
Welcome to the Early Start Online Special Topic course on Hearing Assessment: Decisions and Documentation for Early Start

This presentation:

- Defines evidence-based hearing screening practices;
 - Offers procedures that can be implemented to monitor the hearing status of all children enrolled in Early Start.
 - Describes the steps through which service coordinators support families, from newborn hearing screening to diagnostic evaluation and audiological follow-up, as recommended; and
 - Explores ways to access hearing screening resources in the local community.
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Language is . . .

- a cognitive process.
 - the capacity to think and communicate in symbols.
 - a uniquely human ability.
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In order to use language for communication, we need a way to share our thoughts, feelings, and ideas with other people. Speech—or spoken language—is one way to do that. Signed language or written language are other ways to share our thoughts, feelings, and ideas. All of these methods of communication rely on the same neurological structures to develop; they are just produced in different ways.

Spoken language is the most common communication method, and it relies on three factors:

1. The speaker's ability to control the movements of small muscles in the lips, tongue, jaw, and palate, in very precise ways to create specific sound combinations—what we think of as words;
 2. The speaker and listener sharing the same code of sound combinations—meaning they both understand and use the same words; and
 3. The listener's ability to hear those words clearly and accurately.
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Difficulty with any of these abilities can impact communication development. Speech can be garbled or imprecise making it difficult to understand. The codes in the minds of the speaker and the listener may be different, like Spanish and Mandarin or English and Farsi. And the listener may have a difficult time hearing the words being spoken. Of these three factors the one that develops first and is undoubtedly the easiest to go undetected is an issue with hearing.

Why is that? Because nearly all babies experiment with their voice and enjoy playing with sound. Deaf babies babble in a way very similar to their peers with normal hearing levels. Reduced hearing levels are often undetectable through observation alone, especially in the first several months of life, a critical time when infants explore information through all their senses. It may *look like* a baby heard something when, in reality, he only saw it or felt it. Observing a child's behavior is not a very reliable way to judge how well he hears. This is why evidence-based physiological measures to evaluate hearing are necessary.

In order to give all children the best possible opportunities to learn and grow, we must be diligent about insuring that hearing is normal or, for those with reduced hearing levels, early intervention is available as soon as possible.

In a presentation at the 2016 Early Start Partners Symposium, entitled "Decisions and Documentation for Hearing Assessment," Jonathan Hill, Federal Programs Monitor with the California Department of Developmental Services described the critical nature of hearing assessment and its importance in determining eligibility for Early Start.

He also discussed federally mandated early intervention services related to hearing status and the role of Early Start personnel in regularly monitoring the hearing of all eligible children.

Evidence-Based Procedures Used to Assess Hearing

In the field of audiology, the term "hearing screening" is considered the first step of a hearing assessment, meaning the words screening and assessment can be used interchangeably. This is different from the way we use these terms in Early Start. For clarity's sake when discussing testing within this course, we will use the terms "hearing screening" and "hearing assessment" to mean the same thing. A hearing assessment, however, may also include additional procedures, which will not be addressed in this presentation.

There are two methods for conducting a newborn hearing screening. Both have strong evidence to support their use:

1. Auditory brainstem response, or A.-B.-R. and
2. Otoacoustic emissions, or O.-A.-E.

Click on the procedure to learn more about it. When you have learned about both procedures, click the play button in the toolbar below to continue

Auditory brainstem response measures how well sound travels through the ear to the brainstem. With an A.-B.-R., sounds are played through small earphones, and the response of the brainstem to those sounds is measured automatically through small sensors placed on the baby's head.

Otoacoustic emissions measures tiny sounds created by the movement of nerve cells inside the inner ear. O.-A.-E. is conducted using a small hand-held device that makes a sound to stimulate the nerve cells then detects the tiny echo that should come back.

Both these procedures are objective, physiological tests and are quick, painless, and non-invasive. Both can be performed while a newborn sleeps or rests quietly and neither requires the baby's participation.

