

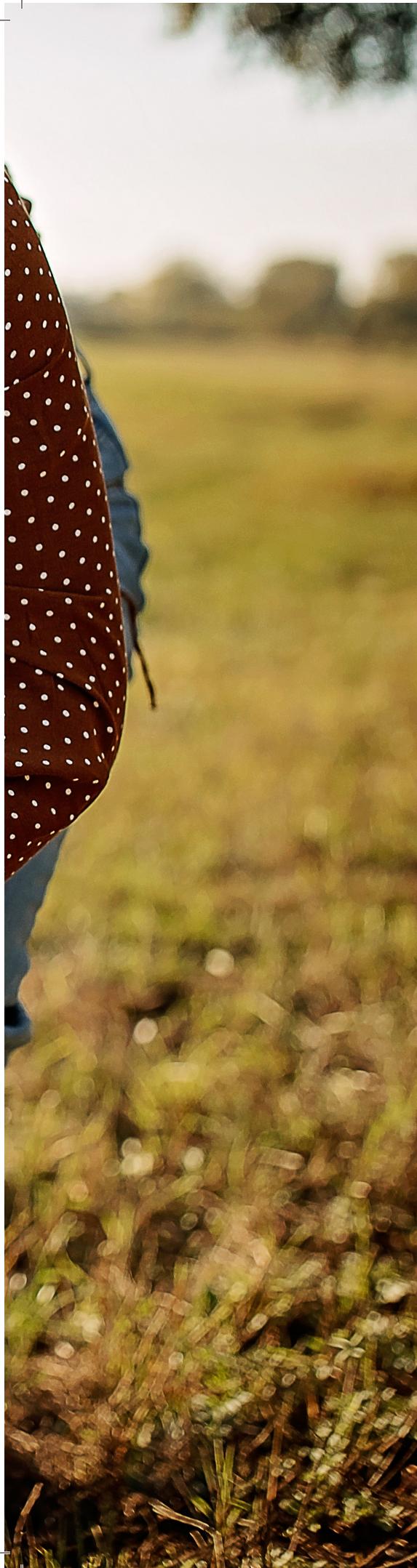
Oticon Medical

Navigating your child's hearing future with a Bone Conduction Hearing System



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MEDICAL





“As a parent you are your child’s best teacher—offer your wisdom, share your experience and give your love.”

This booklet was created in collaboration with Dr. Laurie Mauro, AuD, from Children’s Hospital of Philadelphia (CHOP). We would like to express our thanks and gratitude to Children’s Hospital of Philadelphia for their contributions, partnership and expertise in helping to develop this informational booklet for your convenience.

You are not alone — Oticon Medical is here to support your journey for your child to achieve sound success

Over the next several months, you will make many important decisions about your child's hearing future. At Oticon Medical, our goal is to give you the foundation and resources so that you can start this journey prepared and equipped to make these life decisions for your child.

This resource provides:

- Knowledge in the form of information on hearing and hearing loss plus the benefits and importance of intervention at every stage of your child's hearing journey.
- Support through a variety of resources and services that will empower you as you begin this journey with your child.
- Hope that with the use of Oticon Medical's unique hearing technologies your child will be able to access the world of sound and develop listening and spoken language skills.
- Opportunities to connect with others who have been on this journey with their child and learn more about advocating for your child now and throughout their life.



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Chapter 1

Understanding hearing and hearing loss

“Normally you count 10 toes, 10 fingers, 2 eyes, 2 ears ... and at that moment, that’s when we realized things were a little different.”

– Linus’s Mother

Watch Video: www.youtube.com/watch?v=mPDPRX4UZGU

Understanding hearing and hearing loss

All children have their own special personality and talents. Just as each child is unique, so is their hearing loss. This chapter provides a description of how the ear works, a review of the types and degrees of hearing loss, how hearing is assessed, and the importance of early intervention for your child.

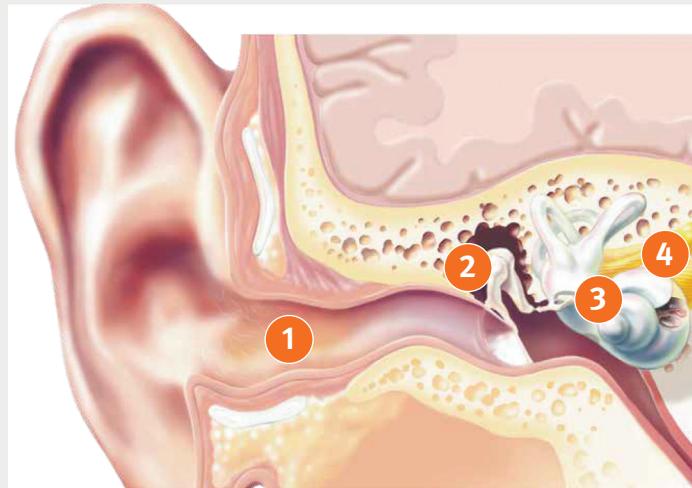
How natural hearing works

The ear is a remarkable organ and is always working to locate and process sounds. The ear consists of four main parts: outer ear (1); middle ear (2); inner ear (3); and the auditory nerve (4). Each part plays a key role in transmitting sound to the brain.

