

# EARLY INTERVENTION

*“It’s not that we’re fixing a delay,  
we seem to be preventing it  
from ever occurring.”*

— Dr. Christine Yoshinaga-Itano



# Introduction

As your infant/child grows, many hearing tests will be done by a hearing loss specialist called an audiologist. Currently, the Auditory Brainstem Response (ABR) test, also called Brainstem Auditory Evoked Response (BAER), and Evoked OtoAcoustic Emissions (OAE), are available to examine hearing in newborns and infants up to six months of age. Once your infant/child reaches six months of age, there are several other tests that audiologists can do to check and measure his/her hearing loss. Some of the tests include the Behavioral Observation Audiometry (BOA), Visual Reinforcement Audiometry (VRA), and Play Audiometry. (See the Terminology section.)

Each test will give the audiologist information about your infant/child's hearing loss. Most likely, many tests will need to be performed over a long period of time, to figure out the exact kind and amount of hearing loss your infant/child has.



# Frequently Asked Questions

## What is a decibel?

A decibel (shortened dB) is the unit used to measure the intensity of a sound, or how loud a sound is. On the decibel scale, the smallest sound a person is able to hear (near total silence) is 0 dB, and a sound 10 times more powerful is 10 dB. Any sound over 85 dB can cause hearing loss. This hearing loss (caused by too much noise, or noise-induced) is the result of both the loudness of the sound and how long a person hears the sound.

Near total silence _____	0 dB
A whisper _____	15 dB
Normal conversation _____	60 dB
Lawnmower _____	90 dB
A car horn _____	110 dB
A rock concert or a jet engine ____	120 dB
Gunshot, firecracker _____	140 dB

## What is an audiologist?

An audiologist is a highly trained and licensed professional who specializes in the testing, evaluation, and management of hearing loss. The audiologist does tests to figure out the amount of hearing loss your child has, what type of hearing loss it is, and what type of help is needed.

## How do I choose an audiologist?

Be sure that your audiologist is experienced in the testing and management of infants and young children. This is important because testing methods for infants and young children are different than those used for older children and adults who can talk and answer questions.

## How can an infant/child's hearing be tested?

There are different ways to test an infant or young child's hearing. Some do not need any direct participation or effort from your child. Other tests rely on trained observation of your child's behavior when sound is present. Not all tests can be done on every child and every type of test gives different information. More than one type of test should always be performed to provide the most information possible.

## What is an ABR?

An Auditory Brainstem Response test (may be referred to as ABR, AABR/BAER, and BSER) records the brain's response to sound through sensors that are placed on your infant/child's head. Small earphone inserts that look like earplugs, are placed into his/her ear(s) to send the sound. The test requires no direct reply or response from your infant/child. For best results, your infant/child must be asleep since movement can interfere with the test. A diagnostic ABR gives the audiologist information about the amount and type of hearing loss that your infant/child may have.

## What is an OAE?

An Otoacoustic Emissions (OAE) test is a simple test to gather general information about your infant/child's hearing. A small probe is placed into your child's ear canal, after which sounds are carried inside the ear. A normal cochlea (hearing part of the ear) will send a signal back in reply/response. If no signal from the cochlea is picked up by the probe, then there may be a hearing loss. This test cannot measure how much hearing loss is present. It can only tell if the cochlea is working correctly or not.

## What are BOA, VRA and Play Audiometry?

Behavioral Observation Audiometry (BOA), Visual Reinforcement Audiometry (VRA), and Play Audiometry are other methods used to review your child's hearing. These tests are all done in a soundproof booth and should include testing for both tones and speech.