The results of either test can be "pass" or "refer." "Pass" means there was no need for further testing at that time, while "refer" indicates that an objective, physiological hearing screening should be repeated by one month of age to confirm or rule out the need for further testing. Results of the second physiological hearing screening can also be "pass" or "refer"; however, this time, "refer" means the child should undergo an audiological diagnostic evaluation. Best practice recommends completing that testing by three months of age, with an aim of having any needed early intervention services in place by six months of age.

Research tells us that babies are already listening in the womb and continue to listen to the world around them after they are born. Early on they recognize familiar voices, understand emotion and tone of voice, and study the faces of their caregivers to learn the code they are using to communicate. Without normal hearing this process can be greatly impacted. That's why it's critical that every newborn has a hearing assessment to ensure that they're able to hear the world around them, especially the words their caregivers use.

In 2002, California began implementing a statewide newborn hearing screening program to ensure every family had "the opportunity to have their baby's hearing screened" prior to discharge from the hospital. By 2006, newborn hearing screening was available in every hospital and birthing center throughout the state. The vast majority of babies pass the newborn hearing screening, but a few—two to four in one thousand infants—do not, and they are referred for additional testing. With over five hundred thousand births in California each year, about one thousand to fifteen hundred infants are identified as Deaf or Hard of Hearing annually. For children who received special care in a neonatal intensive care unit, the likelihood of hearing problems is approximately 10 times higher.

Prior to the newborn hearing screening program, reduced hearing levels sometimes went undetected for many months—or even years—with children being identified as late as kindergarten or first grade. The lack of adequate access to sound for any extended period of time can dramatically impact a child’s spoken language development. It can also interfere with cognitive and social-emotional development and result in long-term lags in academic achievement. Many of these issues may be preventable through early and periodic identification of reduced hearing levels, including hearing problems that are mild or unilateral—meaning in only one ear—and those brought on by chronic ear infection. In fact, repeated middle ear fluid and ear infections are leading causes of reduced hearing levels later on where no concern was present at birth. Hearing levels can also be impacted later on by genetic factors and prenatal infections despite no concern being present at birth.

Risk Assessment

Hearing issues can begin at any time throughout childhood, and the incidence of permanent reductions in hearing doubles between birth and school-age. Hearing problems can also be “progressive,” meaning the reduction in hearing becomes more and more significant over time. The American Academy of Pediatrics recommends that physicians and other health care providers use a risk assessment and ensure that appropriate follow-up is taken—including objective, physiological hearing assessment procedures and audiological assessment. Every child with one or more risk factors for hearing loss should have regular hearing surveillance and be referred for an audiological assessment at least once between 24-30 months.

Early Start service coordinators can also use a risk assessment procedure to support families in thinking about hearing and to contemplate the need for further testing. A sample risk assessment form is provided with this course. It is *not* a required document within the Early Start system, but, instead, provides an example of what a quality risk assessment might include.

It’s important that service coordinators revisit the subject of hearing at each periodic and annual review—at a minimum—and respond to any concerns raised by the family or IFSP team. Service coordinators also need to document any actions recommended and steps taken to follow-through with those recommendations. A risk assessment does not take the place of an objective, physiological hearing screening, but can serve as a way to raise the topic of hearing, revisit it regularly, and monitor follow-up.

Service coordinators can do many things to explore risk factors with a family. They can:

1. Request and review medical records;
2. Discuss any concerns the parents have about hearing;
3. Review the developmental hallmarks related to hearing, recognizing that delayed spoken language development is itself a risk factor for reduced hearing levels; and
4. Ask open-ended questions about:
 - Any history in the family of hearing problems during childhood;
 - The mother's pregnancy, labor, and delivery;
 - Any out of the ordinary events that occurred at birth or afterward;
 - Significant illnesses and accidents, including head trauma;
 - Extended or repeated hospital stays, including in the NICU;
 - Diagnoses such as:
 - In utero infections, like cytomegalovirus or C.-M.-V., rubella, mumps, herpes, chicken pox, and toxoplasmosis, or other infections, like H.-I.-V.;
 - Syndromes, like CHARGE, Down, and Treacher-Collins. About 400 syndromes include the possibility of reduced hearing levels;
 - Craniofacial anomalies, like a small or misshapen outer ear, missing or narrow ear canal, or other physical characteristics associated with syndromes known to include reduced hearing levels; and
 - Neurodegenerative disorders, like a stroke in utero or a brain malformation present at birth;
 - Medications like gentamycin, tobramycin, diuretics, and chemotherapy drugs that can damage hearing; and
 - Medical procedures such as extracorporeal membrane oxygenation or "ECK-mo," blood transfusions, extended periods of jaundice, or prolonged ventilation.

