PATHWAYS

FOR

FAMILIES

Of Children
Who are Deaf
or
Hard of Hearing

A Special Thanks

A special thanks to the parents of children who are deaf and hard of hearing in Alabama for their many contributions to the development of this Resource Book. Their knowledge, passion and valued experience have led to its contents. This book may be used by professionals as they come alongside families and by parents as they make decisions related to appropriate services and supports for their child and family.

Alabama's Early Intervention System

Alabama Department of Rehabilitation Services

602 South Lawrence Street

Montgomery, Alabama 36104

Child Find 1-800-543-3098

(334) 293-7500

Organizations & Websites Which Can Assist You:

1. Alexander Graham Bell
2. American Academy of Pediatrics
3. American Cochlear Implant Alliance Foundation
4. ASHA - American Speech-Language Hearing Association
5. ASL-LEX
6. Auditory Verbal Therapy
7. Baby Hearing
8. Beginnings of N.C.
9. CDC - Center for Disease Control
10. Cues Speech
11. Deaf Blind Resources - National Deaf Blind
12. Deaf Sense
13. First Years & Ober Kotter Foundation
14. Gallaudet University
15. Hands & Voices
16. Hearing First
17. John Tracy Clinic
18. Listening for Life
19. NAD
20. NCHAM
21. NIDCD
22. Success For Kids with Hearing Loss
23. The Moog Center (My Baby & Me)
24. Articles
25. Milestones & Developmental Checklists
26. Additional Resources

27. AEIS
28. CRS
29. AIDB

1) Alexander Graham Bell www.agbell.org
Children With Hearing Loss Can Hear and Speak
Some babies are born with hearing loss. Other children are born with normal hearing and begin to have hearing problems as they grow older. No matter the reason for the hearing loss, parents often struggle to understand, accept and sometimes even to act. These feelings are normal and you will get through them. AG Bell is committed to equipping you with the tools you need to take action. Here, we provide you with information about language development, early intervention, hearing technology and more that can help you ensure your child has the opportunity to develop language on par with children who have no hearing loss.

2) American Academy of Pediatrics www.pediatrics.org
Supplemental document to the recommendations of the Joint Committee on Infant Hearing (JCIH), which provides comprehensive guidelines for early hearing detection and intervention, establishing strong early intervention systems with expertise to meet the needs of children who are deaf or hard of hearing.

3) American Cochlear Implant (ACI) Alliance Foundation ACIA www.acialliance.org
The mission of the American Cochlear Implant (ACI) Alliance Foundation is to advance access to the gift of hearing provided by cochlear implantation through research, advocacy and awareness.

4) The American Speech-Language-Hearing Association (ASHA) www.asha.org
The American Speech-Language Hearing Association is the national professional, scientific, and credentialing association for 198,000 members and affiliates who are audiologists; speech-language pathologists; speech, language, and hearing scientists; audiology and speech-language pathology support personnel; and students.

5) ASL-LEX www.asl-lex.org
About ASL-Lex
ASL-LEX is a database of lexical and phonological properties that have been compiled for nearly 1,000 signs of American Sign Language.

needs of children who are deaf or hard of hearing. Our impartial support helps families make informed decisions and empowers them to advocate for their child's needs. We support deaf parents who have children who are hearing and collaborate with the professionals who serve all of our children.

9) Center for Disease Control, EHDI, (Early Hearing Detection & Intervention
www.cdc.gov

- Decision Guide to Communication Choices
- Making a Plan For Your Child
- Early Intervention: Communication and Language Services for Families of Deaf and Hard-of-Hearing

10) Cued Speech www.CuedSpeech.com
Cued speech is a visual communication system - mouth movements of speech combined with "cues" to make all the sounds (phonemes) of spoken language look different.

11) Deaf Blind Resources - National Deaf Blind www.nationaldb.org
NCDB, in partnership with state projects, has worked to refine a vision statement for our national collaborative work. The following statements message our values as a network and offer a public expression to our collective objective.
Vision Statement: Children and youth who are deaf-blind receive supports and services that allow them to experience full integration and participation in society including education, employment, community, and social relationships.
Our Mission is to provide families, professionals, and the community with:

- Opportunities for shared leadership and collaboration
- A national network of supports and services across the age range
- Personnel who are qualified and knowledgeable
- Systems with improved capacity

12) Deaf Sense www.deafsense.com
Here at Deaf Sense, we believe everyone can and should succeed. We are educators and parents of Deaf children who desire that each deaf child have every opportunity to thrive. We know that it truly is 'what is between the ears that counts,' and when we use that mind to its full ability, nothing can stop us. Life is 20% what you do and 80% what you think about. It is time to teach valuable mental tools that can move and empower others to greatness.

At Hearing First, we want all children to benefit from the availability of newborn hearing screening, the advances in technology, and the early learning services in their communities. We want all children to have the opportunity to take advantage of access to sound – a critical building block for future success.

17) John Tracy Clinic www.jtc.org

Thank you for your interest in John Tracy Clinic! Who We Are - John Tracy Clinic's provides parent-centered services locally and globally to young children with hearing loss, offering families hope, guidance and encouragement. Established in 1943 by Louise Treadwell Tracy, JTC is now one of the world's most acclaimed private providers of audiology diagnostics, education, resources and support for families who have infants or young children with hearing loss. Today we serve more than 3,200 families annually. Our goals are to help children develop the speech, language and listening skills they need to thrive in the hearing world. Further, we equip their parents with the necessary knowledge and training to help their children achieve their full communication potentials. Our services include comprehensive pediatric audiological evaluations, a parent-infant program, auditory-verbal therapy services, family and parent support programs, counseling services, worldwide parent education, an auditory verbal preschool, as well as professional education, including a master's degree program in partnership with Mount Saint Mary's University Los Angeles.

18) Listening For Life www.listeningforlife.com

This website is designed for parents of children with hearing impairments, to better understand the practice of Auditory-Verbal Therapy. It will provide an introduction to AVT and it's principles. It will guide you through the wonders of AVT and the possibilities for your child as he/she develops into a healthy, happy hearing adult. You will find information about what AVT is, who is involved in the AVT process, how AVT can help your child and what you can do at home to facilitate language learning. Keep a contact page to log information you receive when speaking with various individuals, (ENT, Audiologist, Physician, Speech Pathologist, etc.) This website is meant to be an introduction to AVT for parents and professionals. Over the course of your child's therapy there will be a world of questions you may have. I am available to answer questions you and your family may have. I have also compiled a list of web sites you may find helpful to look at. Any

22) Success For Kids with Hearing Loss www.successforkidswithhearingloss.com
Supporting Success for Children with Hearing Loss began in 2011 and was created by Karen Anderson, PhD, with the goal of creating an 'umbrella website' for teachers of the deaf/hard of hearing. Karen had many practical materials that were frequently requested and had developed a personal website of these tools. Supporting Success built on the concept of making practical information readily available, resulting in the current resource-packed website.

23) The MOOG Center (My Baby & Me) www.moogcenter.org
The Moog Center for Deaf Education is an independent, not-for-profit school that provides educational services to children with hearing loss birth to early elementary years and their families. Our goal at the Moog Center is to make it possible for children with hearing loss to talk, well enough to compete academically and socially with their hearing peers. When children leave the Moog Center, they are prepared to transition to their local schools and enjoy their education alongside their hearing classmates. We lay the ground work for children to achieve successful and fulfilling lives. Ninety-five percent of our alumni have chosen to receive post high school education. *At the Moog Center for Deaf Education we teach deaf children to talk. And we teach others how to do it, too.*
The Moog Center consists of the following programs:

- *The Family School*
- *The Moog School*
- *Teleschool*
- *Audiology*

- *Professional Consulting*
- *Educational Consulting*

At the Moog Center we:

- *create curricula*
- *present nationally and internationally*
- *have top-notch audiology*
- *are outcome based*
- *provide results*

ALEXANDER GRAHAM BELL

www.agbell.org

Children With Hearing Loss Can Hear and Speak.

Some babies are born with hearing loss. Other children are born with normal hearing and begin to have hearing problems as they grow older. No matter the reason for the hearing loss, parents often struggle to understand, accept and sometimes even to act. These feelings are normal and you will get through them.

AG Bell is committed to equipping you with the tools you need to take action. Here, we provide you with information about language development, early intervention, hearing technology and more that can help you ensure your child has the opportunity to develop language on par with children who have no hearing loss.

How does hearing work?

What is a speech banana?

What causes hearing loss?

Is all hearing loss the same?

No. There are actually five different types of hearing loss:

1. **Conductive:** Occurs when there is a condition of the outer or middle ear that prevents sound from reaching the inner ear and brain. Causes can include blockage of the outer ear or ear canal, an ear infection with fluid, or a malformation of the outer or middle ear. The hearing loss may be temporary or treatable with medication or surgery. If the condition cannot be addressed through medication or surgery, many people with conductive hearing loss may benefit from hearing aids.
2. **Sensorineural:** Usually the result of a problem with the cochlea, either through malformation or damage. Damage can occur from infections such as meningitis, or as a side effect of certain ototoxic medications (toxic to parts of the ear). This type of hearing loss typically cannot be treated with medication. Options such as hearing aids, middle ear implants or cochlear implants vary depending on the cause and severity of the hearing loss. Having your child fitted with appropriate hearing devices as quickly as possible following diagnosis is an important step towards improving your child's access to sound.
3. **Mixed:** A combination of conductive and sensorineural hearing loss.
4. **Neural:** A rare condition resulting from damage or malformation to the auditory (hearing) nerve that connects the cochlea (inner ear) to the brain. The hearing loss is usually profound and permanent. Traditional treatment options like hearing aids or cochlear implants are typically not viable because in cases of neural hearing loss, the auditory nerve is not able to transmit information to the brain. In some cases, auditory brainstem implants have been utilized with limited success.

How does hearing work?

What is a speech banana?

What causes hearing loss?

Hearing loss may result if any part of the hearing process along the auditory pathway is not functioning properly, which causes a disruption to sound as it travels towards the brain. The cause can be genetic, environmental, due to illness or even unexplained.

- **Genetic** - In more than 50 percent of pediatric hearing loss cases, it is believed that genetic factors are the cause. Genetic or hereditary hearing loss occurs when a gene from one or both of the parents affects any portion of the outer, middle or inner ear, causing varying degrees of hearing loss.
- **Prenatal Exposure** - In some cases, an in utero infection, illness, or toxin during the mother's pregnancy can be passed on to a baby in utero and cause hearing loss.
- **Perinatal Experiences** - Procedures performed or medications used to save a baby's life in an emergency (such as use of a ventilator or a strong antibiotic) can also affect hearing.
- **Acquired Hearing Loss** - When hearing loss occurs after birth, it is often due to factors such as:
  - **Chronic ear infections, also called otitis media:** A common issue for many children and typically causes only temporary hearing loss. However, prolonged issues without treatment or repeated cases can affect hearing and cause more permanent damage.
  - **Ototoxic drugs:** Usually prescribed to treat serious problems such as meningitis, this class of medications can affect hearing.
  - **Disease:** Conditions such as otosclerosis, Ménière's disease, meningitis and mumps can affect hearing. The impact on hearing varies depending on the cause, severity and duration of treatment.

How does hearing work?

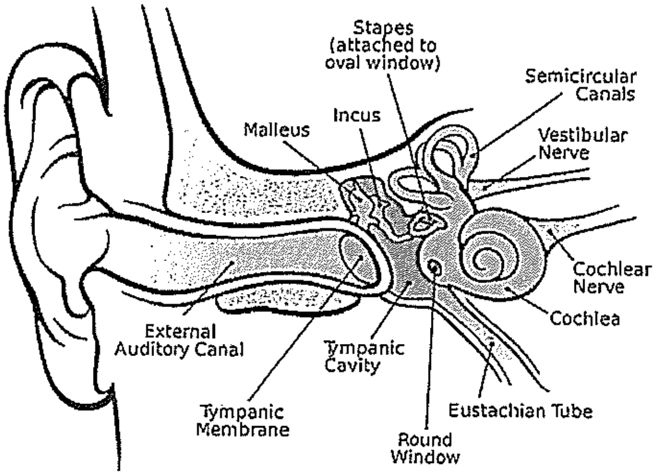
Hearing is a complex process that involves many parts of the ear working together to convert sound waves into information that is sent to the brain where that sound is interpreted and understood.