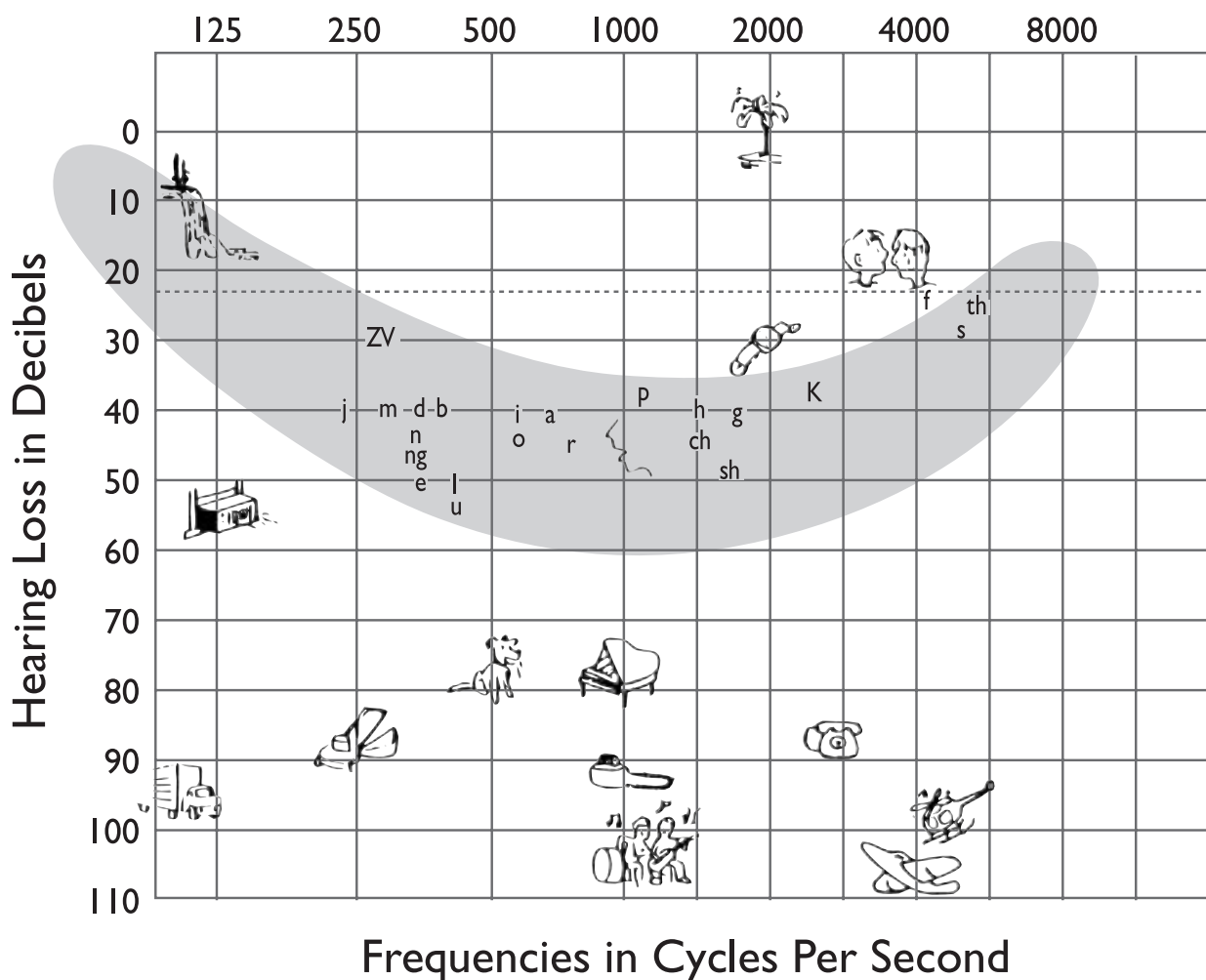
- Behavioral Observation Audiometry (BOA): This is used for infants up to approximately six to nine months of age. In this test, the audiologist closely watches your infant/child's face and body for changes in actions when he/she hears different sounds. Such actions include eye blinking and widening, changes in sucking, trying to find sound/s, and/or body tensing. Although this test gives important information, it should never be used alone to figure out whether or not your infant/child has a hearing loss.