- **The outer ear** is made up of three parts: the pinna, which is the part we see on the sides of our heads, the ear canal, and the tympanic membrane (often referred to as the eardrum). The outer ear is responsible for capturing and directing sound to the middle ear.
- **The middle ear** consists of three small bones called ossicles, specifically the malleus (hammer), incus (anvil), and stapes (stirrup). These three bones help convey sound to the inner ear.
- **The inner ear (or cochlea)** consists of sensory (hair) cells. These sensory cells have distinct functions in delivering sound to the auditory nerve. It is the unique properties of the inner ear that are responsible for determining and transforming pitch and loudness information into an electrical code that the nerve can then transmit to the brain.
- **The auditory (hearing) nerve** is responsible for transmitting sound information from the inner ear to the higher processing centers of the brain. The brain is responsible for interpreting sound.

Natural hearing occurs when sound enters the ear canal and travels to the eardrum (1). The soundwaves cause the eardrum to vibrate sending the bones in the middle ear into motion (2). This motion is converted into electric impulses by tiny hair cells inside the inner ear (cochlea) (3). These impulses are sent to the brain via the auditory nerve where these impulses are perceived by the listener as sound (4).

When the ear is working properly it can detect a range of pitches or frequencies over a wide range of volume or intensity.



Diagnosing a hearing loss

When and where a hearing loss is diagnosed for a young child will vary as well as the type of methods used to test a child's hearing. All children are screened at birth for a hearing loss. For those children who do not pass their hearing screening it is critical that parents follow through on the additional testing needed to confirm the presence or absence of a hearing loss.

Every state and territory in the United States has established an Early Hearing Detection and Intervention (EHDI) program to screen all children for a hearing loss by one month of age, identify hearing loss in a child before three months of age, and to provide intervention services before six months of age.

It is important to note that a child's hearing can be evaluated at any age using a variety of test measures. A licensed audiologist who has experience working with children performs these tests. Audiologists use objective measures such as otoacoustic emissions (OAE) or auditory brainstem response (ABR) testing that do not require a physical response from your child.

These tests are easy, accurate, and completed while the child is sleeping or awake—the only requirement is that the child remains relatively still. A machine records the measurements made and a small probe inserted into the child's ear delivers the sound. As a child gets older, other test measures such as Visual Reinforcement Audiometry (VRA) and Conditioned Play Audiometry are used. Both tests require that the child provide some type of response to sound either by looking for the sound or by dropping a block in a bucket upon hearing the sound.

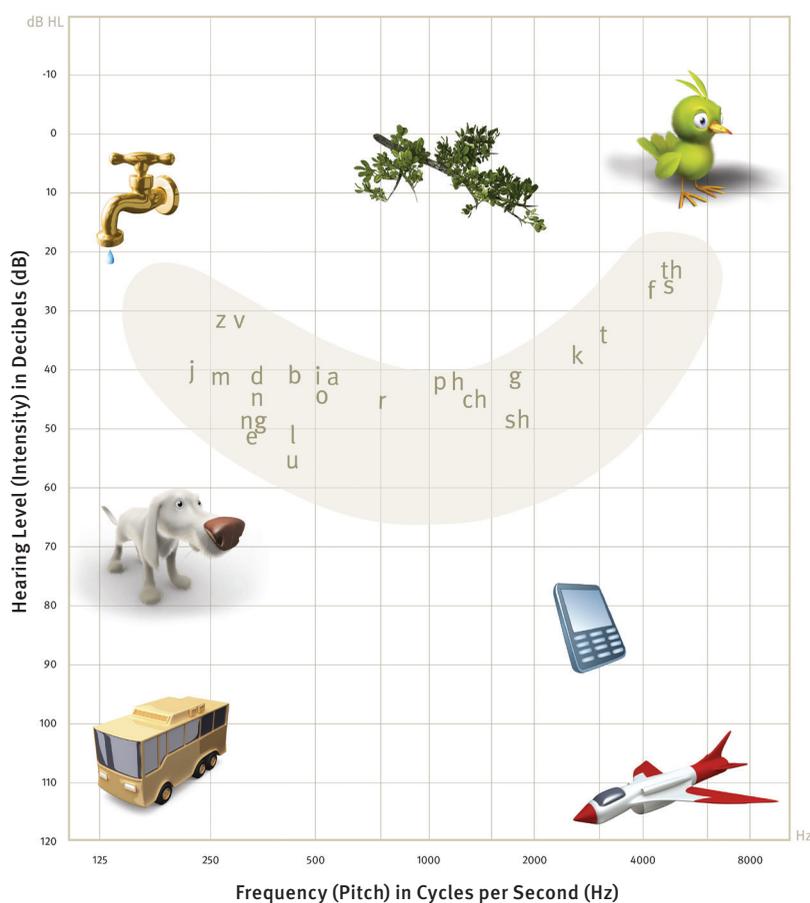
The audiologist will examine how the child hears via air-conduction testing versus bone-conduction testing. In air-conduction testing, a pure tone is presented via an earphone (or a loudspeaker). The signal travels through the air in the outer ear to the middle ear and then to the cochlea in the inner ear. In bone-conduction testing, instead of using an earphone, an electromechanical earphone is placed on the mastoid bone behind the child's ear. This allows for stimulation of the cochlea via mechanical vibration of the skull with almost no stimulation of the outer and middle ear.

Type and degree of hearing loss

One of the very first steps in understanding the treatment options available for your child is to find out their type and degree of hearing loss. The terms below describe the types of hearing loss that your child may have, and which part of the ear is not working properly:

Conductive hearing loss	A condition of the outer ear or middle ear prevents sound vibrations from reaching your inner ear, or cochlea. With this type of hearing loss, ears may feel plugged and speech may sound muffled.
Sensorineural hearing loss	The location of hearing loss is with the inner ear (cochlea) or hearing nerve. With sensorineural hearing loss, sounds are not only softer, but difficult to understand—especially when it is noisy. Often this type of hearing loss is permanent.
Mixed hearing loss	A hearing loss that includes components of a conductive and sensorineural hearing loss.
Single-sided deafness (SSD)	Hearing loss in one ear that is severe-to-profound with normal hearing in the other ear.