The ear consists of three main parts:

THE OUTER EAR
(the external ear and the ear canal)

THE MIDDLE EAR
(the ear drum and the three very small bones that make up the ossicular chain: the malleus, incus and stapes)

THE INNER EAR
(the cochlea and auditory nerve)



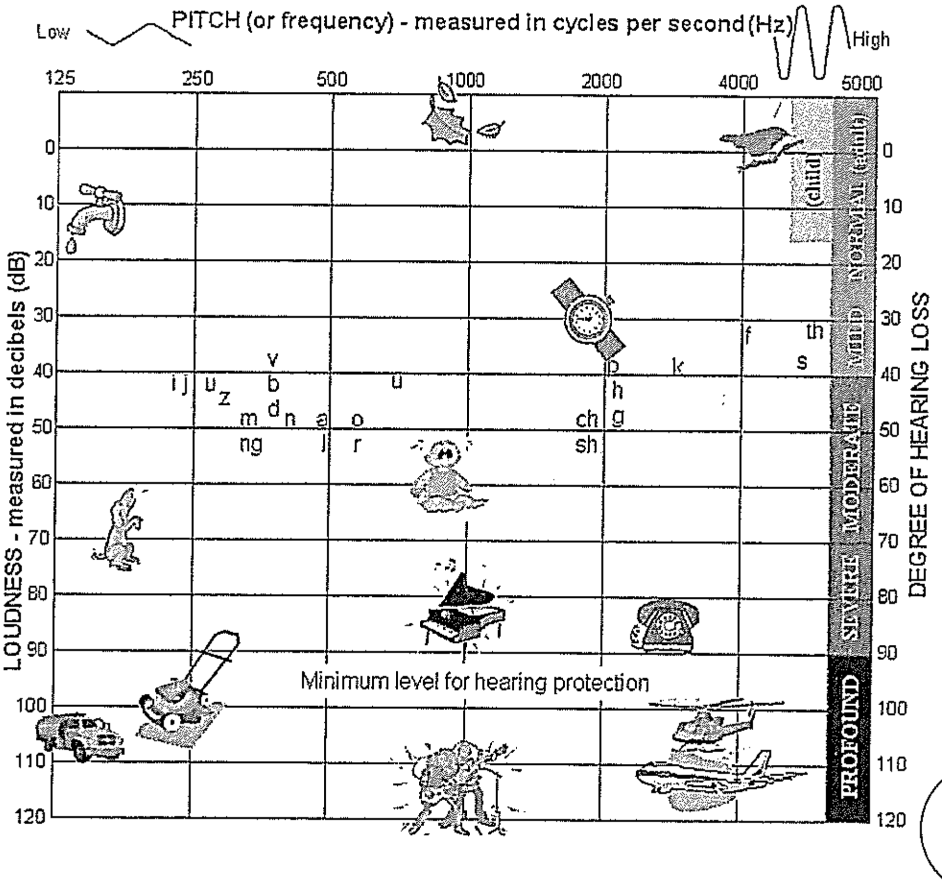
Simply put, sound, which includes speech, enters the ears and is received and moved along a defined pathway to the auditory areas (or hearing centers) of the brain where that sound is understood. The different parts of the ear and rest of the auditory pathway act as way stations by reacting to and moving sound to the next way station in the hearing system. Any time there is a disruption to the travel of sound as it makes its way to its final destination, the auditory areas of the brain, the result is a hearing loss or disorder. The outer ear, middle ear, inner ear and auditory centers of the brain all make up the auditory system. Here's how it works:

- **The outer ear** collects sound waves moving through the air and directs them to the eardrum.
- **The eardrum** vibrates with sound.
- **Sound vibrations** move from the eardrum through the ossicles (bones in the middle ear) to the cochlea.
- **Sound vibrations** cause the fluid and tiny hair cells inside the cochlea to move.

How does hearing work?

What is a speech banana?

The speech banana is a term used to describe the area where the sounds of human speech (called phonemes), appear on an audiogram (graph of an individual's hearing thresholds). When the phonemes are plotted out on the audiogram they make the shape of a banana. Therefore, audiologists and other speech professionals refer to that area as the "speech banana." While many other sounds fall outside of the speech banana, audiologists are most concerned with the frequencies within the speech banana because a hearing loss in those frequencies can affect a child's ability to learn language.



What causes hearing loss?

Is all hearing loss the same?

The Importance of Early Intervention

"Early intervention" is a term that medical and other professionals use to describe the identification and treatment of developmental or physical challenges in children from birth until three years of age.

nose and throat (ENT) specialist, a physician also known as an otolaryngologist, who will evaluate your child to determine if there is an underlying cause to your child's hearing loss. In addition to making recommendations related to treatment, an ENT physician who specializes in pediatrics may also provide information on various communication approaches for your child.

What is involved in screening?

Hearing screening methods for infants and children are non-invasive and painless.

- **ABR (Automated Brain Stem Response):** Sounds are presented through earphones while the baby rests quietly or sleeps. Brainstem responses to sound are measured through small electrodes, which are taped on the baby's head. These responses are processed by a computer.
- **OAE (Otoacoustic Emissions):** A small probe tip is inserted into the baby's ear canal. It measures the function of the inner ear, or cochlea. This screening can also be performed on a sleeping infant.
- **Behavioral Testing:** These types of tests are used when a child is old enough to turn his or her head in response to sound or play a game. These tests measure the quietest sounds the child can hear and the child's ability to understand words.
- **Acoustic Impedance Tests:** These tests can be administered to children of all ages and can help identify middle ear problems (e.g., the presence of fluid and the status of eardrum) through quick, non-invasive, computerized technique.

What is the early intervention system?

Will early intervention provide the information I need?

Who chooses the best communication approach for my child?

Historically, teachers, doctors and other professionals talked with families about a child's communications "options." Today, the word "options" has been replaced with "outcomes" as a reflection of the hearing loss community's focus on the success of the child.

For children with hearing loss, there are four primary communication outcomes, each tied to an approach to language:

Listening and Spoken Language
Cued Speech/Language
American Sign Language/Bilingual-Bicultural
Total Communication Method

Mastering a communication outcome requires hard work and dedication on the part of the child and family. A child's brain is ready to learn language at an early age, even though he or she will not be able to understand or communicate back right away. Remember that you are laying the foundation for communication proficiency from day one. It is important to stick with one option for long enough to determine that it is the right one for your child and your family.

Listening and Spoken Language

Cued Speech/Language

Cued Speech is a visual communication system that is used to demonstrate phonetic information for children who may not be able to learn entirely though amplified hearing.

Designed to enhance lipreading ability, cued speech combines the natural mouth movements of speech with eight hand shapes (cues) that represent different sounds of speech. For example, the hand shapes help the child distinguish sounds that look the same on the lips, such as "p" and "b". In addition to the eight hand shapes, there are four positions around the mouth, each of which represents several vowel sounds. Some children who use Cued Speech also enroll in programs that emphasize listening and spoken language development.

For more information, contact the National Cued Speech Association.

American Sign Language

Total Communication Method

Historically, teachers, doctors and other professionals talked with families about a child's communications "options." Today, the word "options" has been replaced with "outcomes" as a reflection of the hearing loss community's focus on the success of the child.

For children with hearing loss, there are four primary communication outcomes, each tied to an approach to language:

Listening and Spoken Language
Cued Speech/Language
American Sign Language/Bilingual-Bicultural
Total Communication Method

Mastering a communication outcome requires hard work and dedication on the part of the child and family. A child's brain is ready to learn language at an early age, even though he or she will not be able to understand or communicate back right away. Remember that you are laying the foundation for communication proficiency from day one. It is important to stick with one option for long enough to determine that it is the right one for your child and your family.

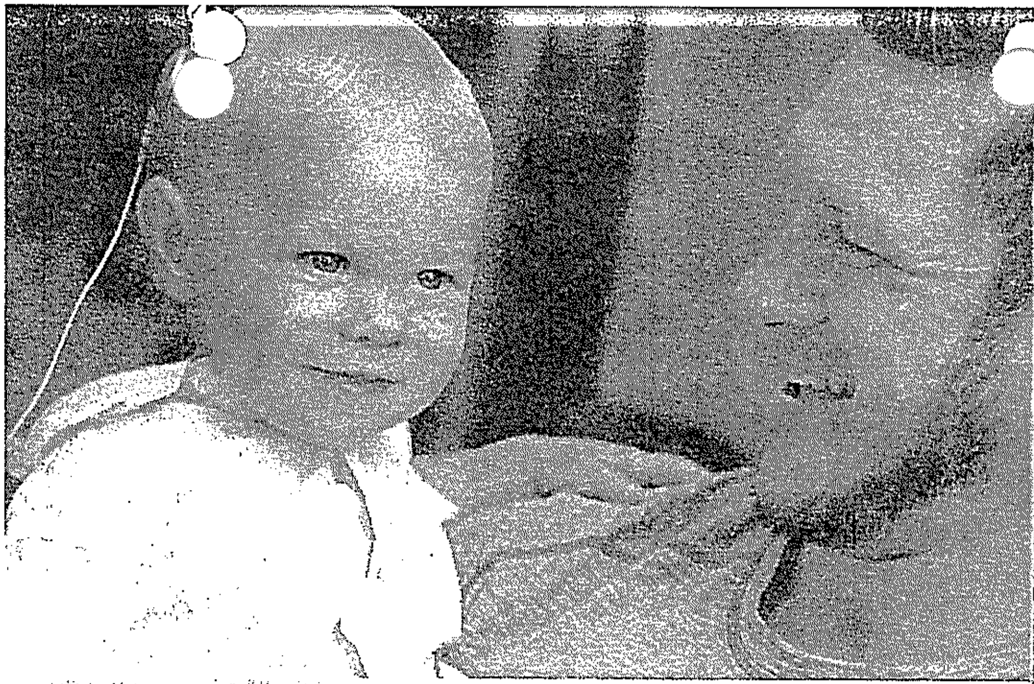
Listening and Spoken Language

The Listening and Spoken Language approach to language development teaches infants and young children with hearing loss to listen and talk with the support of hearing technology such as hearing aids, assistive listening devices (such as an FM system) or cochlear implants.

Hearing technology provides auditory stimulation and sets the stage for the development of listening while spoken language therapy teaches the child how to "listen" with the device and to translate what he or she is hearing into spoken language. In nearly every case, a child needs hearing technology that is appropriately fitted and worn 100 percent of his waking hours in addition to listening and spoken language therapy to develop an outcome.

The earlier the infant has access to auditory stimulation, the earlier he or she can take advantage of the benefits of "hearing," or listening, and learn to talk, thus learning spoken language.

Parents and caregivers receive counseling and support in their role as the child's most important teacher of language, learning how to stimulate their child's speech and language production. The goal is for the child to attend his local school and learn in the



The Alexander Graham Bell Association for the Deaf and Hard of Hearing (AG Bell)

is a 501(c)3 nonprofit that is a lifelong resource, support network, and advocate for listening, learning, talking, and living independently with hearing loss. Through publications, outreach and advocacy, conferences and trainings, scholarships, financial aid and state chapters, AG Bell provides families and professionals with the support they need — close to home. AG Bell relies on the generous support of members and donors to advance its mission.

JOIN US

Professionals:
www.agbell.org/teach
Non-Professionals:
www.agbell.org/connect

TALK TO US

(202)337-5220
(866)337-5220 (Toll Free)