- Visual Reinforcement Audiometry (VRA): This test is generally used for infants and young children from six months to two or three years of age. In this test, the audiologist trains your infant/child to look at a toy that lights up and/or moves whenever he/she hears the sound. Like the BOA, the VRA should not be the only test used to diagnose, or decide whether or not your infant/child has a hearing loss.
- Play Audiometry: This test is generally used for children three to six years of age. In this test, the audiologist trains your child to drop a block in a bucket (or do something like it) whenever a sound is heard. Your child may also be asked to point to simple pictures when told or shown to do so.

### What is an audiogram?

An audiogram is a graph, or picture, on which the audiologist draws the findings of your infant/child's responses to different sounds, and the loudness (decibel) level at which your infant/child can hear that sound. An ABR audiogram can give a good idea of your infant/child's hearing level, usually within ten decibels of the actual hearing loss. The audiogram that you get through behavioral (your infant/child's actions) tests may give you more exact information. However, the findings depend on if, and how, your infant/child helps, or takes part in, these tests. As your infant/child gets older, you can get a more detailed audiogram done. A complete audiogram will show the loudness level at which your infant/child can hear different levels of sound in each ear with and without hearing aids.

### The "Speech Banana"



### **What is tympanometry?**

Tympanometry is not a hearing test. It measures the movement of your infant/child's eardrum (tympanic membrane) and the ability of the middle ear system to move sound to the inner ear. During the test a small probe is placed into your child's ear canal, and there is a slight change in air pressure. The feeling is very much like the feeling of air pressure change when riding in an elevator. Tympanometry can determine if there is middle ear fluid that is changing the hearing test results.

### **What does the ABR/BAER look at?**

Just like how an electroencephalogram (EEG) looks at the way brain waves work, the ABR/BAER looks at how brain waves change when different sounds are heard by the auditory (hearing) part of the body. As the sound travels into the ear, it is changed into nerve signals by the tiny, hair-like nerve fibers of the cochlea (hearing part of the ear). These tiny nerve fibers come together at the auditory (hearing) nerve, which conducts the signals through to the brain. Research has shown that the lower parts of the brain, called the brainstem, are very important in the working of a healthy auditory (hearing) system. During the ABR/BAER test, by putting sounds at several volume (loudness) levels into the ear, we can see if the brainstem is working well. This information can give us a good idea of how well someone can hear.

### **How is the ABR/BAER test done?**

Typically, the ABR/BAER test is done by an audiologist. Your health care provider or current audiologist will most likely refer you to a professional who can do the test, if the test cannot be done at their office.

The audiologist uses a special computer to get and analyze, or study, the ABR/BAER. A soft, foam earplug is placed in your infant/child's ear. This earplug will send sounds at different volume (loudness) levels into the auditory (hearing) part of the body in the ear. Electrodes are placed on your infant/child's

forehead and ear lobes. These electrodes carry tiny, nerve-like signals to the computer. The computer reads these signals and creates a special wave form on paper. By looking at the shape and size of these wave forms, the audiologist can tell if your infant/child has a hearing loss or not, as well as, what type of hearing loss they may or may not have.

### **Why might an ABR/BAER test not be normal?**

There are many reasons why an ABR/BAER test might not be normal.

1. Most importantly, if your child has a hearing loss, that will cause the ABR/BAER test not to be normal. The audiologist can tell if the hearing loss is caused by something not working in the outer or middle ear, or if it is because of a problem with the inner ear.
2. Some neurological (brain) conditions, or illnesses, can also cause ABR/BAER tests not to be normal, or abnormal. An abnormal ABR/BAER can also be caused if your infant/child moves during the test, so it is very important for him/her to stay still while the test is being done. Usually, infants/young children need to be sleeping during this procedure.

### **How do I know if my child needs to have an ABR/BAER test?**

Your infant/child's health care provider may suggest that you see an audiologist for other, earlier tests before an ABR/BAER is done. Usually, the audiologist will try to get responses/replies to sounds through behavioral (action) testing. If the findings of these earlier tests do not give what is needed, the audiologist will likely suggest that an ABR/BAER test be done to rule out hearing loss. Currently in Alaska, two hospitals can do ABR/BAER tests for newborn infants; 1) Providence Alaska Medical Center and 2) Alaska Native Medical Center, both in Anchorage. In addition to diagnostic testing, follow-up with your infant/child's health care provider or an otolaryngologist (a ear, nose, throat doctor) may be also be suggested.