Figure 1: Familiar Sounds Audiogram



During your child’s diagnostic hearing test, the audiologist will record the softest sound (hearing threshold) your child can hear at various frequencies (i.e. pitch) onto the audiogram. Figure 1 is an example of the familiar sounds audiogram and provides a reference point on the audiogram where various environmental and speech sounds occur. Frequency or pitch is measured in Hertz (Hz) and displayed along the horizontal axis and intensity or loudness is measured in decibels (dB) along the vertical axis. A normal-hearing person can detect very soft sounds of 15 dB or less (e.g., whisper) to very loud sounds of 120 dB (e.g., an airplane taking off), across all frequencies.

Degree of hearing loss

Mild Hearing Loss (20–40 dB average loss): May hear some speech sounds but soft sounds are hard to hear, such as a whisper or the consonants at the end of words like “shoes” or “books”.

Moderate-to-Severe Hearing Loss (40–70 dB average loss): May hear almost no speech when another person is talking at a normal level. An example would be that the child might be able to pick out the vowels within a sentence that is spoken but would not be able to hear the consonants making comprehension of the sentence almost impossible.

Severe Hearing Loss (70–90 dB average loss): Cannot hear speech of a person talking at a normal level and only some loud sounds. An example would be that a child may respond to a very loud sound, such as a car horn, but it likely would not startle or scare them the way it might a child with normal hearing.

Profound Hearing Loss (90+ dB average loss): Unable to hear any speech and only very loud sounds. With this type of hearing loss, the child will likely feel the vibrations of very loud sounds only.

Signs of hearing loss

It may be difficult to determine whether your baby or small child has hearing loss, especially if they cannot communicate yet. Knowing and understanding the signs is important as your child begins to grow and develop. Below are some typical signs that can help you determine if your child may have a hearing loss.

A child who has a hearing loss in both ears may exhibit one or more of the following characteristics:

For a young child:

- Does not react or startle to loud sounds.
- Does not search out or detect where sound is coming from.
- Began to babble or play with their voice but now has stopped.
- Is still babbling but is not progressing to using more understandable speech.
- Does not react to voices, especially when being held.
- Does not follow simple commands, such as “get your shoes” or understand simple directions.
- Is easily frustrated or experiences communication breakdowns.

For an older child:

- Is falling behind with speech and communication skills.
- Depends heavily on lip-reading.
- At the end of the school day, is exhausted because they must concentrate hard all day just to understand speech.
- A child who has a hearing loss in only one ear may exhibit one or more of the following characteristics:
- Difficulty hearing sound that is directed toward one ear versus the other.
- Difficulty distinguishing where sound is coming from.
- Unable to understand speech well in the presence of background noise.
- Detect quiet voices or soft sounds.

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- Difficulty distinguishing where sound is coming from.
- Unable to understand speech well in the presence of background noise.
- Detect quiet voices or soft sounds.

Developmental milestones for hearing, speech, and language skills

Understanding the milestones for speech and language development for a child who does not have a hearing loss can serve as a guideline and basis of comparison once your child is using a hearing implant solution and receiving intervention services.

Age	Hearing and understanding	Speech and language
Birth to 3 months	<ul style="list-style-type: none"> • Startles at loud sounds • Quiets or smiles when spoken to • Seems to recognize caregiver voice and quiets if crying • Increases or decreases sucking behavior in response to sound 	<ul style="list-style-type: none"> • Makes pleasure sounds (cooing) • Cries differently for different needs • Smiles when they see parent
4 – 6 months	<ul style="list-style-type: none"> • Moves eyes in direction of sounds • Responds to changes in tone of your voice • Notices toys that make sounds 	<ul style="list-style-type: none"> • Babbling sounds more speech-like with many different sounds, including /p/, /b/, and /m/ • Vocalizes excitement and displeasure • Makes gurgling sounds when left alone and when playing with you
7 months – 1 year	<ul style="list-style-type: none"> • Pays attention to music • Enjoys games like peek-a-boo and pat-a-cake • Turns and looks in direction of sounds • Listens when spoken to • Recognizes words for common items like “cup”, “shoe”, “juice” • Begins to respond to requests (“Come here”, “Want more?”) 	<ul style="list-style-type: none"> • Babbling has both long and short groups of sounds such as “tata” “upup” and “bibibibi” • Uses speech or non-crying sound to get and keep attention • Imitates different speech sounds • Has 1 or 2 words (bye-bye, dada, mama) although they may not be clear
1 – 2 years	<ul style="list-style-type: none"> • Points to a few body parts when asked • Follows simple commands and understands simple questions • Listens to simple stories, songs, and rhymes • Points to pictures in a book when named 	<ul style="list-style-type: none"> • Says more words every month • Uses 1-2 word questions (“Where kitty?”) • Puts 2 words together (“more cookie”) • Uses many different consonant sounds of the beginning of words

How early intervention will help your child

When it comes to speech and language development in a young child, every moment matters, which is why it is so critical to begin early intervention services as soon as a diagnosis of hearing loss is confirmed. For babies, early intervention should begin prior to six months. These services are often provided through your public-school system.