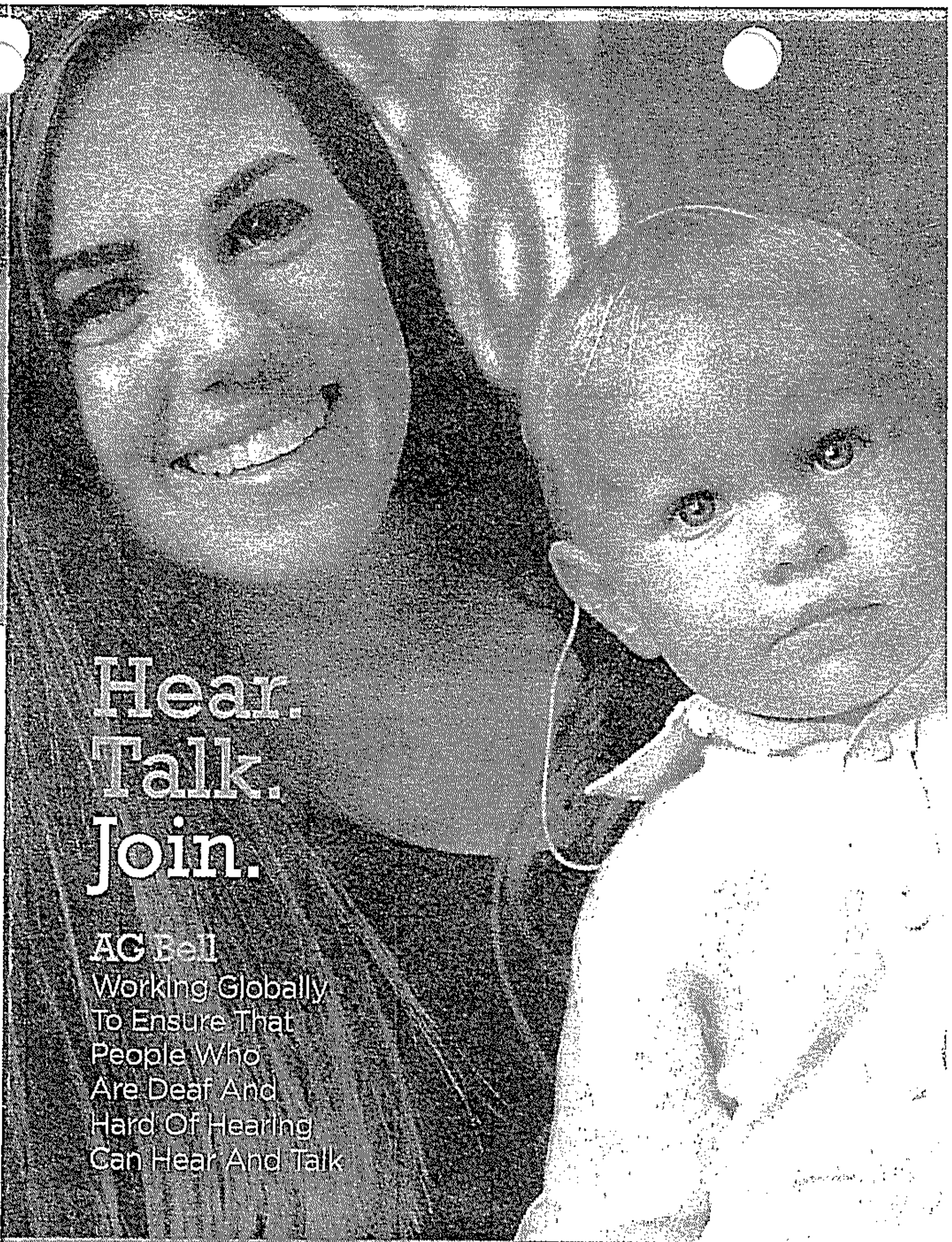
WRITE TO US

3417 Volta Place, NW
Washington, D.C. 20007 USA
(202)337-8314 (Fax)
info@agbell.org

HELP US

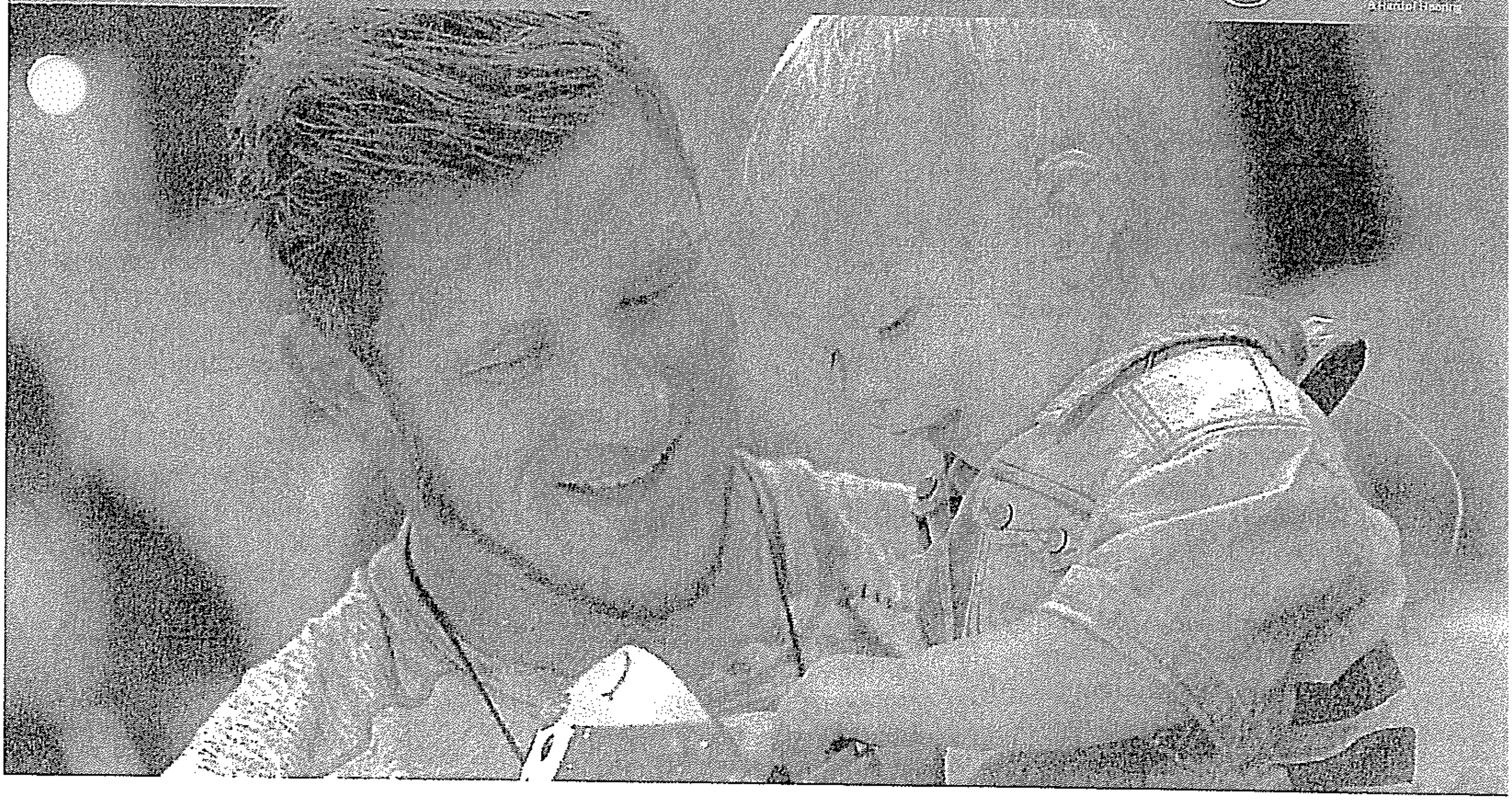
www.agbell.org/give
EIN: 53-0196644

a.g.bell
Association for the Deaf & Hard of Hearing



a.g.bell
Association for the Deaf & Hard of Hearing

a.g.bell



What is the Alexander Graham Bell Association for the Deaf and Hard of Hearing (AG Bell)?

The Alexander Graham Bell Association for the Deaf and Hard of Hearing is an international nonprofit organization that brings families and professionals together to support children with hearing loss. AG Bell's community comprises families who have children who are deaf or hard of hearing, adults who are deaf or hard of hearing, and the professionals who work with them, including teachers of the deaf, speech-language pathologists, audiologists and certified Listening and Spoken Language Specialists (*LSLS®*).

Our History

Although widely known as the inventor of the telephone, Dr. Alexander Graham Bell was first and foremost a teacher of the deaf. Dr. Bell established two organizations: the Volta Bureau in Washington, D.C., which served as a repository for information related to deafness, and the American Association to Promote the Teaching of Speech to the Deaf. Over time these organizations evolved into what we now know as the Alexander Graham Bell Association for the Deaf and Hard of Hearing.

Our Mission

Our mission is "Working Globally To Ensure That People Who Are Deaf And Hard Of Hearing Can Hear And Talk." To carry out this mission, AG Bell is organized into four goal areas: Advocacy, Community Building, Capacity Building, and Leadership and Management.

Advocacy

AG Bell works to promote issues relevant to children and adults with hearing loss to legislators, regulators, healthcare systems, the media and educational and legal systems. AG Bell participates in a variety of coalitions that address issues of concern to the larger community of individuals who are deaf or hard of hearing, such as the Deaf and Hard of Hearing Alliance (DHHA) and the Joint Committee on Infant Hearing (JCIH), among others.

X

American Sign Language

The Alexander Graham Bell Association for the Deaf and Hard of Hearing (AG Bell) fully supports the recommendation by the Joint Committee on Infant Hearing, published in 2007 by the American Academy of Pediatrics, which states "families should be made aware of all communication options and available hearing technologies in an unbiased manner."

AG Bell recognizes that there are various options regarding language choice, including spoken and signed languages throughout the world. AG Bell also recognizes that there are numerous communication approaches and educational methods that incorporate audition, signs, and various combinations of both speech and sign.

AG Bell acknowledges that a chosen approach depends on culture, family interests, and desired communication outcome. AG Bell believes that the language and communication approach chosen should be based on an informed decision made by the child's parents/family and based on their own unique circumstances.

Reach Us

Alexander Graham Bell Association
for the Deaf and Hard of Hearing

3417 Volta Place NW
Washington, D.C. 20007

Tel: 202-337-5220
TTY: 202-337-5221
Fax: 202-337-8314

info@agbell.org

Resources

Privacy Policy

Partners

Press

Advertising

Board of Directors

Social Media Policy

Follow Us

● ● ● ● ●

Our Mission

Working globally to ensure that people who are deaf and hard of hearing can hear and talk.

We want all families to be informed and supported, professionals to be appropriately qualified to teach and help children with hearing loss, public policy leaders to effectively address the needs of people with hearing loss, and communities to be empowered to help their neighbors with hearing loss succeed.

frequencies (or pitches). Hearing aids can also be programmed to fit the needs of individual hearing patterns, such as boosting intensity level for high frequency sounds that your child may not hear at all and less for low frequency sounds that your child may hear better.

It is important to note that hearing aids do not correct hearing the same way that glasses correct vision. Hearing aids amplify all sounds, so individual sounds may be somewhat distorted and it may be difficult for your child to distinguish and understand your voice from background noise in loud environments. Regular sessions with an auditory-verbal practitioner will help your child distinguish these sounds.

Cochlear Implants

Cochlear implants were developed in the 1970s to help individuals who are profoundly deaf and gain little or no benefit from hearing aids.

When hearing is functioning normally, the inner ear converts sound waves into electrical impulses, which are sent to the brain and recognized as sound. A cochlear implant works in a similar manner – when surgically implanted behind the ear and in the cochlea, the electronic device is able to bypass damaged hearing cells and stimulate the auditory nerve to restore partial hearing. Cochlear implants provide enhanced sound detection and a greater potential for understanding speech.

If your child receives little to no benefit from hearing aids, has a severe-to-profound hearing loss and is at least 12 months old, he or she may be a candidate for a cochlear implant.

Listening and Spoken Language Therapy

The most important step after providing your child with access to sound through hearing aids, cochlear implants or both is to begin listening and spoken language therapy. Although your child is hearing sound, he or she still needs to learn to understand the sounds by learning to listen and then to translate that sound into spoken language. This type of therapy will help your child learn how to hear and speak. Family-centered early intervention services promoting the use of listening and spoken language should start no later than 6 months of age.

You can expect to actively participate in your child's listening and spoken language learning process. Through guidance, coaching and demonstration, parents become the primary facilitators of a child's spoken language development. With time, you'll will begin to see that your child can have access to a full range of academic, social and occupational choices throughout his or her life!

every child and adult with hearing loss has the opportunity to receive early intervention to listen, talk, and thrive in mainstream society.

Reach Us

Alexander Graham Bell Association
for the Deaf and Hard of Hearing

3417 Volta Place NW
Washington, D.C. 20007

Tel: 202-337-5220
TTY: 202-337-5221
Fax: 202-337-8314

info@agbell.org

Resources

Privacy Policy

Partners

Press

Advertising

Board of Directors

Social Media Policy

Follow Us

● ● ● ● ●

Our Mission

AMERICAN
ACADEMY OF
PEDIATRICS

www.pediatrics.org

Supplemental document to the recommendations of the Joint Committee on Infant Hearing (JCIH), which provides comprehensive guidelines for early hearing detection and intervention, establishing strong early intervention systems with expertise to meet the needs of children who are deaf or hard of hearing.

This Policy Is A Revision Of The Policy In 106(4):798

Pediatrics
October 2007, VOLUME 120 / ISSUE 4
FROM THE AMERICAN ACADEMY OF PEDIATRICS

Year 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs

Joint Committee on Infant Hearing

THE POSITION STATEMENT

The Joint Committee on Infant Hearing (JCIH) endorses early detection of and intervention for infants with hearing loss. The goal of early hearing detection and intervention (EHDI) is to maximize linguistic competence and literacy development for children who are deaf or hard of hearing. Without appropriate opportunities to learn language, these children will fall behind their hearing peers in communication, cognition, reading, and social-emotional development. Such delays may result in lower educational and employment levels in adulthood.[1] To maximize the outcome for infants who are deaf or hard of hearing, the hearing of all infants should be screened at no later than 1 month of age. Those who do not pass screening should have a comprehensive audiological evaluation at no later than 3 months of age. Infants with confirmed hearing loss should receive appropriate intervention at no later than 6 months of age from health care and education professionals with expertise in hearing loss and deafness in infants and young children. Regardless of previous hearing-screening outcomes, all infants with or without risk factors should receive ongoing surveillance of communicative development beginning at 2 months of age during well-child visits in the medical home.[2] EHDI systems should guarantee seamless transitions for infants and their families through this process.

American Academy
of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

STATEMENT OF ENDORSEMENT

Supplement to the JCIH 2007 Position Statement: Principles and Guidelines for Early Intervention After Confirmation That a Child Is Deaf or Hard of Hearing

PREFACE

This document is a supplement to the recommendations in the year 2007 position statement of the Joint Committee on Infant Hearing (JCIH)[1] and provides comprehensive guidelines for early hearing detection and intervention (EHDI) programs on establishing strong early intervention (EI) systems with appropriate expertise to meet the needs of children who are deaf or hard of hearing (D/HH).

EI services represent the purpose and goal of the entire EHDI process. Screening and confirmation that a child is D/HH are largely meaningless without appropriate, individualized, targeted and high-quality intervention. For the infant or young child who is D/HH to reach his or her full potential, carefully designed individualized intervention must be implemented promptly, utilizing service providers with optimal knowledge and skill levels and providing services on the basis of research, best practices, and proven models.

The delivery of EI services is complex and requires individualization to meet the identified needs of the child and family. Because of the diverse needs of the population of children who are D/HH and their families, well-controlled intervention studies are challenging. At this time, few comparative effectiveness studies have been conducted. Randomized controlled trials are particularly difficult for ethical reasons, making it challenging to establish causal links between interventions and outcomes. EI systems must partner with colleagues in research to document what works for children and families and to strengthen the evidence base supporting practices.

Despite limitations and gaps in the evidence, the literature does contain research studies in which all children who were D/HH had access to the same well-defined EI service. These studies indicate that positive outcomes are possible, and they provide guidance about key program components that appear to promote these outcomes. This EI services document, drafted by teams of professionals with extensive expertise in EI programs for children who are D/HH and their families, relied on literature searches, existing systematic reviews, and recent professional consensus statements in developing this set of guidelines (eg, refs 2 and 3; H.M. Schachter, T.J. Clifford, E. Fitzpatrick, S. Eatmon, M. Morag, A. Showler, J.C. Johnston, M. Sampson, and D. Moher, unpublished data, 2002).

JOINT COMMITTEE ON INFANT HEARING
Carianne Muse, MPH, Judy Harrison, MA, Christine Yoshinaga-Itano, PhD, Alison Grimes, AuD, Patrick E. Brookhouser, MD, Stephen Epstein, MD, Craig Buchman, MD, Albert Mehl, MD, Betty Vohr, MD, Mary Pat Moeller, PhD, Patti Martin, PhD, Beth S. Benedict, PhD, Bobbie Scoggins, EdD, Jodee Crace, MA, Michelle King, MS, Alice Sette, AuD, and Beth Martin, MA

KEY WORDS
hearing loss, hearing screening, hearing impairment, deafness, audiology

ABBREVIATIONS
ASL—American Sign Language
CDC—Centers for Disease Control and Prevention
D/HH—deaf or hard of hearing
EHDI—early hearing detection and intervention
EI—early intervention
IDEA—Individuals with Disabilities Education Improvement Act
IFSP—individualized family service plan
JCIH—Joint Committee on Infant Hearing

www.pediatrics.org/cgi/doi/10.1542/peds.2013-0008
doi:10.1542/peds.2013-0008
PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

with pediatric experience. The specific professionals on each team should be individualized on the basis of family needs. This list of professionals may include, but is not limited to, an audiologist, teacher of the D/HH, speech-language pathologist, service coordinator, individuals who are D/HH, and representatives of family-to-family support networks. Depending on the needs of the child, it also could include physical therapists, occupational therapists, psychologists, and educators with expertise in deaf/blind, developmental delay, and/or emotional/behavioral issues.