# Tests

Questions for parents to begin asking about their infant/child's hearing tests?

- What does this test measure? What will this test tell me about my infant/child's hearing loss?
- How does this test work?
- Why do we do this test at this time?
- What are you looking for with this test? What do you expect to find with this test?
- How do we read the results or findings of this test?

The audiologist (hearing loss specialist) is an important part of your infant/child's team of caregivers. Make sure that he/she is willing to listen to you and take time to answer your questions. Following are some questions that you may want to ask your audiologist:

- How much experience do you have testing infants and young children? How about fitting infants and young children with hearing aids?
- How much of your time do you spend working with young children (practicing pediatric audiology)?
- Do you know what FM systems are? Do you recommend them for infant/young children?
- How soon do you suggest fitting hearing aids for a deaf or a hard-of-hearing infant/child? (The audiologist should be ready to fit your infant/child with hearing aids as soon as the loss is confirmed.)
- Will you be able to direct me to the speech and language pathologists? How about early intervention programs? (If not, the audiologist probably does not have many pediatric (infant/children) patients.)
- What do you know about cochlear implants? Where can I get more information about them?

*“I’ve learned that it’s not what happens to people that’s important. It’s what they do about it.”*

— 10 year old



# Introduction

One of the most amazing and important happenings that will take place during your infant/child's early years is the learning of language. Babies start to say their first words around one year of age. Around age 4, they know more than 1500 words and begin telling stories. Children learn language skills during the preschool years and these work as a wonderful base for learning in school.

Children with solid language skills often become strong readers and writers. When an infant is born with a hearing loss, this learning of language can be delayed, or not on time. Such delays can be prevented, or lessened, by finding hearing loss early (early detection) and taking action to help your infant/child learn (intervention). Family members can help with infant/children's language, listening and speech while doing natural, daily routines. The following section will give you important information about early intervention, ideas about how you and your family can help your infant/child learn language, and places to find support for your whole family.

Early intervention begins soon after your infant/child has been found to have a hearing loss. Intervention, or help, will usually be provided by Early Intervention/Infant Learning Program (EI/ILP), in or near your community.

The early intervention that you will get through working with EI/ILP can help you understand hearing loss and gain confidence as a parent of a deaf or hard of hearing child. It also will guide you in identifying your infant/child's strengths and needs, and help him/her develop important language skills necessary to become part of the larger community.

There are two main goals of early intervention:

**Goal #1** is to help your infant/child who is deaf or hard of hearing, learn how to communicate, use any available hearing, and to interact with others. All children learn skills best at certain ages. During these "important periods," your infant/child's brain is ready to learn. If these learning chances are missed, it will be harder to learn the skills later in life.

**Goal #2** is to help your infant/child become a fully participating member of the family. Everyone in the family is important to your infant/child's development, especially in learning language and social skills. For example, you will want your infant/child to know what your family talks about at mealtime, and what his/her big brother and sister did at school. And, like all other young children, you will want your infant/child to understand where you are going when you get into the car, when it's time to go to bed, to play, and so on.

*“I’ve learned that when I grow up, I’m going to be an artist. It’s in my blood.”*

— 8 year old



# Frequently Asked Questions

## **What is early intervention?**

Early intervention is the term used for many services available to children, ages birth to 3 years, who have disabilities or developmental delays. A federal law, the Individuals with Disabilities Education Act (IDEA) Part C, covers early intervention services and outlines the rules for those infants/children that qualify for these services. Early intervention services may include home visits, family training, counseling, special instruction, and therapy. These “early intervention” services are set up to help families help their infant/child be the best he/she can be.

## **How will I decide what services are provided?**

After your infant/child’s assessment/evaluation, an Individual Family Service Plan (IFSP) will be developed. Your family works with a team (usually the same people who reviewed your infant/child) to review all of the information gathered about your infant/child. If deaf education services are being considered, a teacher of the deaf is always part of the team. You will want to ask your infant/child’s audiologist to also be involved in the development of the Individualized Family Service Plan (IFSP). The plan is based on the results that you want most for your child’s development. You and the professionals then decide on ways and services to help your infant/child reach these results.

