, and the blue line shows the hearing thresholds. When the amplified speech line is above the hearing thresholds your child can hear the sounds. Hearing aid settings should match the targets within plus or minus 5 decibels.

When hearing aid settings are adjusted too low, the hearing aids will not be loud enough for your child. To learn spoken language, your child needs to hear soft, average, and loud speech. If you notice that your child is not responding as you expect, or that your child does not want to wear the hearing aids, they may be set too low. In this example, the purple amplification line is below the targets, this means the hearing aids are not set loud enough for the hearing loss.

If it is not possible to meet the targets, the audiologist can talk with you about other options, such as hearing aid features that can help your child hear high frequency sounds better.



If the hearing loss is severe, hearing aids may not be able to provide enough loudness for your child to adequately hear the sounds. Cochlear implants may be an option for your child to access sound.

When hearing aid settings are adjusted too loud, the hearing aids may bother your child and your child may not want to wear them. You also may notice that your child is sensitive to loud sounds or bothered by certain sounds. The light blue amplification line in this example is above the targets on the graph. This means the settings are too strong for the hearing loss.

If the hearing aids cannot be adjusted to meet the targets, talk with your audiologist about options. You should expect your audiologist to monitor and adjust your child's hearing aid programming over time.