Early intervention is typically conducted in your home. During these home visits an infant or family specialist will come to your home or another natural environment, such as daycare, to work with you, your child, and your family members. These home visits are designed to give you the confidence and skills necessary to communicate with your child and encourage their development. Your specialist will work closely with you to identify your needs and set priorities for your child, help you locate resources, and answer your questions.

Why is Early Intervention Important? Research has compared children with hearing loss who receive early intervention and amplification before six months of age versus after. By the time they enter first grade, children identified earlier are one to two years ahead of their later identified peers in language, cognitive, and social skills.³ Therefore, early intervention can lay the foundation for developing fundamental language, social, and cognitive skills that provide the framework for later education and success in society.



Building your child's team

It takes a village! By now you may have discovered that there are a number of professionals who will be involved with your child's hearing healthcare. It is important to identify and build strong relationships with the professionals who are there to support you and your child throughout this process. **Why are these professionals important?** See below for a description of how each of them will support your child throughout their lifetime:

Audiologist

The audiologist is likely to be the first professional you encounter, and possibly the one who gives you the initial news regarding your child's hearing loss. The audiologist would also be the professional to evaluate, program, and manage your child's hearing solution(s) throughout their life.

Otolaryngologist

Upon diagnosis of hearing loss, your child will be referred to an ear, nose, and throat (ENT) specialist (otolaryngologist), or one who specializes in childhood ear and hearing problems. The otolaryngologist's initial role is to determine the specific nature of the underlying problem that may be at least partially causing the hearing loss. They may also refer for additional testing from other pediatric specialists.

Primary Care Physician

Your child's primary care physician may be either a pediatrician or a family practice doctor. The primary care physician or the otolaryngologist may also provide a referral to a doctor who specializes in medical genetics, to find out if your child's hearing loss may be hereditary. That may help you determine if a similar hearing loss could occur in your other children.

Early Intervention Specialist

This professional is typically someone with an education background. They will discuss your observations and concerns about your child and give you information and support regarding your child's educational needs in the future.

Speech Language Pathologist (SLP)

This professional will evaluate the impact of your child's hearing loss on speech/language development and monitor their progress over time. You may also work with an auditory-verbal therapist. Either therapist will help you become familiar with the appropriate speech/language, auditory, and cognitive developmental milestones that you may expect for your child.

The Hearing Implant Manufacturer

If it is determined that your child is a candidate for a bone conduction hearing system, the hearing implant manufacturer will provide you with products, support, services, and resources.



Explore on your own

We understand that you may still have more questions. As a follow-up to this section, you may want to consider the following:

- Visit these websites:
 - Alexander Graham Bell Association for the Deaf and Hard of Hearing at www.agbell.org
 - The National Center for Hearing Assessment and Management at www.infanthearing.org
 - Our website at www.oticonmedical.com/us
- Follow up with your audiologist, primary care physician, and/or otolaryngologist to ask additional questions and schedule additional appointments
- Contact your local school district to start early intervention services if not already initiated by your audiologist

“Fortunately, thanks to the Ponto, Fabian’s language acquisition is not compromised at all. Linguistically, he is on par with other children and he is starting with exactly the same sounds.”

— Mother of Fabian

Watch Video:

www.oticonmedical.com/us/bone-conduction/meet-other-users/users-tell-their-story/bahs/fabian



Chapter 2

Types of Hearing Solutions

“We go to the hospital and the doctor says, “It’s just this and this, and we have a solution for it,” and I was like, “Okay, then that is it, and let’s go!”

— Tom, father of baby Sam

Watch Video: <https://www.youtube.com/watch?v=YJdjfUd7ne8>

What is the right hearing solution for my child?

In this section you will find many answers to questions regarding the various types of hearing solutions available to your child based on their type and degree of hearing loss.

Given the advancements in technology today, there are many hearing solutions available for your child that were not years ago. Selecting the most appropriate hearing technology is critical

to your child's hearing success. Therefore, as you continue this journey, your audiologist will work closely with you and your family to determine the best hearing solution. You can rest assured there is a solution for your child that is going to give them the best access to a world of sounds so that they can live life to their fullest.

Air conduction hearing aids

Hearing aids are small electronic devices that amplify sound, or more simply, increase the volume of sound. By amplifying sound, any remaining, healthy hair cells in the ear are stimulated to transmit sound information to the auditory nerve and brain. Typically, a hearing aid can help your child if they have mild to moderate hearing loss in one or both ears.

CROS hearing aids

Contralateral Routing of Signal (CROS) hearing aids are designed to help those children with single sided deafness (SSD). They require the user to wear two hearing aids behind each ear and work by picking up sound in the impaired ear (ear with the hearing loss) and transmitting it with a wireless signal to the normal or better hearing ear.

After the initial fitting of hearing aids, your audiologist will work with you and your child closely to monitor their progress. If your child is not benefitting from hearing aids or not progressing as much as you and your audiologist would expect, other treatment options may be recommended.

Bone conduction hearing devices

If your child's hearing loss is due to problems in the outer or middle ear, they may be a good candidate for a bone conduction hearing device. This hearing solution bypasses problems in the ear canal or middle ear and can offer clearer, more natural-sounding hearing. A bone conduction device can help your child if they have a damaged outer or middle ear, but a healthy cochlea. Bone conduction devices use the body's natural ability to conduct sound through bone conduction and may be the best solution for a child who has a conductive, mixed, or unilateral (SSD) hearing loss. Children will begin their journey with a bone conduction hearing device on a Softband and when they are age-appropriate will transition to an implant with an abutment providing direct sound transmission.