Clearly, a large number of genetic, prenatal, and beyond birth factors can impact a child's hearing, so the need for ongoing conversation about hearing is critical.

A conversation with a family about these topics may include questions and statements similar to the following:

1. How well does your child hear? What sorts of sounds does he respond to and how does he respond?
2. What's happened that's been exciting or concerning since he was born?
3. Who else in your family had similar concerns or issues during childhood?
4. Tell me about your pregnancy. How was your health? How was the labor and delivery?
5. How was your child's health when he was born?
6. How has your child's health been since he came home from the hospital and how is it now?
7. What doctors or other health care providers have you or your child seen since his birth?

These sorts of questions and statements encourage a parent to tell their story, which the service coordinator and family can explore together, looking for possible risk factors related to hearing. It's a good rule of thumb to avoid "yes-no" questions that sound as if you are ticking off boxes on a checklist and also to avoid asking families any questions you already know the answers to. It's fine to check and clarify what you know to ensure that the information taken down is correct. A risk assessment is only as useful as it is accurate.

The Hearing Assessment Infographic

This infographic, entitled “Documentation of Hearing Status,” was introduced at the Early Start Partners Symposium mentioned at the beginning of this presentation. It is useful as a guide to understanding the hearing screening process in California. Each step along the path involves a question to be answered and/or an action to be taken. Let’s explore the infographic together.

The first question to ask yourself is, “How old is this child who’s been referred to Early Start?” For children who are referred at less than six months of age, the process is generally pretty simple. If the child had and passed a newborn hearing screening in the hospital where he was born, the service coordinator simply needs to obtain documentation of that result to include in the child’s file. Results can be sought, with parent permission, from the birthing hospital, the child’s primary health care provider, or the parents themselves.

If the child was referred for a repeat screening, the service coordinator may need to assist the family in making that happen. In both these cases, the child will be known to the Hearing Coordination Center for the local community, and personnel there will also be in touch with the family to ensure that follow-up happens in a timely manner. You will learn more about the Hearing Coordination Center later in this presentation.

Occasionally, a child under six months is referred to Early Start who did not undergo a newborn hearing screening procedure. The family may have moved to California from a location that did not provide this service. It’s best practice in this sort of situation for the service coordinator to support the family in accessing an appropriate, evidence-based hearing screening. Since this child did not participate in the California Newborn Hearing Screening Program, he won’t be known to the Hearing Coordination Center. A risk assessment can be used to determine next steps, provide recommendations to the I.-F.-S.-P. team, and document follow-up needed and the timeline over which it occurs.

For children referred to Early Start who are more than six months old, for example, a two-year-old who is not yet using words, newborn hearing screening results are no longer valid. This is because things can change so quickly in the life of a young child, and early intervention staff can help to ensure that a progressive or delayed-onset hearing problem is not present. This family will also likely not be known to the Hearing Coordination Center, but their staff may be very helpful to service coordinators in finding audiological services in the local community.

Accessing Hearing Screening Resources in the Local Community

An audiologist, or other qualified personnel under an audiologist's supervision, will be the most likely professional to provide those services. An audiologist is trained and experienced in:

- Identification of children with reduced hearing levels;
- Identification of children with auditory disorders like auditory neuropathy spectrum disorder or A.-N.-S.D.;
- Determination of the type, degree, and configuration of hearing problem; and
- Provision of services for the prevention and treatment of reduced hearing levels and auditory disorders.