## **Who provides the services?**

The IFSP states who will offer each service and who is in charge of each service. A Family Service Coordinator will work with your family to support your child’s development, and to arrange for services in and outside of the Early Intervention/Infant Learning Program.

## **Where can I find more information about early intervention services in Alaska?**

Early intervention services in Alaska are offered through the Early Intervention/Infant Learning Programs and can be found in 22 communities throughout Alaska. These programs are managed by the State of Alaska, Department of Health & Social Services, Division of Public Health, Section of Maternal, Child & Family Health, Special Needs Ser-

vices Unit. If you are unable to find your ILP Providers in the Resource section, call Alaska Info at 1-800-478-2221 or visit the AK Info website at [www.ak.org](http://www.ak.org).

## **What is the Early Intervention/Infant Learning Program?**

The Early Intervention/Infant Learning Program (EI/ILP) is a family-centered program for children from birth to three years of age. They work with families whose children may have difficulties with:

- Communication/speech
- Movement
- Social/behavior
- Thinking/reasoning
- Vision/hearing
- Feeding/dressing

## **What can the Early Intervention/Infant Learning Program do?**

- Check whether your infant/child’s learning is moving forward normally. If your infant/child is not, EI/ILP can help to figure out whether there is a developmental delay.
- Give you information about developmental milestones.
- Work with your family to form an individualized plan of services for infants/children who qualify.
- Offer services such as special instruction in occupational (work/job) therapy, physical therapy and speech therapy, and other activities and materials to improve your infant/child’s learning.
- Offer your family information and support in finding other services and assistance.

## **Why are Early Intervention/Infant Learning Program services important?**

- The first years of your infant/child’s life are the most important ones in their growth/development.
- Every infant/child develops at their own speed/rate.
- Infants and toddlers learn by playing.
- You, as the parents or caregivers, are the most important people in moving along your infant/child’s growth/development.

### **Who should contact the Early Intervention/Infant Learning Program?**

Any person that is worried about an infant/child's growth/development can contact EI/ILP. These people include parents, friends, healthcare providers, and social, health and education services agencies.

Who can apply for and receive services?

1. Any child who is born prematurely (early), or is in any way "at risk" of developing a delay.
2. Any child whose assessment/review points toward a setback in one or more developmental areas, such as:
  - Significant/progressive hearing loss
  - Down Syndrome
  - Complex seizure disorder
  - Cerebral palsy
  - Hydrocephaly
  - Congenital heart disease
  - Fetal Alcohol Syndrome (FAS)
  - Bronchopulmonary dysplasia (BPD)

### **How do I know if I can apply for the Early Intervention/Infant Learning Program for my infant/child?**

Alaska law states that for an infant/child to qualify for Part C of the IDEA law, that infant/child must have a fifty percent or greater developmental delay in one or more areas of development listed above. In addition, a health care provider must state that the delay is present in the infant/child or that a diagnosed condition, illness, will most likely end up in such a delay. The state EI/ILP regulations (rules) allow infants/children with delays or risk factors that are not listed above, to be enrolled with limited services, if there is available funding.



### **How much will the Early Intervention/Infant Learning Program cost?**

Some services including child find, evaluation and assessment (review), forming a special plan of services for your infant/child and service coordination, are offered FREE to families. There may be a fee for some Early Intervention/Infant Learning Program services, but no one will be not be given services because they are not able to pay.

### **Where are the services?**

Early Intervention/Infant Learning Programs serve children throughout Alaska. Services can be offered in the natural surroundings for your infant/child, such as your own home, or other settings, such as a child care center.

### **What does the Early Intervention/Infant Learning Program system offer for children who have disabilities but do not qualify for services offered through the state Part C definition?**

All families sent to the system who are not put into services are offered re-screening of their child's developmental progress on a routine basis, and receive a developmental status report and suggested home activities to improve their child's development.