Cochlear implants*

A cochlear implant is a medical device that helps children with severe to profound hearing loss gain access to sounds they are missing and are unable to access with the use of hearing aids or other hearing technologies. In contrast to a hearing aid, which simply makes sound louder, a cochlear implant bypasses damaged hair cells in the cochlea to stimulate the hearing nerve directly. This surgically implanted electronic device is designed to mimic natural hearing. The cochlear implant has become widely recognized as an established treatment for children with a bilateral severe to profound hearing loss.¹

*The Neuro CI System is not FDA approved for children

¹ Papsin BC, Gordon KA. Bilateral cochlear implants should be the standard for children for bilateral sensorineural deafness. *Curr Opin Otolaryngol Head Neck Surg*. 2008; 16:69-74. doi: 10.1097/MOO.0b013e3282f5e97c



Differences in hearing solutions

Air Conduction Hearing Aid	Cochlear Implant	Bone Conduction Hearing Device
Acoustically amplify sound	Convert sound into electrical signals	Sounds are converted into vibrations
Rely on the responsiveness of remaining undamaged inner ear sensory cells	Bypass the inner ear sensory cells and stimulate the auditory nerve directly	Bypass the middle ear. Vibrations are directly transmitted to both inner ears

Advantages of hearing with two ears

Hearing with two ears, also called binaural hearing, has distinct advantages like improved speech understanding in noise, better speech recognition, and sound localization.²

Binaural hearing can be achieved with the use of two hearing solutions of any type or combination. When your child hears with both ears, they act as a team and can provide them with added advantages, such as being able to identify where a

sound is coming from as they attempt to cross the street, using less effort when listening in a classroom, and/or being able to hear their friends' conversation in the school cafeteria.

It is for these reasons that you should consider a discussion with your audiologist and surgeon about the possibility of hearing in both ears.

² Cullington, H. E. & Zeng, F.-G. G. Comparison of bimodal and bilateral cochlear implant users on speech recognition with competing talker, music perception, affective prosody discrimination, and talker identification. *Ear Hear* 32, 16–30 (2011).

“So, I got to try on a “second ear” (Ponto bone anchored hearing aid) at the Microtia/Atresia Picnic today. How the heck did I go this long without stereo hearing?!? First time hearing in stereo, check!”

– Kole

Candidacy guidelines

Children with a conductive, mixed hearing loss in one or both ears or single sided deafness (SSD) may be a candidate for a Ponto system.

If your child's hearing loss for bone conduction thresholds falls within the shaded range of the audiogram, they may be a candidate for a bone anchored hearing system.

Possible causes of hearing loss in children

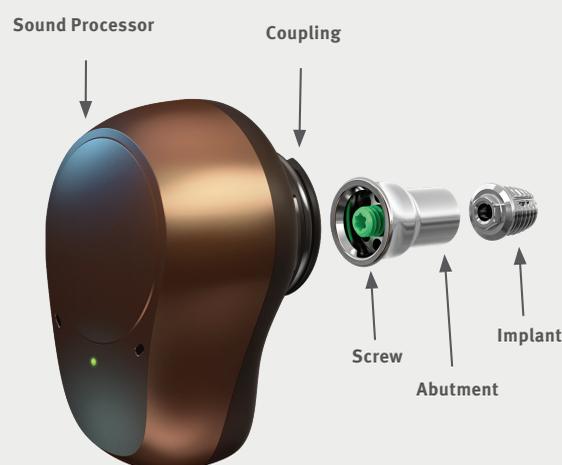
Conductive and mixed hearing loss	Unilateral hearing loss/ single-sided deafness
<ul style="list-style-type: none"> • Chronic Otitis Media* • Congenital causes • Aural Atresia and/or Microtia • External Otitis* • Cholesteatoma • Traumatic injury to the middle ear structures 	<ul style="list-style-type: none"> • Congenital causes • Sudden deafness • Surgical interventions • Ototoxic (poisonous to the ear) drugs

*Cause may be temporary but requires intervention

Hearing with a bone conduction hearing device

A bone conduction system works by bypassing the middle and outer ear where the hearing loss is occurring and sends a vibrant and robust sound signal directly to the inner ear using bone conduction. The sound vibrations are captured by the sound processor microphone and sent through the skin to the implant located in the skull bone, then onto the inner ear. A bone conduction device is a stable, long-term solution for the treatment of a conductive, mixed, or unilateral hearing loss.

The Ponto™ System consists of a small titanium implant, an abutment, and a Ponto sound processor (*see illustration at right*). The implant is carefully implanted in the bone behind the ear. The abutment is then attached to it and allowed to protrude through the skin as an anchor for the sound processor.



Young children will begin to use a bone conduction device on a Softband

It is important to fit children as early as possible to provide the best opportunity for language development. Ponto sound processors can be used on a Softband until the child is able to receive an implant. **There is no minimum age requirement for the fitting of a Ponto sound processor on a Softband.**

Benefits of bone conduction hearing devices

Bone conduction hearing devices have several benefits over conventional air conduction hearing aids, including:

- Bone conduction hearing systems bypass the conductive component of hearing loss, which means less amplification is needed resulting in a clearer, less distorted sound signal for the child.
- The ear canal of the child wearing a bone conduction system remains completely open, which is medically advantageous for the acute care of chronic ear infections and draining ears.
- The bone conduction sound processor can be worn by the child on a soft headband allowing for the evaluation of hearing benefit by the audiologist and other hearing healthcare professionals prior to implantation.
- The implantation involves a minimal procedure that is simple, reversible, and does not expose the child to any risk of additional hearing impairment.

What is BrainHearing™?