Strong working relationships with audiologists in the local community are advantageous to service coordinators in order to support families in regularly monitoring the hearing status of their children. Understanding what local resources might best meet a child's need when the clinical team has identified hearing as an area of concern, when a referral to an audiologist is needed, and how to support a family in obtaining such a referral are critical skills of the Early Start service coordinator.

Obtaining a hearing screening for a child is easier in some communities than others due to location, population size, and the availability of qualified service providers. Service Coordinators can use thorough risk assessment procedures to work with a family in determining if an objective physiological hearing screening would be appropriate for the child.

If a service coordinator is unfamiliar with audiologists and other personnel qualified to screen and evaluate hearing in the community, Hearing Coordination Center staff can serve as an excellent resource. Hearing Coordination Centers are a component of the Newborn Hearing Screening Program mentioned before and are managed by the California Department of Health Care Services. The mission of the Hearing Coordination Centers is to monitor and support the state's newborn hearing screening program. No one is better informed about who is available in a local community to provide hearing screening and audiological evaluation services. There are three Hearing Coordination Centers throughout the state. To find the Hearing Coordination Center that covers your local community, click to visit the Hearing Coordination Center's website. The link will open in a new window or tab. When you are ready to proceed, click back into this window or tab, and click the play button in the toolbar below.

Returning to the Hearing Assessment Infographic

Returning to the infographic and a child who has been referred to Early Start at less than six months of age, the results of the initial screening in the hospital and the repeat screening within the next month, may lead to a referral for a full audiological diagnostic evaluation. The results of that diagnostic evaluation may be a "pass" or a diagnosis of reduced hearing levels or an auditory disorder.

Service coordinators and Hearing Coordination Center personnel collaborate on these cases to ensure that early intervention services are in place as soon as possible. Once that occurs the Hearing Coordination Center bows out, leaving responsibility for follow-up with Early Start personnel.

A similar set of circumstances may occur for children referred to Early Start after six months of age. A physiological screening procedure, which an Early Start service coordinator helped to arrange, may result in a referral for a full diagnostic audiological evaluation. The child may pass the evaluation, and only require periodic monitoring of hearing status while eligible for Early Start.

The child might also receive a diagnosis of reduced hearing levels or an auditory disorder. Because he might not be known to the Hearing Coordination Center, the Early Start service coordinator may be the family's primary support in arranging any recommended follow-up, such as:

- Referral for medical and other services necessary for appropriate treatment and intervention;
 - Access to auditory habilitation, speech reading, orientation and training related to listening devices, and other appropriate intervention services such as signed language instruction;
 - Selection, fitting, and dispensing of appropriate listening and vibrotactile devices; and
 - Evaluation of the effectiveness of those devices.
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Regardless of how you get to the last box on the infographic, service coordinators need to revisit hearing status regularly and work with families at each periodic and annual IFSP review, at a minimum, to explore the need for further testing or follow-up. New concerns may arise or previous concerns may be more significant as the child grows. Either way, it is best practice for Early Start personnel to continue to monitor hearing of all eligible children through risk assessment and/or objective, physiological hearing screening procedures, continually looking out for delayed-onset and/or progressive hearing problems. Something as common and simple as repeated ear infections may be an important red flag. Remember, hearing problems can be difficult to identify by simply watching a child's behavior.

The hearing assessment infographic and risk assessment described in this presentation can be useful tools for service coordinators as they navigate the hearing assessment process. It may be helpful to carry a copy of the infographic and risk assessment forms on a daily basis, as you may never know when a concern about hearing may arise.

Service coordinators have a multi-faceted job and often support families in countless ways. Being well versed in the hearing assessment process and the community resources available to ensure that every child's hearing is monitored appropriately are two small components of that job. Both of these responsibilities are critical to the future development of all children served by Early Start. Service coordinators are to be commended for their work with families and children, particularly in light of the complex nature of service coordination. Thank you for all you do!