BEST PRACTICE GUIDELINES

This best practice document for the implementation of EI services (habilitative, rehabilitative, or educational) is intended to assist the state/territory EHDI systems in optimizing the development and well-being of infants/children and their families. Another goal of this document is to facilitate the development of systems that are capable of continuously evaluating and improving the quality of care for infants/children who are D/HH and their families. Finally, this document outlines best practices to promote quality assurance of EI programs for children from birth to age 3 years and their families.

Goal 1: All Children Who Are D/HH and Their Families Have Access to Timely and Coordinated Entry Into EI Programs Supported by a Data Management System Capable of Tracking Families and Children From Confirmation of Hearing Loss to Enrollment Into EI Services

Rationale

Screening hearing in newborns creates an opportunity but it does not guarantee optimal outcomes. Timely access to quality EI providers is a critical component of a successful system. The Colorado EDHI program is an example of a program that has been able to collect comprehensive outcome data due to the implementation of EI and a consistent EI program (eg, criteria for selection of EI providers, professional development through in-service training and mentoring, a standard protocol of developmental assessments at regular intervals). The Colorado EHDI system was established in 1992 and focused on timely and coordinated access to EI with statewide data management to ensure follow-through. Beginning in 1995 and continuing to the present, a series of articles on the Colorado system was published. These studies had over 500 different infant participants who were D/HH, who had no additional disabilities, and who had hearing parents. The studies included longitudinal data on 146 children from infancy through 7 years of age. Almost all were early-identified and had timely access to an appropriate and consistent EI system.[12] On average, these children achieved age-appropriate developmental outcomes not only in the first 3 years of life[10,13–16] but through age 7[9,17,18] (Pipp-Siegel, Sedey, & Yoshinaga-Itano, 2001). Other studies provided support for these findings,[19,20] but only the Moeller study,[8] published before establishing universal newborn hearing screening, studied children from a consistent EI services program.

Part C of the IDEA requires that infants and toddlers with disabilities receive EI services from birth to age 3 years.[5] These services are provided according to an individualized family service plan (IFSP). A barrier to the development of comprehensive systems for children who are D/HH is the lack of coordination between local and state part C programs, state EHDI programs, and existing systems for children who are D/HH. To accomplish goals for monitoring and tracking children who are D/HH, a strong partnership with part C will be necessary at the national, state/territory, and local levels. At the current time, tracking systems from universal screening to confirmation that a child is D/HH, to enrollment in EI, and to developmental outcomes are being developed in many states/territories, but there are currently only a few coordinated systems.[7]

Loss to documentation and loss to follow-up rates are threats to the effectiveness of EHDI systems. Reduction in these losses is a high priority to strengthen the development of EHDI systems. Continuously updated data reported to the CDC indicate that a significant number of referrals lack documentation of confirmatory audiologic evaluations and/or enrollment in EI. It is estimated that currently only 1 in 4 children who are D/HH are successfully tracked to an EI system.[7] Loss to documentation and ineligibility for services (eg, infants with unilateral hearing loss in some states) also may contribute to loss to follow-up rates.

Recommendations

1. Share a baseline analysis of EHDI follow-up statistics with part C to establish collaboration and to identify system gaps or needs regarding statistics to be reviewed, such as (1) confirmation/identification of children who are D/HH and (2) their enrollment in EI services.
    - Identify the referral process operating within the state/territory. Establish a timely, coordinated system of entry into EI services. Ensure that providers have the core knowledge and skills necessary to optimize the overall development and well-being of children and their families. Identify methods to report and track individual children from audiologic confirmation to

diagnostic evaluations; amplification choices; communication choices; communication development from infancy through early childhood, including language, auditory, speech, signing, and social-emotional domains; resources relevant to working with infants/toddlers who are D/HH; medical details such as likelihood of progression of or improvement in hearing levels; and auditory/visual technology (eg, frequency modulation systems or "FM" systems, light systems, doorbells, or captions).

When parents/caregivers/families receive support from professionals who are knowledgeable about infants/children who are D/HH and their families, emotional bonding between *parents and infants may be facilitated.* Parental stress similar to that in hearing parents is possible and parental acceptance is more likely (Pipp-Siegel, Sedey, & Yoshinaga-Itano, 2001).[22–26] Service coordinators in the Colorado EI program were specialists in EI services for families who have children who are D/HH. Studies examining outcomes of the Colorado EI program were descriptive studies and could not examine whether a causal relationship exists between provider expertise and these social-emotional characteristics. However, the studies did reveal that a program with specialized service coordinators and EI service providers is related to positive family and child social-emotional outcomes. In addition, there is evidence in the literature that some parents experience negative emotions when service coordination is provided by individuals without the core knowledge and skills for working with children who are D/HH.[27]

Recommendations

1. Develop or adapt qualifications for service coordinators who contact families after confirmation that their child is D/HH. Collaborate with part C in a manner that includes the expertise of the state EHDI team or an EHDI task force and EI specialists with expertise in supporting children who are D/HH. These state/territory guidelines should identify the professional qualifications (educational and experiential background) of service coordinators for children who are D/HH and their families.
2. Identify the core knowledge and skills for service coordinators on the basis of evidence-based practices and the recommendations of professional organizations and national policy initiatives. Implement strategies to identify current skills of service coordinators and gaps *in their knowledge and skills related* to serving families with children who are D/HH. Establish and implement professional development programs that include training in dissemination of information without bias. Provide resources and other supports to assist service coordinators in the acquisition of core knowledge and skills needed to promote successful outcomes for the children and their families.
3. Identify the number and percentage of families who had timely access to a service coordinator with skills and expertise related to children who are D/HH and their families.

Goal 3: All Children Who Are D/HH From Birth to 3 Years of Age and Their Families Have EI Providers Who Have the Professional Qualifications and Core Knowledge and Skills to Optimize the Child's Development and Child/Family Well-being

Rationale

States/territories need to ensure that EI providers meet at least minimum criteria for experience and skills necessary to serve infants who are D/HH and their families. Because of the shortage of qualified professionals, it is important that a system for building capacity exists at the preservice, in-service, and mentoring levels. A primary goal of the EI program is to promote children's development of strong language skills, regardless of the route or routes taken by the family (eg, spoken language, American Sign Language [ASL], visually supported spoken language). This goal is critical because it is widely recognized that well-developed language skills serve as a foundation for communication and literacy attainment.[28] Goal 3 (and Appendix 1) promotes reliance on qualified providers, and recommends processes for ensuring that families access them. Goals 3a and 3b are not intended to be mutually exclusive; rather, they describe key quality elements when providers are using spoken or visual languages. Systems that manually code or cue spoken language are not included in goals 3a or 3b because they are not distinct languages. However, when these approaches are implemented by families, the same competencies described below apply. The purpose of goal 3 is to ensure that families and children have qualified providers, regardless of the approach taken to develop communication.

The purpose of these recommendations is to assist states and territories in the provision of high-quality EI through

- identification of the core knowledge and skills for direct EI services providers (eg, those who provide developmental, educational, and communication/language [including spoken and/or sign language] services; see Appendix 1);
- development of guidelines for the delivery and evaluation of a system of ongoing professional development for direct EI service providers.

competency and fluency are not ensured among EI providers. To establish the basic grammatical foundations of visual language learning for a newborn infant who is D/HH, access to competent and fluent language models is vital.[41,42] However, although fluency of the language model is necessary, it is not sufficient to make a professional qualified to provide EI services. Families with children who are newly identified also need information and resources from EI professionals on how to provide an enriched language environment that supports their child's early language learning. As an example, the SKI-HI Institute Deaf Mentor program is a model that can provide resources and training for people who are D/HH to support a family's learning of ASL. The families can be given resources and support in acquiring ASL through collaboration with professionals who are D/HH and who communicate in ASL. In SKI-HI's Deaf Mentor program, adults who are D/HH are role models for the young child and family members. The child and the family learn ASL and are introduced to various deaf culture events. The SKI-HI Institute conducted a 3-year study entitled "The Deaf Mentor Experimental Project for Young Children Who Are Deaf and Their Families," and found that children of hearing parents who are exposed to a bilingual and culturally competent environment through Deaf Mentor services have positive outcomes. Not only did the children have a beginning knowledge and use of ASL but they were also developing English skills at a faster rate than children who did not receive Deaf Mentor services and received services solely from a SKI-HI parent advisor.[40]

Recommendations

1. Ensure that families have complete and accurate information about ASL.
2. Identify collaborative partners who can assist in the development of statewide systems capable of providing competent sign language instruction to families and their infants/children. Partners may include EHDI systems, EI professionals with skills in teaching families with infants/toddlers who are D/HH, and individuals who are D/HH with fluent/native ASL skills and experience in teaching families/parents of infants. Agencies that can support development of a statewide system may include schools for the deaf, local education agencies, state coordinators of services for students who are D/HH, the Registry of Interpreters for the Deaf, the ASL Teachers Association, the American Society for Deaf Children, the State Association of the Deaf, the National Association of the Deaf, and the Diagnostic Center at Boys Town National Research Hospital for use and implementation of the Educational Interpreter Performance Assessment.[43]
3. Establish a representative committee that develops guidelines related to the qualifications of sign language instructors. Committees should include specialists in EI strategies for parent/family education and individuals who are D/HH with fluent/native skills and experience in teaching families/parents of infants.
4. Conduct a needs assessment to determine (1) the number of available sign language instructors with the qualifications in sign language and family/infant education and (2) available funding sources.
5. Develop systems that ensure that neither geographic location nor socioeconomic status limits access to competent and skilled sign language instructors. State systems should consider utilization of all technology, including computer and videophones, to support teaching families.
6. Establish and conduct training for ASL instructors that includes strategies and techniques for teaching sign language to families of infants and toddlers.
7. Establish a quality assurance program for ASL instructors of parents/families. The program should (1) assess their fluency in and knowledge of ASL (existing models for such assessment include the ASL Teachers Association, the Registry of Interpreters for the Deaf, and the ASL Proficiency Interview) and (2) determine their ability to tailor the instruction so that families are prepared to communicate with infants and very young children.
8. Conduct a needs assessment to determine the number of professionals (compensated or volunteer) with the qualifications and skills required to serve as an ASL instructor for families/parents of infants.
9. Ensure that ASL instructors can accept, without judgment, a family's use of their sign language skills with or without spoken language.

Goal 3b: Intervention Services to Develop Listening and Spoken Language Will Be Provided by Professionals Who Have Specialized Skills and Knowledge

Rationale

The development of listening and spoken language skills is now attainable for the vast majority of infants/children who are D/HH (without severe additional disabilities) when they are identified early and are provided with early and appropriate EI services beginning with fitting of amplification that ensures audibility across the speech spectrum of the native spoken language.[44] The consensus of professionals who specialize in intervention for listening and spoken language for children who are D/HH is that these skills are frequently not mastered in typical preservice training programs of educators of the deaf, life when they were early-identified and received timely EI services.[10,50]

For some children who are D/HH and have additional disabilities, it may be determined that hearing loss is not the primary disability. Regardless of the primary disability, however, it is critical to recognize the primacy of communication for learning and the impact of communicative delays on other developmental domains. Therefore, the team of professionals serving the child must include specialized expertise in meeting the communication access needs of the child.

EI specialists serving children who are D/HH with additional disabilities should be able to

- monitor developmental needs and outcomes across domains with appropriate assessments;
- recognize developmental concerns and involve a team of evaluators before attempting to design an intervention program;
- work as an effective and integrated member of a transdisciplinary team, in a manner that optimizes child and family learning;
- modify developmental strategies to accommodate the child's special needs;
- advocate for and facilitate the parent/family understanding of medical, developmental, pediatric, and other specialty reports and their implications for the child's learning;
- collaborate with the managing audiologist to adapt assessment and amplification approaches to accommodate the child's special needs;
- recognize the child's needs and make referrals for specialty evaluations (eg, feeding and swallowing, oral motor, etc);
- assist families in prioritizing needs to optimize the level of service delivery at various ages;
- adapt EI strategies to appropriately accommodate disabilities in other developmental domains and to reinforce goals of other specialty providers on the team;
- use augmentative communication devices and strategies, including individualized evaluation and implementation;
- manage mobilization devices and other supportive equipment needed by the child.

Recommendations

1. Develop and implement a data management system capable of reporting the number and percentage of children who are D/HH with additional diagnosed disabilities, including the following: visual, intellectual, or emotional/behavioral disability; fine and gross motor delays with or without cerebral palsy; autism spectrum disorder; sensory processing disorder; and craniofacial or neurodegenerative disorders or brain malformations.
2. Develop a system with the ability to track children who are D/HH with additional disabilities regardless of the primary disability of the child, identifying the individual or agency that can and will assume responsibility for tracking these children (eg, EHDI or part C, public school programs, or schools for the deaf).
3. Ensure that the developmental monitoring protocol is adaptive and sensitive to any restrictions in performance that are due to the additional disability and that would significantly underestimate the abilities and skills of the child.
4. Implement models of transdisciplinary services, making certain that families who have children with multiple disabilities have access to EI services that meet the needs of the child and family in all developmental domains.

Goal 5: All Children Who Are D/HH and Their Families From Culturally Diverse Backgrounds and/or From Non-English-Speaking Homes Have Access to Culturally Competent Services With Provision of the Same Quality and Quantity of Information Given to Families From the Majority Culture

Rationale

The number of culturally and linguistically diverse children who are D/HH in the United States and its territories is continually rising. In some major urban areas, and in some states, the number of culturally diverse occupants is now the majority. There is a rapid and growing population of children who are D/HH living in homes in which the primary language is not English. Families who use ASL as the language of communication within the home are also a culturally and linguistically diverse population. An additional aspect of diversity is the significant portion of families who have limited levels of literacy, parental education, and/or family income. These families are at high risk of failure to access and benefit from traditional educational services. However, research within the United States has revealed that it is possible to deliver EI services that result in appropriate development of children of families from culturally diverse backgrounds.[10,17,50]

It is important that the information provided to families is of the same quality and quantity provided to native English speakers and that it is delivered in a manner that is accessible to the families. Even when culturally diverse families are able to communicate successfully in spoken English or ASL, they may have values and associated with children who are D/HH. Thus, developmental assessment for this population is designed to ensure that the children are mastering the developmental skills appropriate for their age and cognitive functioning. Earlier identification of children who are D/HH has been established with the goal of prevention of delay, not remediation of delay.