### **Where can I get more information about the Early Intervention/Infant Learning Program?**

Contact the Early Intervention/Infant Learning Program at:

Department of Health & Social Services  
Maternal, Child and Family Health  
3601 C Street, Suite 934  
P.O. Box 240249  
Anchorage, Alaska 99524-0249  
Anchorage (907) 269-3400  
Statewide 1-800-478-2221  
[www.state.ak.us/dph/mcfh/default.htm](http://www.state.ak.us/dph/mcfh/default.htm)

### **How can I find out who the ILP provider is in my community?**

See list of providers in Resources section.

# Check List

- Do I think that my infant/child might have a hearing loss? Call your infant/child's health care provider now!
- Does my infant/child have a hearing loss? Call your infant/child's health care provider for the name of an audiologist (hearing loss specialist), an otolaryngologist (ear, nose, and throat doctor), and the Early Intervention/Infant Learning Program in your community (see Resource section for contact information).
- Are there other parents I can talk to? Call the audiologist or the Early Intervention/Infant Learning Program in your community for a referral (see Resource section for contact information).
- Are new people always being added to my infant/child's intervention team? Find out who they are from the service coordinators and write down their names, phone numbers, addresses, and e-mail addresses.
- What are my goals for my infant/child and for our family? Write them down and plan to share them with the infant/family specialist.
- Am I beginning to notice so many little kinds of progress that I forget them by the end of the day? Start a diary and write just a few words about each little improvement in your infant/child's growth.
- Have I found a pediatrician, an ear, nose, and throat (ENT) doctor, and an audiologist who really understand my infant/child and listen to me? Keep up the relationship.
- Have I found support for my family and myself? Remember to take care of everyone's needs. The whole family is important.

## Team Members

The professionals who will play a part in the management and care of your infant/child's hearing loss are all members of your infant/child's team of experts. It is important for you, as parents, to have these experts on your team. However, don't ever forget that you are the only ones who can be the team manager or coach, and speak up for your infant/child. You know your child best! It does not matter how much professionals know, don't ever let them take your place in the management and care of your infant/child's education and development/growth.

You will probably meet the members of the team in the following order:

1. A health professional pediatrician (infant/child doctor), family doctor, or public health nurse
2. An audiologist (hearing loss specialist)
3. An otorhinolaryngologist (ear, nose, and throat doctor)
4. A child service coordinator
5. A speech and language pathologist
6. A teacher of the deaf or hard of hearing



# How to Choose an Audiologist

The audiologist is a vital part of your child's team of caregivers. Make sure that he/she is willing to listen to you and take time to answer your questions. Following are some questions that you may want to ask your audiologist:

- How much experience do you have testing children? Fitting infants with hearing aids?
- How much of your practice is devoted to pediatric audiology?
- Are you familiar with FM systems? Do you recommend them for young children?
- How soon do you recommend fitting hearing aids for a deaf or a hard-of-hearing child? (The audiologist should be ready to fit your child with hearing aids as soon as the loss is confirmed.)
- Will you be able to direct me to the speech and language pathologists? To early intervention programs? (If not, the audiologist probably does not have many pediatric patients.)
- What do you know about cochlear implants? Where do I get more information?



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*“Be gentle with yourself, learn to love yourself, to forgive yourself, for only as we have the right attitude toward ourselves can we have the right attitude toward others.”*

—Wilfred Peterson

# Infant Learning Program (ILP) - Individualized Family Service Plan (IFSP)

The Individualized Family Service Plan must contain the following:

- A statement of your infant/child's present level of development/growth.
  - A statement of your family's resources, priorities, and concerns about your infant/child.
  - A statement of the major outcomes expected.
  - A statement of specific early intervention services necessary.
- A statement of the natural surroundings (such as the home or a community setting) in which early intervention services will be done, including reason(s) if services are not provided in natural surroundings.
  - The beginning dates of services, and length of those services.
  - The service coordinator who will be in charge of putting the plan into place.
  - The steps to be taken to support your child's move to preschool or other services.