BrainHearing is an Oticon Medical unique principle that guides the research and innovation of all hearing systems we develop. It is our Guiding Star that guides us toward the goal of always focusing on helping the brain make sense of sound with less effort. For children, this is especially critical.

Speech is processed in both easy and challenging listening conditions, and children are often in challenging environments. Because of this their auditory system and cognitive functions lose effectiveness. It is in these situations where they need to use every detail they hear, to figure out what is said. Our BrainHearing approach provides the advanced sound processing children need to quickly make sense of sound and reduces the effort they expend on trying to decipher the message freeing up their cognitive resources to understand and learn language. In fact, clinical evidence from Andrea



Pittman and colleagues (2019)⁴ found that children learn words 2.5 times faster using a Ponto system. Additionally, Browning and colleagues (2019)³ demonstrated that our advanced sound processing incorporated into the Ponto system improves a child's ability to understand speech in challenging listening environments when compared to a system that uses conventional technology.

“I cannot say enough good things about how easy Oticon Medical made the process for me. Once we determined that I would be able to get the new device, the upgrade process was very simple and quick!”

– Katie

Watch Video:

www.oticonmedical.com/us/bone-conduction/meet-other-users/users-tell-their-story/bahs/katie

The Ponto System offers parents and caregivers peace of mind through the unique pediatric friendly set of options. These include:

- Advanced sound processing supporting BrainHearing
- A tamper-resistant battery door
- Light Emitting Diode (LED) to verify processor functionality
- A safety line for added retention for active children
- Color options and stickers to personalize the sound processor according to the child's unique style
- Wireless connectivity solutions for listening in challenging environments, such as a classroom.
- Oticon ON app providing access to important notifications regarding the Ponto sound processor battery status and system functionality, as well as the ability to adjust volume and programs, and locate the device should it become misplaced.



Placement of the Softband on the child

When fitting the child with a Softband care should be taken to ensure that their first experience with the device is positive. Consider the following:

- Put the Softband on the child's head loosely at first, with the connection disc against the mastoid or some other bony part of the skull. Make sure that the whole disc is in contact with the skin. Avoid placing the disc against the temporal bone as this may be uncomfortable for the child.
- Tighten the Softband to ensure an effective sound transmission can be achieved, but loose enough not to cause any discomfort. You should be able to put a finger between the Softband and the child's skull.
- Attach the sound processor to the connection plate on the Softband. Begin speaking to your child and observe how they react to the sound. Insurance and the Ponto sound processor on a Softband.

Insurance and the Ponto Sound Processor on a Softband

Should your child be a candidate for a bone conduction hearing device on a sound processor. We have Insurance Services available to support the navigation of this process. Bone conduction hearing devices may be covered by your private insurance company and/or other public insurance companies (i.e., Medicaid).

The Oticon Medical Insurance Support Team will assist you with everything: verification of benefits; submitting paperwork to insurance providers; and requesting and receiving preauthorization for the sound processor. We do this in a confidential and private manner to protect your healthcare information through each step of the process. The following are some commonly asked questions regarding insurance services.

1. How do I contact the Oticon Medical Insurance Support Team?

You can call the Oticon Medical Insurance Support Team directly at **1.855.400.9761** or **insuranceservices@oticonmedical.com**.

2. How do I submit paperwork to the Oticon Medical Insurance Support Team?

If you need to submit any paperwork to our team, please send via mail or fax as listed below. Please be sure that all documents include your name and contact information and are sent to the attention of the Insurance Support team.

Oticon Medical
580 Howard Avenue
Somerset, New Jersey 08873
Phone: 1-855-400-9761
Fax: 1-888-683-8736
Email: **insuranceservices@oticonmedical.com**

3. How long does a request for Prior Authorization take?

A request for prior authorization can take anywhere from 4–6 weeks (or less) However, it depends on the insurance plan. Insurance Support does not control the timeframe of how long it takes for a plan to make a decision. We strictly request the approval and await a decision. Once approved or denied, Insurance Support notifies all parties that a decision has been reached.

4. My insurance carrier denied my prior approval request. What can be done?

As part of our services, Oticon Medical will request a prior approval from a patient's insurance plan. Insurance Support is not responsible for the decision of the insurance carriers. If a request is denied, the patient has the right to an appeal. Please contact **insuranceservices@oticonmedical.com** for additional questions or assistance regarding an appeal.



Be your child's best advocate

Now that you are further along in this journey to better hearing for your child, consider taking some time to do the following:

1. List three goals for you and your child to accomplish in the next year.
2. Keep a notebook of your child's hearing evaluations, medical test results, hearing instruments, therapy notes, and any other important information that you might want to share with others.
3. Keep a journal of your child's responses to sounds while wearing their hearing devices. Your observations will be very helpful to share with the professionals who are working with your child.

References

³ Browning, JM, Buss, E, Flaherty, M, Vallier, T, and Leibolda, LJ. (2019). Effects of Adaptive Hearing Aid Directionality and Noise Reduction on Masked Speech Recognition for Children Who Are Hard of Hearing. *American Journal of Audiology*. Vol. 28 (101–113).

⁴ Pittman, A. L. (2019). Bone Conduction Amplification in Children: Stimulation via a Percutaneous Abutment versus a Transcutaneous Softband. *Ear and hearing*, 40(6), 1307–1315



Chapter 3

Living with a Ponto System

“When you’re riding a bicycle or in a certain situation with a car going by, you could turn in the wrong direction, and it could definitely make a bad situation. Ponto makes me more confident as a mom that my daughter can hear and knows exactly where that sound is coming from.”