The urgency of providing appropriate EI services is supported by evidence of reduced and limited success of EI strategies that are initiated after the sensitive period for language and auditory development.[8,10] The goal of EI services for infants/children who are D/HH is to provide sufficient support to ensure that the child makes appropriate progress toward expected developmental objectives. The best opportunity to accomplish this goal is the prevention of developmental disability. Therefore, progress monitoring should be done with instruments that are norm-referenced. Assessment tools should be appropriate for the language and communication system used by the child.

Monitoring of developmental progress provides parents/families and EI providers objective data about the individual rate of their child's development and can guide their decision making. In addition, systematic monitoring of developmental progress has the potential to provide states/territories, local educational agencies, and individual early childhood programs with information that can guide system change and continuous improvement by identifying strengths and weaknesses within their system.

Recommendations

1. Monitor the developmental progress of all infants identified through universal newborn hearing screening (UNHS) on a consistent schedule, every 6 months through 36 months and annually thereafter, to ensure that children are making appropriate progress in the following areas:
    - language and social-emotional development commensurate with or within 1 SD of their chronological age or cognitive development;
    - auditory, listening, vocal, and speech development leading to intelligible and age-appropriate spoken language, if chosen by the family;
    - signing, both expressivity and receptivity, leading to appropriate language development, if chosen by the family;
    - fine and gross motor development, visual and auditory perception, and measures of adaptive behavior;
    - analysis of developmental growth over time: (1) development over time can only be analyzed if the child is assessed with at least some instruments that can be repeated throughout the target age range; (2) if the child's progress in the above domains does not meet expectations, or if critical variables have changed over the course of the time of monitoring, appropriate adaptations to EI services should be made;
    - analysis of the quality of the system using progress monitoring: (1) progress monitoring should also be used to assess the quality of the system; (2) states and territories should develop guidelines for determining whether the quality, frequency, and intensity of service is sufficient for adequate progress for an individual child on the basis of his or her progress monitoring.
2. Develop a statewide standard assessment protocol used with all children who are D/HH to provide the state/territory with an opportunity to do quality assurance of components of their EI system. States could develop a standard assessment battery in collaboration with experts in their state and either directly implement the battery or ensure that it is implemented (eg, in collaboration with a university, research entity, or other program capable of collecting and analyzing statewide assessment data for children who are D/HH). This information can then be used to improve the skills of the providers and the characteristics of intervention.
3. Develop a collaborative sharing network capable of collecting developmental data for progress monitoring at regular intervals including data reporting to the EHDI database.

Goal 7: All Children Who Are Identified With Hearing Loss of Any Degree, Including Those With Unilateral or Slight Hearing Loss, Those With Auditory Neural Hearing Loss (Auditory Neuropathy), and Those With Progressive or Fluctuating Hearing Loss, Receive Appropriate Monitoring and Immediate Follow-up Intervention Services Where Appropriate

Rationale

Children with hearing loss are at risk of academic failure (math and reading), delayed language development, progression (worsening) of hearing loss, and/or psychosocial delays. This finding has been revealed in a number of studies over the past 35 years, in populations having all types and degrees of hearing loss.[56–65] Children who are diagnosed as having unilateral hearing loss may experience onset and progression of hearing loss in the formerly normal hearing ear.[62,66]

unable to promote consistent amplification usage, or (3) the parents/family are themselves not convinced of the benefit of amplification.[63]

12. Provide educational information to parents/family covering the following topics:
    - impact of hearing loss on the daily life of the child including communication challenges in noisy environments, the difficulty of incidental learning, and the possibility of language/communication delays;
    - importance of hearing protection;
    - impact of chronic otitis media on residual hearing, and the importance of audiologic and otologic monitoring of hearing status every 3 to 6 months;
    - importance of monitoring the communication and social-emotional development of the child;
    - availability of EI services (to prevent delay instead of habilitation after delay is identified);
    - pros and cons of all amplification options including cochlear implants;
    - language options including visual and spoken languages, benefits of multisensory input of language, and the need for ongoing comprehensive evaluation of communication;
    - possibility of progression or fluctuation of hearing loss and importance of surveillance by audiology and the medical home;
    - importance of medical, genetic, ophthalmologic, and cardiac (EKG) evaluations on children with any type and degree of hearing loss;
    - importance of reassessment of treatment/intervention plans regularly to consider progress in language and communication acquisition, changes in hearing status, changes in amplification choices, and/or changes in communication modes/methods.
13. Encourage primary care physicians to recognize the need for ongoing audiologic surveillance in all children, particularly those with risk factors for delayed-onset/progressive hearing loss, or those children whose hearing loss is already being treated with hearing aid amplification. This surveillance should include developmental checks consistent with the American Academy of Pediatrics Periodicity Schedule, or more frequently if concerns are raised regarding hearing or development.

Goal 8: Families Will Be Active Participants in the Development and Implementation of EHDI Systems at the State/Territory and Local Levels

Rationale

Equitable partnerships between families and EI programs and systems are critical to the success of EHDI programs and the achievement of optimal outcomes for children. Family leadership and involvement are critical when developing policies and programs to ensure that the systems of care support a genuine reflection of the day-to-day challenges and opportunities facing families.[1]

- Qualified parent/family leaders are appropriately trained on such topics as advocacy, systems building, parent/family/professional partnerships, theories of adult learning styles, and family-to-family support.
- Parent/family leaders contribute to the EHDI system by exhibiting the elements of collaboration, that is, mutual respect for skills and knowledge, honest and clear communication, understanding and empathy, mutually agreed-upon goals, shared planning and decision making, open sharing of information, accessibility and responsiveness, negotiation and conflict resolution skills, and joint evaluation of progress.
- Parent/family leaders have the capacity to look beyond their own personal experiences/beliefs to represent and support a broad community of families.

Recommendations

1. Develop or revise policies and legislation related to EHDI programs that require the meaningful inclusion of qualified families as active participants in the development and implementation of EHDI systems.
2. Report the number of professional family positions (ie, compensated rather than volunteer) and demonstrate how parents and families are involved in recruitment processes.
3. Provide resources (professional development training and mentorship) for families to obtain the necessary knowledge and skills to participate in systems and policy development and demonstrate that training is provided.

Goal 9: All Families Will Have Access to Other Families Who Have Children Who Are D/HH and Who Are Appropriately Trained to Provide Culturally and Linguistically Sensitive Support, Mentorship, and Guidance

Rationale

Given the low incidence of children who are D/HH, families often feel isolated and do not typically have support opportunities in their established communities. Being deaf

Goal 11: All Children Who Are D/HH and Their Families Have Access to Support, Mentorship, and Guidance From Individuals Who Are D/HH

Rationale

Research has revealed the benefits of providing children who are D/HH and their families connections to members of the D/HH community. Families who have many contacts with adults who are D/HH exhibit a strong sense of competence with regard to raising their child who is D/HH.[75] When there are no other D/HH members in the family, parents identify deaf individuals as one of the most important sources of support in addition to teachers, therapists, other parents, and spouses.[76] Community members who are deaf are able to provide children who are D/HH with unique perspectives that parents who are hearing cannot.[77]

The more interactions that families have with adults who are D/HH, the better they may envision their own child's future, including developing goals and dreams that are not limited by misunderstandings about the lives of people who are D/HH. The goal of the system is to value infants/children who are D/HH for who they are.

Starting at the time the language and communication decision-making process begins, programs such as D/HH Connections in Colorado† involve deaf individuals in guiding, supporting, serving as role models, and interacting with the child who is D/HH and his or her family. These individuals may share personal experiences or information about being D/HH, educational and communication opportunities, using hearing technology, or about the deaf community and deaf culture. They are available to go into the home, ideally working in close coordination with other EI service providers. They may assist families in meeting IFSP goals. Providing families who are hearing with opportunities to learn more about being D/HH reduces family stress and promotes family support of the child.[78,79]

Recommendations

1. Establish an advisory group composed of a critical mass of members who are D/HH, especially those with experience with EI services and programs, along with representatives from the state EHDI system and EI providers with expertise and skill in providing services to families of infants and toddlers who are D/HH who will
   - collaboratively identify potential funding mechanisms for sustainable support services to families from individuals who are D/HH;
   - develop and implement guidelines that address providing families with access to D/HH individuals who can provide family support (these guidelines should outline the background and training necessary for support personnel/role models who are themselves D/HH to interact with families of infants/children newly identified as D/HH; these systems should guarantee that families have access to the services regardless of audiologic status (hearing levels or type) and the geographic location of the family);
   - develop a leadership training protocol/curriculum for role models and provide leadership training for identified role models;
   - develop and implement a mentoring and monitoring system for role models.
2. Make sure that the individuals who are D/HH represent the diversity of the EHDI population (eg, deaf culture, hard of hearing, cochlear implant and hearing aid users, unilateral hearing loss, auditory neural hearing loss, cultural diversity).

Goal 12: As Best Practices Are Increasingly Identified and Implemented, All Children Who Are D/HH and Their Families Will Be Ensured of Fidelity in the Implementation of the Intervention They Receive

Rationale

Fidelity of intervention refers to assurance that the intervention provided to the family and child is sufficient to (1) promote a good quality of life for the family and the child; (2) provide strategies for the development of spoken, signed/visual, or multimodal language that are appropriate to the family's choices and the cognitive ability and age of the child; and (3) provide strategies that optimize auditory skill development with the family's chosen technology.

High fidelity of the implementation of intervention requires (1) knowledge of intervention theory and methods, (2) well-defined interventions based on theory and methods, (3) demonstration of intervention procedures, (4) supervised practice, (5) feedback on performance, and (6) data to demonstrate that the intervention strategies result in the desired goals.

Ensuring fidelity of implementation includes the following characteristics: (1) linking interventions to improved outcomes (credibility); (2) definitively describing operations, techniques, and components; (3) clearly defining responsibilities of specific persons; (4) creating a data system for measuring operations, techniques, and components; (5) creating a system for feedback and

---

†Although the writers are aware of other states involving deaf community members in similar ways, it is not clear if they are integrated in a formal way in EI and EHDI systems. For this reason, the Colorado program is described.

- All states/territories indicate that they have an annually updated resource manual that is made available and disseminated to all families with newly identified infants/children who are D/HH. States/territories regularly evaluate the comprehensiveness and quality of the information provided in the resource manual.

2. Children/families have timely access to service coordinators who have the core knowledge and skills to fulfill the legal requirements of part C (helping families obtain services, coordinating services, facilitating the timely delivery of services, and continuously seeking appropriate services) and the requisite knowledge and skills unique to working with children, from birth to 3 years of age, who are D/HH and their families.
3. All children who are D/HH from birth to 3 years of age and their families have EI providers who have the professional qualifications and core knowledge and skills to optimize their development and well-being.
    - Each state and territory has a statement of professional qualifications for providers within 2 years of the publication of this document.
    - All providers meet the stated professional qualifications.
    - States and territories have a statement of the systematic professional development program for EI professionals working with families who have infants/children who are D/HH within 5 years of the publication of this document.
4. Three areas have been identified as needing specialized skills in addition to the general knowledge and skills required by providers.
    - *Listening and spoken language*. States and territories will adopt a mechanism for ensuring that the professionals providing listening and spoken language services have the knowledge and skills that will facilitate the development of these skills for families who choose these objectives.
    - *Sign language instructors*. States and territories will report the percentage of families and children who are able to access ASL learning opportunities from a skilled, fluent ASL user. All families who chose ASL will have access to trained and skilled ASL instructors who use effective ASL learning programs for families with young children who are D/HH. Families who elect to use sign systems or cued speech also have access to users with fluency.
    - *Other specialized methods*. States and territories will develop a mechanism that ensures intervention providers have the knowledge and skills to teach integrated systems of visual communication and listening/spoken language.
5. States report that they have developed a system ensuring family participation in the development and implementation of EHDI policies and procedures.
    - All families report that they have access to ongoing family-to-family support.
6. States report that they have developed and implemented a system ensuring participation of individuals who are D/HH with relevant skills and knowledge in the development and implementation of EHDI policies and procedures.
    - All families report that they have access to professionals/individuals in a variety of different roles who are themselves D/HH.
7. States/territories develop fidelity monitoring systems and set the goal to begin implementation within 5 years from the publication of this document.
    - Intervention services for families and children who are D/HH are monitored for fidelity of implementation.
8. Children who are D/HH have their development monitored annually, allowing the state to determine progress toward meeting the developmental outcome goals of EHDI.
9. States/territories have a system for determining whether EI professionals working with children who are D/HH with additional disabilities have the skills and knowledge necessary to promote successful or optimal/appropriate developmental outcomes for these children and their families. Professionals will receive ongoing in-service education on developmental disabilities (eg, motor, vision, autism, and cognition) and have access to specialists/team members who are qualified to address the specialty areas needed by the child. IFSPs and individualized education programs include the interdisciplinary services necessary to address the broad spectrum of needs presented by children who are D/HH and have additional disabilities.
10. States/territories will be able to report the number and percentage of families who have children who are D/HH in nonnative English-speaking

Appendix 1A Family-Centered Practice: Family-Professional Partnerships, Decision Making, and Family Support

Providers Have the Knowledge and Skills to	Best Practice Documents (Ref. No.)
1. Recognize the expertise and major impact of families on children's growth and development	1, 32, 88, 90, 93
2. Understand family systems and family dynamics	32, 88, 90, 93
3. Establish respectful reciprocal relationships with families	32, 88, 90, 93
4. Demonstrate appropriate and effective listening strategies with families and others	32, 88, 90, 93
5. Facilitate families' identification of concerns, priorities, and resources	32, 88, 90, 93
6. Implement strategies to promote infant-caregiver relationships and interactions	32, 88, 89, 90, 93
7. Promote and enlist help from family-to-family support networks	1, 32, 88–93
8. Support family health and emotional well-being	32, 88, 90, 93
9. Identify risks for abuse/neglect situations	32, 88, 90, 93
10. Provide support and recognize signs indicating the need to refer for counseling/therapy or other emotional support from specialists	32, 88, 90, 93
11. Encourage family skills for collaboration with the EI team	1, 32, 88, 89, 91, 93
12. Promote family involvement in all aspects of intervention	1, 32, 88, 89, 91, 93
13. Promote informed decision making through provision of accurate and comprehensible information, resources, and support	1, 32, 93
14. Implement strategies for guiding and supporting families' decisions regarding communication approaches/opportunities	1, 32, 88–93
15. Encourage family advocacy skills	1, 32, 88, 89, 91, 93
16. Monitor family satisfaction with intervention services	1, 32

Appendix 1B Socially, Culturally, and Linguistically Responsive Practices Including D/HH Cultures and Communities: Sensitivity to and Respect for an Individual Family's Characteristics

Providers Have the Knowledge and Skills to	Best Practice Documents (Ref. No.)
1. Understand the diversity of families, languages, cultures, communities	1, 32, 88–93
2. Understand the influence of family, culture, and environment on infant development	1, 32, 88, 90–93
3. Understand the implications of socioeconomic and cultural differences in child rearing	1, 32, 88, 90–93
4. Demonstrate sensitivity to cultural, religious, ethnic, disability, gender, socioeconomic, linguistic, and geographic influences on children and families	32, 88, 93
5. Demonstrate understanding of and respect for deaf culture and D/HH communities	32, 91–93
6. Understand the role and resources of the deaf community, sign language interpreters, and cultural brokers	1, 32, 89, 92, 93
7. Appreciate the roles and access the resources of interpreters and cultural brokers when working with non–English-speaking families	32, 90, 91
8. Promote family's understanding and appreciation of "being deaf or hard of hearing"	None
9. Understand the role and include resources of D/HH adults to promote language and social development and use of technologies (auditory and visual)	1, 32, 89, 91, 92
10. Appreciate and respect cultural perspectives on selection and use of technology	32
11. Implement culturally sensitive approaches	1, 32, 88–93

Appendix 1C Language Acquisition and Communication Development: Typical Development, Communication Approaches Available to Children With Hearing Loss, and Impact of Hearing Loss on Access to Communication

Providers Have the Knowledge and Skills to	Best Practice Documents (Ref. No.)
1. Understand developmental sequences across developmental domains and their complex interactions with communication	1, 32, 88, 90, 93
2. Understand the influence of variables such as age of identification/intervention on language (English and other spoken languages, ASL) and speech acquisition	32, 88, 93
3. Understand the effects of multiple language exposure on children's development (ie, bilingualism in spoken languages and in ASL), drawing upon current theories of bilingualism	32, 88, 90, 93
4. Understand the impact of hearing loss on communication, language, and speech	1, 32, 88
5. Promote the important role of caregivers in development of communication skills through caregiver-child interaction	1, 32, 88–93
6. Understand typical development sequences in auditory and visual perception	1, 32, 88–90, 93
7. Understand the array of communication approaches (eg, ASL, bilingual-bicultural, auditory/oral, auditory/verbal, cued speech, and simultaneous communication) and resources for observing and demonstrating them	1, 32, 88–90, 93
8. Understand augmentative communication approaches and circumstances in which they should be considered	90, 93
9. Understand the importance of involving D/HH adults in the promotion of children's language and social development	1, 32, 89, 91, 92

Appendix 1E Continued

Providers Have the Knowledge and Skills to	Best Practice Documents (Ref. No.)
8. Know how to gather information from families that identifies their priorities, concerns, and resources related to their child's development	32, 88, 90
9. Know current cochlear implant candidacy criteria	1, 88
10. Recognize strengths and limitations of standardized instruments and adaptations for a child who is D/HH	90, 93
11. Use assessment tools and strategies that are culturally, linguistically, and developmentally appropriate	32, 90, 93
12. Understand and participate in interdisciplinary, transdisciplinary, and multidisciplinary assessment procedures and processes	90, 93
13. Implement assessment strategies and support family participation and involvement	32, 88, 93
14. Implement principles/processes to appropriately assess the child in natural environments	88, 90, 93
15. Monitor child progress by using appropriate tools and procedures	1, 32, 88–90, 93
16. Convey assessment and evaluation results and recommendations in a manner that is understandable, accessible, culturally sensitive, and confidential	1, 32, 90, 92, 93

Appendix 1F Technology: Supporting Development by Using Technology to Access Auditory, Visual, and/or Tactile Information

Providers Have the Knowledge and Skills to	Best Practice Documents (Ref. No.)
1. Recognize the importance of the use of technology to access auditory, visual, and/or tactile information	1, 88–93
2. Recognize benefits and challenges of technology use with infants across multiple settings and activities	32, 88, 90, 93
3. Be knowledgeable about current augmentative communication technologies and their application with infants with multiple special needs	88
4. Identify sources for obtaining assistive technology, information, funding, and support	1, 32, 93
5. Implement strategies to support families' abilities to use and monitor effectiveness of technology	1, 32, 88, 90, 91, 93
6. Promote family skills in monitoring amplification and ensuring device retention and safety	1, 32, 88–90
7. Promote family learning and involvement using household, office, and community technology	32, 88, 93

Appendix 1G Planning and Implementation of Services: Creating a Lesson Plan, Conducting a Home Visit, Developing the IFSP, and Using Appropriate Curriculums, Methods, and Resources

Providers Have the Knowledge and Skills to	Best Practice Documents (Ref. No.)
1. Implement best practices related to the process of developing IFSPs and Individual Education Plans	1, 32, 88–90, 93
2. Collaborate with families to develop and implement the IFSPs as working documents	1, 32, 89, 90, 93
3. Plan and implement assessment-based instruction	88, 90
4. Select and systematically implement intervention strategies appropriate to the communication, hearing, speech, language, and emerging literacy needs of the child	88, 90
5. Revise intervention approaches as needed in response to the child and the family	1, 32, 88–90, 93
6. Plan and implement effective parent-child sessions in natural environments	32, 88, 90
7. Plan and implement center-based session (eg, play groups and peer groups) including developing effective lesson plans	32, 88
8. Participate in the planning and implementation of workshops/meetings for families	None

Appendix 1H Collaboration and Interdisciplinary Models and Practices

Providers Have the Knowledge and Skills to	Best Practice Documents (Ref. No.)
1. Recognize roles and responsibilities of families and other individuals with expertise in deafness	1, 32, 89, 90, 93
2. Support consultation across disciplines and collaborate with families	1, 32, 88–90, 93
3. Recognize the roles and the importance of service coordination and medical homes	1, 32, 90, 93
4. Promote collaboration with community programs and resources to support families and children	1, 32, 90
5. Recognize intra/interpersonal variables that influence the development of collaborative relationships with parents and professionals	1, 32, 88–90, 93
6. Apply principles and strategies to support family members and professionals	1, 32, 88–90, 93
7. Implement collaborative strategies for communicating, decision making, and resolving conflict	32, 90, 93
8. Provide for a continuum of service delivery models to meet the needs of the individual child and family (eg, direct service, collaborative consultation, playgroup based)	90
9. Assume a leadership roles affecting collaboration, including self-evaluating, mentoring, networking, and advocating for families and organizations	32, 88, 90, 93

structured development opportunities and interactions that foster skill growth?

- Did I model infant-directed sign ("motherese"), utilizing my facial expressions and hand touches on the baby?
- Did I model the use of and support the family in ways to incorporate finger play, nursery rhymes, gestures, body language, or facial expressions into daily routines (active and passive activities)?
- Did I demonstrate high expectations for visual skill development in daily routines and natural environments? Do I encourage a variety of visual activities including DVDs, print books, and storytelling that are interactive?
- Did I provide opportunities for joint engagement, incorporating eye contact, eye gaze, and eye shifting in a variety of environments, at varying distances, and in nondistracting visual environments? Do I know that the child is able to pay attention and is aware of the words being exchanged? Do I support the family in providing ample opportunity for turn-taking to foster skill development?
- Did I encourage the family and other people to organize the environment to maximize visual potential of the child (eg, the room is well-lit, the background is not too graphic, the seating is in appropriate proximity, and there are plenty of meaningful conversational exchanges, appropriate to the child's developmental level)?
- Did I respond appropriately to the child's attempts to initiate and express self (eg, do I show that I understand through my ASL and then build on to the child's communicative attempt)? Do I model these skills for families and promote their use?

Language Development

- Did I use children's literature and other strategies to encourage early literacy skill development?
- Did I model expanding the child's spontaneous language and discuss the importance of this strategy with others involved? Do I use a language development checklist or scale to ensure that the child is making language gains within age-appropriate intervals? Do I expose the child to other language models (adults and peers) so that the child can acquire a variety of developmental styles?
- Did I motivate, encourage, and reinforce all attempts at communication, supporting semantic, grammatical, social-pragmatic, and verbal reasoning skills?
- Did I recognize the effects of the child's learning style and temperament on language development so that individual needs are consistently nurtured and supported?
- Did I expect ASL acquisition to follow the developmental milestones similar to those of spoken language?
- Did I focus on monitoring the child's development of language through watching/observing/attending and measuring outcomes? Do I recognize that the child has initiated, maintained, and responded to conversation, including appropriately answering basic questions?
- Did I coach the other parents/providers to communicate with the child in ASL throughout daily activities and routines, including incidental conversation, side conversations, and background noises?

ASL Production

- Did I expect, encourage, and elicit signed responses from the child within all activities?
- Did I support the family in developing similar expectations for the child's ASL production?
- Did I incorporate hand-shape, location, movement, palm orientation, facial expression (non manual markers on eyes, face, and head), and body posture to facilitate ASL production?
- Did I note any ASL grammatical errors made by the child and consider whether they are developmental, cognitive, motor, or visual in nature?

Techniques, Strategies, and Communication

- Did I suggest and encourage the family to use Videophone, Skype, iChat, ooVoo, or other visual technology for ongoing communication in ASL?
- Did I provide commentary for parents and/or providers/facilitators on the language goals and observations of the child's emerging skills and ongoing needs?
- Did I demonstrate ways to scaffold[§] a child's emerging skills to ensure the child's success? Do I support the family in developing methods for scaffolding the child's development (eg, assisting the child in making the appropriate hand-shape, beginning with the 6 basic hand-shapes [B, A, C, O, 5, 1], then increasing to more complex hand-shapes [claw-5, claw-3]; supporting the caregiver in knowing that the child learning ASL typically has

---

[§] Did I foster skill growth to the next level using visual aids, manipulative, concrete examples, and situations? For example, asking a child "which" question occurs before the next questioning level, such as who, what, or where?

Kurtzer-White E, Luterman D, eds. *Early Childhood Deafness.* Baltimore, MD: York Press; 2001:13–28