– Georgene, mother of Lucy

Watch Video: www.youtube.com/watch?v=9I_buLMAXco

As your child grows, so do their lifestyles and hearing needs. In this section you will find information on what you can expect your child to experience with a bone conduction device as they grow.

A system as unique as your child

As a parent you likely have many goals for your child. One of these goals may be for them to live life without limitations. So, we understand that the device you choose today will need to adapt with your child as they grow and as their needs change in the future. You can rest assured that the Ponto System developed by Oticon Medical with BrainHearing guiding every step will provide your child with the opportunity to hear their best in any environment. You can also trust that our devices are safe and reliable.

Supporting a child's active lifestyle

We offer pediatric-friendly accessories to support busy children. These include a tamper-resistant battery drawer that prevents children from accessing the battery. To prevent the sound processor from getting lost or damaged if it falls off, the Ponto also comes with a safety line.



The processor is splash-proof but not waterproof, so your child will need to remove it prior to bathing, showering, or swimming. It should also be removed during contact sports to avoid damage or loss. During these breaks, you can use a special cover to hide the abutment. Your child should also remove the processor before going to bed.

Ponto skins and stickers give children the unique opportunity to extend their style and personality onto their sound processor.



Wireless connectivity helps your child hear better in noise

We know that learning takes place in and outside of the classroom. Our wireless accessories allow sound to be wirelessly streamed direct to your child's sound processor for improved hearing in difficult environments, especially noisy situations. They are easy for you and your child to pair and use so more time can be spent hearing, communicating, and connecting to their world.

Although your child may not be ready for all our wireless options, these accessories will be there when they are ready.



ConnectClip

The ConnectClip is a remote microphone and a remote control. It features 2.4 GHz wireless technology and allows for the connection to any smart phone.



EduMic

The EduMic is a unique solution for children to optimize listening effort in challenging environments. Similar to the ConnectClip, the EduMic features 2.4 GHz wireless technology and integrates with the Ponto sound processor by offering advanced features for classroom use. The EduMic preserves speech while analyzing, balancing, and applying noise removal to the streamed signal. With the EduMic your child will hear clearer during the noisy car ride home from school, soccer practice and/or at their friend's birthday party. The EduMic can also stream stereo audio from various sources, such as a Frequency Modulation (FM) and Digital Modulation (DM) system, via a universal receiver, a 3.5 mm input jack, or it can function in telecoil mode – making it the perfect classroom accessory. Additional features to help with the management of the device include LED indicators, a retention clip, and protective skins.



TV Adapter 3.0

Children love to watch their favorite movies and play video games. The TV Adapter 3.0 lets your child enjoy stereo sound directly from your TV to your child's sound processor without having the TV volume up too high for others in the room. Now your child will hear clearly, and everyone in the room can enjoy more family time watching your favorite shows together.



Oticon ON app

Parents can feel confident that their child's processor is functioning properly using the Oticon ON app. Change volume, adjust programs, monitor battery status, and find the processor should it become lost are all features incorporated in the app.



Remote Control 3.0

The Remote Control 3.0 offers parents and older children a direct way to adjust program and volume settings on the Ponto sound processor. The Remote Control 3.0 has large easy to use buttons and can be easily kept in an older child's pocket, backpack or on a lanyard for quick access.



Phone Adapter 2.0

The Phone Adapter 2.0 is designed to provide children with a way to stream a phone call from a landline directly to their Ponto sound processor via the ConnectClip. It provides an improved signal-to-noise ratio for a clearer conversation with friends and family members.

Kids and adventures

Planning a family trip? No worries—the implant and abutment are made from titanium so they will not activate an alarm. At the airport inform security personnel that your child is wearing an implantable hearing device. An identification card is available from Oticon Medical. Any recommendation on whether it is necessary to remove the device will be given by security.

Quality and reliability you can trust

The Ponto sound processor is extremely reliable. Designed with the highest quality standards, the Ponto sound processor comes with a two-year warranty.

The most advanced technology today and tomorrow

As part of our BrainHearing promise, your child will have access to future technology through advancements made in signal processing. A simple upgrade to the child's sound processor is all that will be needed to take advantage of these innovations. As a global leader in hearing healthcare, we feel it is our obligation to make a substantial investment in research and development so that you can be assured that your child will have access to the most advanced technology throughout their lifetime.





Chapter 4 Your Extended Family

“Oticon Medical truly cares about everyone, even those of us in the severe-to-profound range.”
– Nancy

Watch Video:

www.oticonmedical.com/us/bone-conduction/meet-other-users/users-tell-their-story/bahs/nancy

Welcome to the Oticon Medical family!

We know that you have a choice in the device you select for your child, which is why we feel it is important for you to understand how we plan to support you and your child throughout their bone conduction hearing journey.

Your connections to Oticon Medical

We offer parents of children with a Ponto device and those considering getting a Ponto for their child multiple ways to connect to us and to each other. We believe that the best way to support you is by developing resources and communities that can be accessed online and support in-person events. Our goal is to provide opportunities to learn more about our products and services and to speak directly to those who use our products.

Join Oticon Medical Friends

When you join Oticon Medical Friends, you will be connected to other Ponto users and caregivers of users all over the United States, and soon the world. You can share your Ponto experiences and ask others for advice and best practices. To top it off, you can also contact Oticon Medical employees directly.