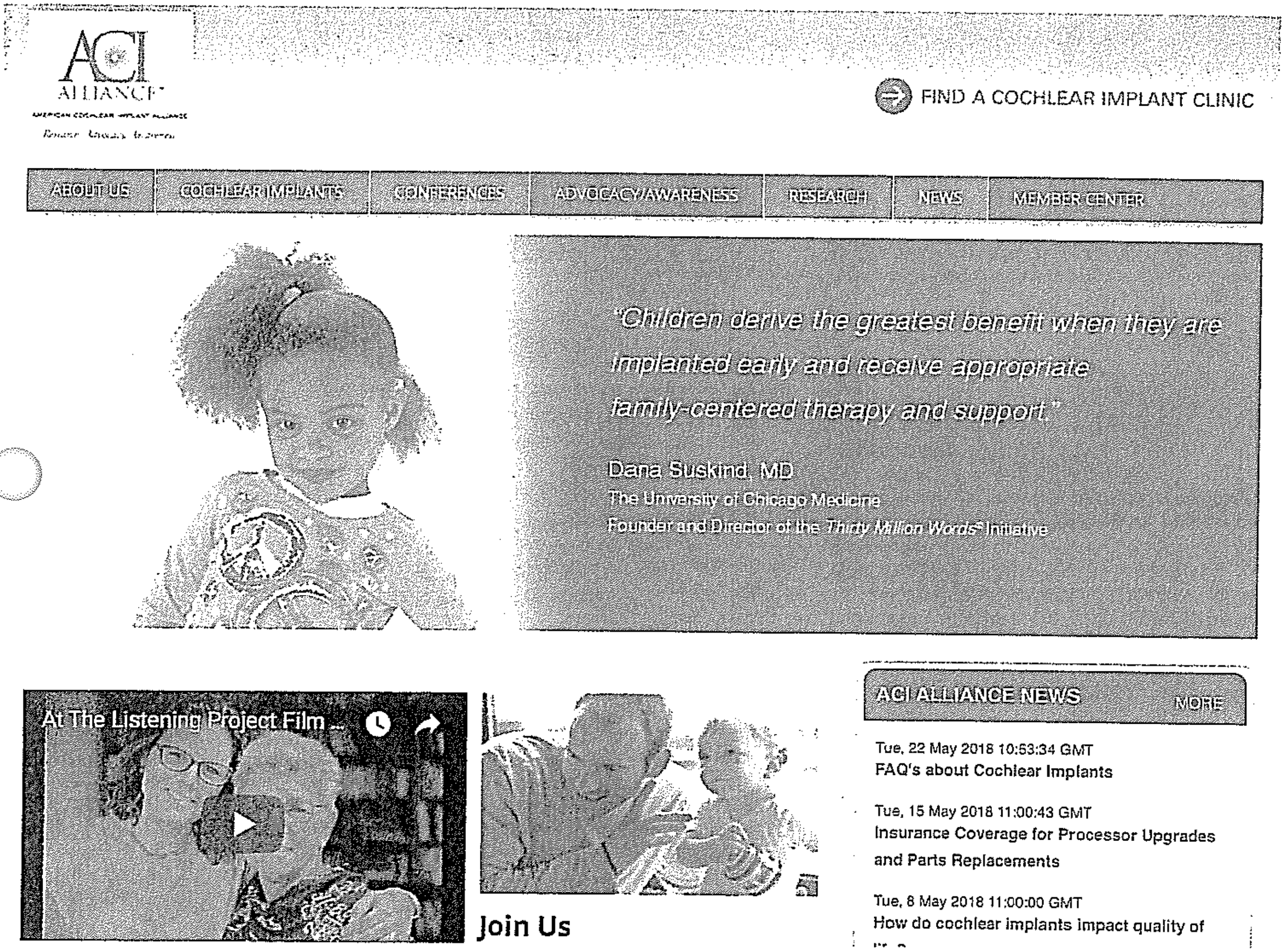
27. Jackson CW. Family involvement in early intervention for children who are deaf or hard of hearing. *Early Childhood Services.* 2009;3(1):77–97
28. DesJardin JL, Ambrose SE, Eisenberg LS. Literacy skills in children with cochlear implants: the importance of early oral language and joint storybook reading. *J Deaf Stud Deaf Educ.* 2009;14(1):22–43
29. Calderon R. Parental involvement in deaf children's education programs as a predictor of child's language, early reading, and social-emotional development. *J Deaf Stud Deaf Educ.* 2000;5(2):140–155
30. Nittrouer S, Burton L. The role of early language experience in the development of speech perception and language processing abilities in children with hearing loss. *Volta Rev.* 2001;103(1):5–37
31. Yoshinaga-Itano C. From screening to early identification and intervention: discovering predictors to successful outcomes for children with significant hearing loss. *J Deaf Stud Deaf Educ.* 2003;8(1):11–30
32. Marge DK, Marge M. Beyond newborn hearing screening: meeting the educational and health care needs of infants and young children with hearing loss in America. Report and recommendations of the 2004 National Consensus Conference on Effective Educational and Health Care Interventions for Infants and Young Children With Hearing Loss. Syracuse, NY: State University of New York, Upstate Medical University; 2005. Available at: www.upstate.edu/pmr/research/beyond_newborn.pdf. Accessed August 17, 2012
33. Russ SA, Dougherty D, Jagadish P. Accelerating evidence into practice for the benefit of children with early hearing loss. *Pediatrics.* 2010;126(suppl 1):S7–S18
34. Stredler Brown A, Arehart K. Universal newborn hearing screening: impact on early intervention services. *Volta Rev.* 2000;100(5):85–117
35. Harrison M. Assessing communication development in infants and toddlers: Collaborating with families. In: Seewald R, Bamford J, eds. *A Sound Foundation Through Early Amplification.* Bury St Edmunds, England: St Edmundsbury Press; 2004:107–208
36. Jones TW, Ewing KM. An analysis of teacher preparation in deaf education: programs approved by the Council on Education of the Deaf. *Am Ann Deaf.* 2002;147(5):71–78
37. Lenihan S, Rice GB Early intervention in auditory/oral deaf education: parent and professional perspectives. *Volta Rev.* 2005;105(1):73–96
38. Proctor R, Niemeyer JA, Compton MV. Training needs of early intervention personnel working with infants and toddlers who are deaf or hard of hearing. *Volta Rev.* 2005;105(2):113–128
39. Napier J, Leigh G, Nann S. Teaching sign language to hearing parents of deaf children: an action research process. *Deafness Educ Int.* 2007;9(2):83–100
40. Watkins S, Pittman P, Walden B. The Deaf Mentor Experimental Project for young children who are deaf and their families. *Am Ann Deaf.* 1998;143(1):29–34
41. Mayberry R. The importance of childhood to language acquisition: evidence from American Sign Language. In: Goodman J, Nusbaum H, eds. *The Development of Speech Perception: The Transition From Speech Sounds to Spoken Words.* Cambridge, MA: MIT Press; 1994:57–90
42. Morford J, Mayberry R. A reexamination of "early exposure" and its implications for language acquisition by eye. In: Chamberlain C, Morford J, Mayberry R, eds. *Language Acquisition by Eye.* Mahwah, NJ: Erlbaum; 2000:111–127
43. Schick B, Williams K, Bolster L. Skill levels of educational interpreters working in public schools. *J Deaf Stud Deaf Educ.* 1999;4(2):144–155
44. Yoshinaga-Itano C, Sedey AL. Early speech development in children who are deaf or hard of hearing: interrelationships with language and hearing. *Volta Rev.* 2000;100(5):181–211
45. Sharma A, Dorman MF. Central auditory development in children with cochlear implants: clinical implications. *Adv Otorhinolaryngol.* 2006;64:66–88
46. Sharma A, Dorman MF, Spahr AJ. A sensitive period for the development of the central auditory system in children with cochlear implants: implications for age of implantation. *Ear Hear.* 2002;23(6):532–539
47. Roush J, Harrison M, Palsha S, Davidson D. A national survey of educational preparation programs for early intervention specialists. *Am Ann Deaf.* 1992;137(5):425–430
48. AG Bell Academy for Listening and Spoken Language [Web page]. Available at: http://nc.agbell.org//Page.aspx?pid=1244. Accessed August 17, 2012
49. Gallaudet Research Institute. Regional and national summary report from the 2007-2008 annual survey of deaf and hard of hearing children and youth. Available at: http://research.gallaudet.edu/Demographics/2008_National_Summary.pdf
50. Pipp-Siegel S, Sedey AL, VanLeeuwen AM, Yoshinaga-Itano C. Mastery motivation and expressive language in young children with hearing loss. *J Deaf Stud Deaf Educ.* 2003;8(2):133–145
51. Steinberg A, Bain L, Li Y, Delgado G, Ruperto V. Decisions Hispanic families make after the identification of deafness. *J Deaf Stud Deaf Educ.* 2003;8(3):291–314
52. American Speech-Language-Hearing Association. Cultural competence [issues in ethics]. 2005. Available at: www.asha.org/docs/html/PI2011-00326.html. Accessed August 17, 2012
53. McConkey Robbins A, Green JE, Waltzman SB. Bilingual oral language proficiency in children with cochlear implants. *Arch Otolaryngol Head Neck Surg.* 2004;13:644–647
54. Waltzman SB, Robbins AM, Green JE, Cohen NL. Second oral language capabilities in children with cochlear implants. *Otol Neurotol.* 2003;24(5):757–763
55. Yoshinaga-Itano C. Early identification, communication modality and the development of speech and spoken language skills: patterns and considerations. In: Marschark M, Spencer PE, eds. *Advances in the Spoken Language of Deaf and Hard-of-Hearing Children.* New York, NY: Oxford University Press; 2006:298–327
56. Bess FH, Tharpe AM, Gibler AM. Auditory performance of children with unilateral sensorineural hearing loss. *Ear Hear.* 1986;7(1):20–26
57. Bess FH, Dodd-Murphy J, Parker RA. Children with minimal sensorineural hearing loss: prevalence, educational performance, and functional status. *Ear Hear.* 1998;19(5):339–354
58. Brookhouser PE, Worthington DW, Kelly WJ. Unilateral hearing loss in children. *Laryngoscope.* 1991;101(12 pt 1):1264–1272
59. Culbertson JL, Gilbert LE. Children with unilateral sensorineural hearing loss: cognitive, academic, and social development. *Ear Hear.* 1986;7(1):38–42
60. Klee TM, Davis-Dansky E. A comparison of unilaterally hearing-impaired children and normal-hearing children on a battery of standardized language tests. *Ear Hear.* 1986;7(1):27–37
61. Kiese-Himmel C. Unilateral sensorineural hearing impairment in childhood: analysis of 31 consecutive cases. *Int J Audiol.* 2002;41(1):57–63
62. Lieu JE, Tye-Murray N, Karzon RK, Piccirillo JF. Unilateral hearing loss is associated with worse speech-language scores

ACIA

American Cochlear Implant (ACIA) Alliance Foundation

www.acialliance.org

The mission of the American Cochlear Implant (ACIA) Alliance Foundation is to advance access to the gift of hearing provided by cochlear implantation through research, advocacy and awareness.



"Children derive the greatest benefit when they are implanted early and receive appropriate family-centered therapy and support."

Dana Suskind, MD
The University of Chicago Medicine
Founder and Director of the *Thirty Million Words®* Initiative

Join Us

ACI ALLIANCE NEWS

Tue, 22 May 2018 10:53:34 GMT
FAQ's about Cochlear Implants

Tue, 15 May 2018 11:00:43 GMT
Insurance Coverage for Processor Upgrades and Parts Replacements

Tue, 8 May 2018 11:00:00 GMT
How do cochlear implants impact quality of

ASHA

American Speech-Language Hearing Association

www.asha.org

The American Speech-Language-Hearing Association (ASHA) is the national professional, scientific, and credentialing association for 198,000 members and affiliates who are audiologists; speech-language pathologists; speech, language, and hearing scientists; audiology and speech-language pathology support personnel; and students.

AMERICAN
SPEECH-LANGUAGE-
HEARING
ASSOCIATION

AUDIOLOGY
Information Series

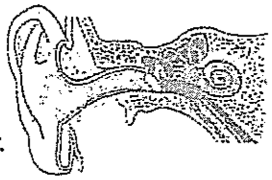
Childhood Hearing Loss

Early detection of hearing loss and early use of hearing aids or cochlear implants are critical for the development of speech, language, and communication skills in children with hearing loss. In fact, children identified with a hearing loss by 6 months of age who received a hearing aid or cochlear implant and habilitation services have been shown years later to have language skills similar to those of children of the same age who have normal hearing.

If your baby has failed newborn hearing screening in the hospital, you will be referred to an audiologist for the child to receive a complete diagnostic hearing test. Based on this testing, the audiologist will be able to tell you if your baby has a hearing loss and, if so, the type and degree of hearing loss, as well as provide you some ideas about what to do next.

Most parents know very little about hearing loss. If your child has been diagnosed with hearing loss, you will have much to learn. Fortunately, there are many people who are there to support you in this journey.

How We Hear



The ear can be divided into three parts leading up to the brain—the outer ear, middle ear, and inner ear.

- Outer ear: Sound travels down the ear canal, striking the eardrum and causing it to move or vibrate.
- Middle ear: Vibrations from the eardrum cause tiny bones to vibrate, which, in turn, creates movement of the fluid in the inner ear.
- Inner ear: Movement of the fluid sends electric signals from the inner ear up the auditory nerve (also known as the hearing nerve) to the brain.

The brain then interprets these electric signals as sound.

Types of Hearing Loss

Conductive hearing loss is caused by a problem in the outer or middle ear that blocks the normal flow of sound to the inner ear. This type of hearing loss is often medically or surgically treatable. Causes of conductive hearing loss include fluid in the middle ear, wax in the ear canal, malformation of the middle ear bones or ear canal, or a hole in the eardrum.

Sensorineural hearing loss is most often caused by a problem in the inner ear. This type of hearing loss is often permanent and cannot be medically or surgically treated. Causes of sensorineural hearing loss include genetic factors, lack of oxygen during birth, and prenatal infections.

Mixed hearing loss is caused by a combination of both conductive and sensorineural hearing loss in the same ear.

Auditory neuropathy (auditory dyssynchrony) occurs when the inner ear is working but the sound is not reaching the hearing nerve in the proper way. Sounds are either distorted or not heard at all.

Degree of Hearing Loss

The amount of hearing loss your child has is called the "degree" of hearing loss. The degree of hearing loss can be mild, moderate, severe, or profound. It is important to understand that even a "mild" hearing loss can affect your child's speech and language skills.

Hearing Tests

Audiologists use a number of different tests to help determine the type and amount of your child's hearing loss. Often, hearing aids will be recommended. Depending on the amount or degree of your child's hearing loss, cochlear implants may also be discussed. You will also be referred to the early intervention program in your area.

Hearing Aids/Cochlear Implants

Early detection of hearing loss and early use of hearing aids or cochlear implants are critical for the development of speech, language, and communication skills in children with hearing loss. In fact, infants identified with a hearing loss by 6 months of age who received a hearing

AMERICAN
SPEECH-LANGUAGE-
HEARING
ASSOCIATION
AUDIOLOGY
Information Series

Causes of Hearing Loss in Children

Hearing Loss at Birth (Congenital Hearing Loss)

The term *congenital hearing loss* means the hearing loss is present at birth. Congenital hearing loss can be caused by genetic or nongenetic factors.

Nongenetic factors account for about 25% of congenital hearing loss. Nongenetic factors that are known to cause congenital hearing loss include:

- Maternal infections, such as rubella (German measles), cytomegalovirus, or herpes simplex virus
- Prematurity
- Low birth weight
- Birth injuries
- Toxins including drugs and alcohol consumed by the mother during pregnancy
- Complications associated with the Rh factor in the blood, such as jaundice
- Maternal diabetes
- Toxemia during pregnancy
- Lack of oxygen (anoxia)

Genetic factors (hereditary) are thought to cause more than 50% of all hearing loss. Hearing loss from genetic defects can be present at birth or develop later on in life. Most genetic hearing loss can be described as autosomal recessive or autosomal dominant. Other, rarer types of genetic hearing loss include X-linked (related to the sex chromosome) or mitochondrial inheritance patterns.

In **autosomal recessive hearing loss**, both parents carry the recessive gene and pass it along to the child. Parents are often surprised to discover their child has a hearing loss because they are not aware that they are carrying a defective gene. This type of inheritance pattern accounts for about 70% of all genetic hearing loss.