Within the Oticon Medical Friends community you will find features designed to empower you as a parent/caregiver of a user, including the following:

- Personalized details regarding your child's device, including warranty status, for easy tracking.
- User Groups where you can chat and ask questions of other parents, adult recipients, and Oticon Medical employees.
- A Library full of downloadable materials to make life with your child's device even better.
- Direct messaging that enables you to talk directly and privately with other parents, adult Ponto users, and Oticon Medical employees.
- Access to our Online Shop for accessories, where you can purchase Softbands, wireless accessories, and more – all available at your convenience.

To join, make sure you have the serial number for your child's Ponto device and then visit:

<https://www.oticonmedical.com/friends>.

Hearing Super-Stars

This club is dedicated to young Ponto wearers between the ages of three and 13 who have begun the journey to a new world of sound. You will be able to learn from others and share your experiences as a parent or caregiver to a child who wears a Ponto device. We also include fun activities and goodies for your Ponto wearer! To join, please visit:

<https://www.oticonmedical.com/us/info/become-a-superhearing-star>.

Oticon Medical advocates

We offer opportunities for parents to become advocates. Our parent advocates typically share personal experiences about their child's journey to getting a Ponto system. Advocacy is encouraged with the goal of informing others who might not realize how Oticon Medical's products and services could improve their child's life.

You can be as active and involved an advocate as you prefer. All our advocates are volunteers, and we respect their time. How you participate is entirely up to you—every little bit counts!

Here are a few typical advocacy activities:

- Sharing your child's personal journey to better hearing and their experience with Ponto device through social media channels.
- Attending conventions and events. Advocates frequently join us at our booths to answer questions about their child's experiences for conference attendees.
- Communicating (by phone or email) with other parents considering a bone conduction device for their child.
- Raising awareness about hearing loss and bone conduction hearing by hosting local events.

We can assist you with the planning and promotion of such activities as well as supply you with product demos and literature needed to make your event a success.

We are fortunate to have so many enthusiastic parents/caregivers of children with a Ponto system who are willing to share their stories and hope you will join the team! If you would like more information on becoming an advocate, please contact Oticon Medical at **888.277.8014** or by email at info@oticonmedicalusa.com.

Take action — Explore our social media channels and online resources!

Social channels

Facebook	https://www.facebook.com/OticonMedicalUS/
Twitter @OticonMedical	https://twitter.com/OticonMedical
Instagram	https://www.instagram.com/oticonmedical/
LinkedIn	https://www.linkedin.com/company/oticon-medical/
YouTube (US Playlist)	https://www.youtube.com/playlist?list=PLfkq6YxeIJQZPAkrWroIsUCpw_mQJMXy

Facebook groups

We also sponsor two official, private Facebook Groups. To request admission to a Group, please visit:

Oticon Medical Ponto Users Group	https://www.facebook.com/groups/1719496824930424
Oticon Medical BAHS Advocacy	https://www.facebook.com/groups/256864367848089



Bone Anchored Hearing Aid Blog

Finally, we have a blog dedicated to topics of interest to the hard of hearing community at large and those interested in learning more about bone conduction hearing. You can register to receive a notification whenever we put up a new post.

Please visit:

<https://www.boneanchoredhearingaid.com>



Glossary of important terminology

Acquired Deafness: A severe to profound hearing loss that develops later in life.

Audiogram: A graph obtained during a hearing test that illustrates a person's hearing for each ear, indicating the degree and type of hearing loss. It shows the amount of hearing loss (in decibels or dB) at different frequencies.

Audiologist: A professional who treats individuals with a hearing impairment.

Audiology: A science that studies hearing; the profession is concentrated on the assessment and rehabilitation of the auditory and communication problems.

Audiometry: A series of tests administered by an audiologist that assesses hearing and middle ear function.

Auditory: Relating to hearing.

Auditory Brainstem Response (ABR): An objective test used to check the function of auditory pathways by measuring the brain's electrical response to sounds. ABR assessments are commonly used in newborn hearing screenings because the child does not need to react to sounds.

Binaural/Bilateral Hearing Loss: Hearing loss affecting both ears.

Congenital Hearing Loss: A hearing loss that is present at birth.

Decibel (dB): the unit used to measure loudness.

Frequency: The pitch of a sound. Frequency is denoted in Hertz (Hz).

Hearing Threshold: The softest sound that a person can hear at a specific frequency. Hearing thresholds are displayed on an audiogram to show an individual's hearing loss.

Localization: The ability to determine where a sound comes from.

Otology: A physician who specializes in treatment of ear problems.

Prelingual Deafness: Deafness that occurs at birth or early in childhood before language acquisition.

Postlingual Deafness: Deafness that occurs after language acquisition.

Rehabilitation: Specialized training for people with hearing loss to help them learn to speak and understand language through listening. For child who could never hear or speak, sometimes referred to as habilitation.

Residual Hearing: The amount of remaining measurable, usable hearing. Most individuals with hearing loss have some degree of residual hearing.

Speech frequencies: The range of frequencies most important for hearing and understanding speech from 500 to 6000 Hz.

Unilateral Hearing Loss: Hearing loss in one ear.

Because sound matters

Oticon Medical is a global company in implantable hearing solutions, dedicated to bringing the magical world of sound to people at every stage of life. As part of the Demant group, a global leader in hearing healthcare with 14,500 people in over 130 countries, we have access to one of the world's strongest research and development teams, the latest technological advances and insights into hearing care.

Our competencies span more than a century of innovations in sound processing and decades of pioneering experience in hearing implant technology. We work collaboratively with patients, physicians and hearing care professionals to ensure that every solution we create is designed with users' needs in mind. We share an unwavering commitment to provide innovative solutions and support that enhance quality of life for people wherever life may take them. Because we know how much sound matters.



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