An **autosomal dominant hearing loss** occurs when an abnormal gene from one parent is able to cause hearing loss even though the matching gene from the other parent is normal. The parent who is carrying the dominant gene may also have hearing loss as well as other signs and symptoms that make up a genetic syndrome. The autosomal dominant pattern accounts for about 15% of all genetic hearing loss cases.

Genetic syndromes have a group of signs and symptoms that together indicate a specific disease. There are many genetic syndromes that include hearing loss as one of the symptoms. Examples include:

- Down syndrome
- Usher syndrome
- Treacher-Collins syndrome
- Crouzon syndrome
- Alport syndrome
- Waardenburg syndrome

Hearing Loss After Birth (Acquired Hearing Loss)

Acquired hearing loss is a hearing loss that appears after birth. The hearing loss can occur at any time in one's life, as a result of an illness or injury. The following are examples of conditions that can cause acquired hearing loss in children:

- Ear infections (very common in children)
- Medications that are toxic to the ear
- Meningitis
- Measles
- Encephalitis
- Chicken pox
- Flu
- Mumps
- Head injury
- Noise exposure

American Speech-Language-Hearing Association

AUDIOLOGY
Information Series

Effects of Hearing Loss on Development

It is well recognized that hearing is critical to speech and language development, communication, and learning. Children with listening difficulties due to a hearing loss or auditory processing problems continue to be at risk for developmental delays.

The earlier a hearing loss occurs in a child's life, the more serious the effects on the child's development. Similarly, the earlier the problem is identified and intervention begun, the less serious the ultimate impact.

There are four major ways in which a hearing loss affects children:

- It causes delay in the development of receptive and expressive communication skills (speech and language).
- The language deficit causes learning problems that result in reduced academic achievement.
- Communication difficulties often lead to social isolation and poor self-regard.
- It may have an impact on vocational choices.

SPECIFIC EFFECTS ON DEVELOPMENT

Vocabulary

- Vocabulary develops more slowly in children who have a hearing loss.
- Children with a hearing loss learn concrete words like *cat, jump, five,* and *red* more easily than abstract words like *before, after, equal to,* and *jealous.* They also have difficulty with function words like *the, an, are,* and *a.*
- The gap in vocabulary between children with normal hearing and those with a hearing loss widens with age. Children with a hearing loss do not catch up without intervention.
- Children with a hearing loss have difficulty understanding words with multiple meanings. For example, the word *bank* can mean the edge of a stream or a place where we put money.

Sentence Structure

- Children with a hearing loss understand and create shorter and simpler sentences than children with normal hearing.
- Children with a hearing loss often have difficulty understanding and writing complex sentences, such as those with relative clauses ("The teacher, whom I have for math, was sick today") or in the passive voice ("The ball was thrown by Mary").
- Children with a hearing loss often cannot hear word endings such as *-s* or *-ed.* This leads to misunderstandings and misuse of verb tense, pluralization, and possessives, as well as nonagreement of subjects and verbs.

Speaking

- Children with a hearing loss often cannot hear quiet speech sounds such as "s," "sh," "f," "t," and "k" and therefore do not include them in their speech. Thus, speech may be difficult to understand.
- Children with a hearing loss may not hear their own voice when they speak. They may speak too loudly or not loud enough. They may have a speaking pitch that is too high. They may sound like they are mumbling because of poor stress, poor inflection, or poor rate of speaking.

Academic Achievement

- Children with a hearing loss have difficulty with all areas of academic achievement, especially reading and mathematical skills.
- Children with a mild to moderate hearing loss, achieve one to four grade levels lower, on average, than their peers with normal hearing, unless appropriate management occurs.
- Children with a severe to profound hearing loss usually achieve skills no higher than the third- or fourth-grade level, unless appropriate educational intervention occurs early.

ASL-LEX

www.asl-lex.org

About ASL-LEX

ASL-LEX is a database of lexical and phonological properties that have been compiled for nearly 1,000 signs of American Sign Language.

It contains:

- Frequency ratings
- Iconicity rating
- Lexical properties (e.g., initialized signs, lexical class)
- Phonological coding (6 features)
- Neighborhood density calculations
- English translation
- Alternative translations (for a subset of signs)
- Reference video clip
  Formats

ASL-LEX is available as a searchable web interface and as a raw data in spreadsheet form.

ABOUT INSTRUCTIONS DOWNLOAD PUBLICATIONS

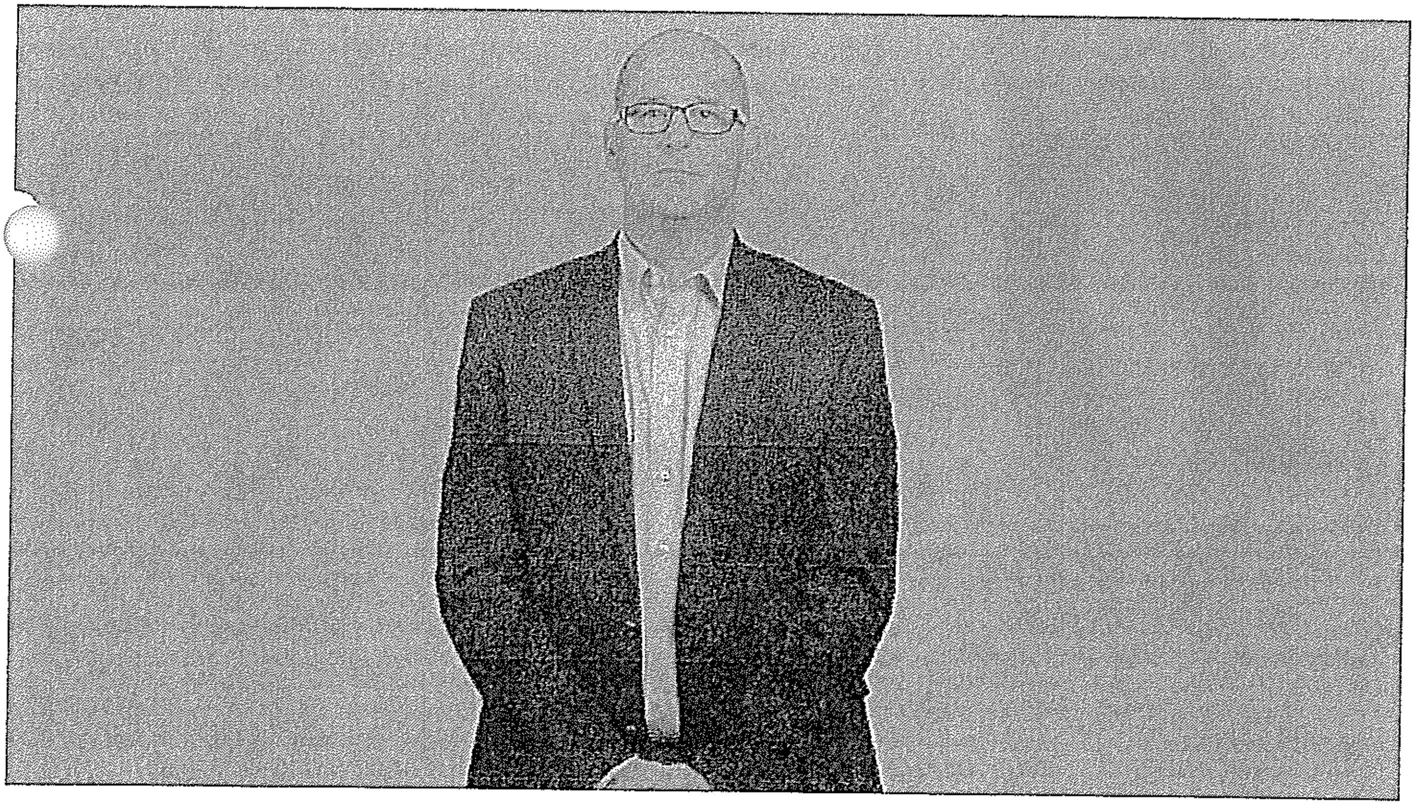
ASL-LEX

Visualizing the ASL lexicon

EXPLORE THE LEXICON

LEARN MORE

> "If children are deprived of language, they will not *thrive*."
>
> *Bruce Bucci, deaf studies instructor, Boston University*



Language Barriers

Hearing parents of deaf children face all of the challenges of parenthood plus the need to learn a completely new language for communicating with their child. They also face conflicting advice from health providers, associations, and educators.

There is also a notion that deaf children struggle with reading because they can't sound out words. This connection between written language and sounds is called phonological coding. But according to research Lieberman did before she came to BU, this is also a misconception. "Many skilled deaf readers do not have access to phonological coding," she says. "They clearly have alternate routes to reading, most likely having a foundation in sign language."

Ultimately, there is no risk to introducing children to sign language. Research shows that the deaf child will only benefit, whether hearing and speech are introduced later or not. "You can do both," says Caselli. "You can learn sign language and try to get spoken language."

One of the biggest challenges for educators and researchers who want to improve deaf education is figuring out how to detect language deprivation. This would not only help researchers understand the scale of the problem but also help them guide deaf children and their parents to services that can smooth the way to introducing sign language.

90 to 95 percent of deaf children are born to hearing parents who often don't know sign language

Photo by: The Learning Center for the Deaf

Lieberman. "They look up to see a sign and down to connect the sign to an object," she says. "They do so in meaningful and purposeful ways."

Bruce Bucci holds his daughter Sophia (age one at the time) and teaches his daughter Isabella to sign "birthday" while celebrating her third birthday. Photo courtesy of Bruce Bucci

Since eye movements reveal a lot about how deaf children process and learn language, Lieberman developed a set of studies using techniques that track eye movements and is continuing this research with a grant from the NIH. She and her research team, which includes both deaf and hearing researchers, are focused on deaf children as young as 18 months and up to five years to understand how and when they learn words.

The study will include both deaf children with deaf parents and deaf children with hearing parents. "We want to look at the full spectrum of deaf children, looking carefully at the quantity and quality of language exposure they're receiving," says Lieberman. "How do those two measures correlate with the ability to develop visual attention skills and new words?"

Not only will this research help develop milestones for detecting language deprivation, it will also help develop interventions for children who are falling behind. An outcome could be an educational program, or tips for parents that help them manage their child's gaze. "Without looking, there's no language," says Lieberman.

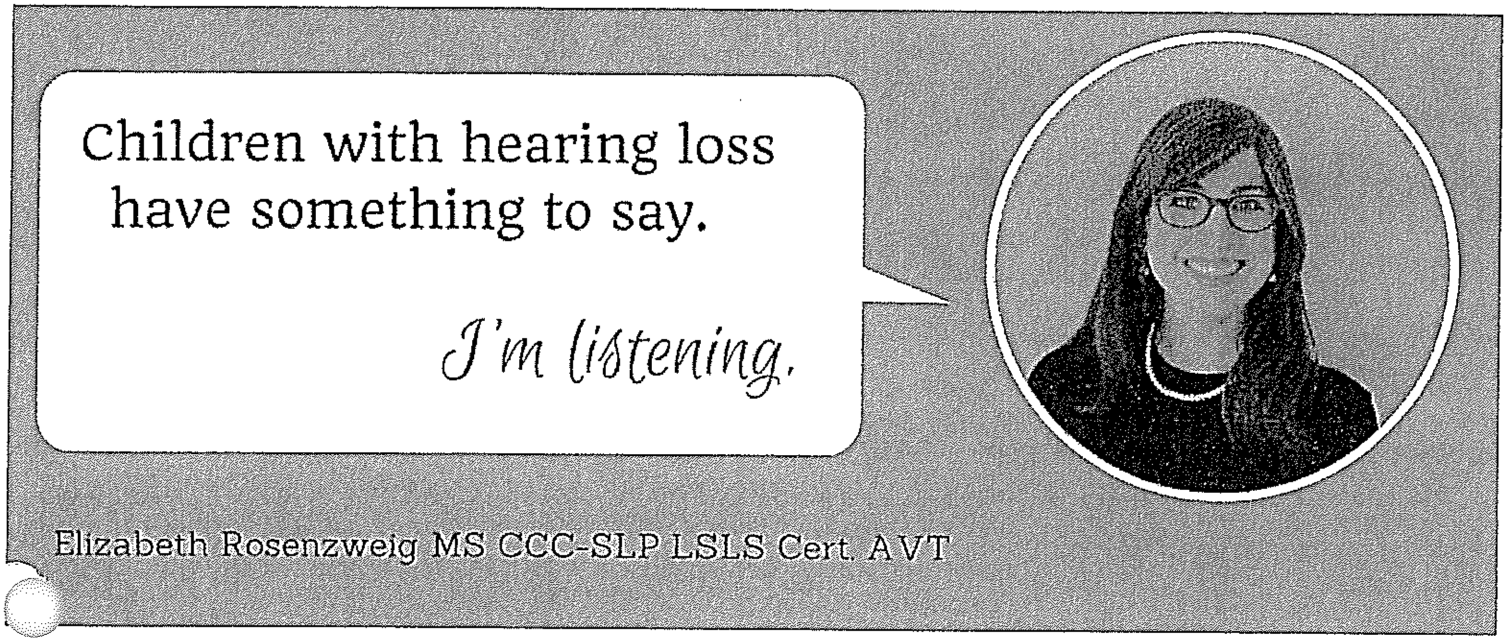
AUDITORY VERBAL THERAPY

www.auditoryverbaltherapy.net

Elizabeth Rosenzweig MS CCC-SLP LSLS Cert. AVT is Listening and Spoken Language Specialist, Certified Auditory-Verbal Therapist in private practice. She provides auditory-verbal therapy, aural rehabilitation, and educational advocacy services to families around the world using teletherapy. Elizabeth also mentors aspiring listening and spoken language therapists and has worked to build the capacity of professionals in developing countries, especially in Latin America. She has authored two children's books featuring characters with cochlear implants (Ellie's Ears and Happy Birthday to My Ears) and is active in research on hearing technology and speech, language, and literacy outcomes for children with hearing loss.

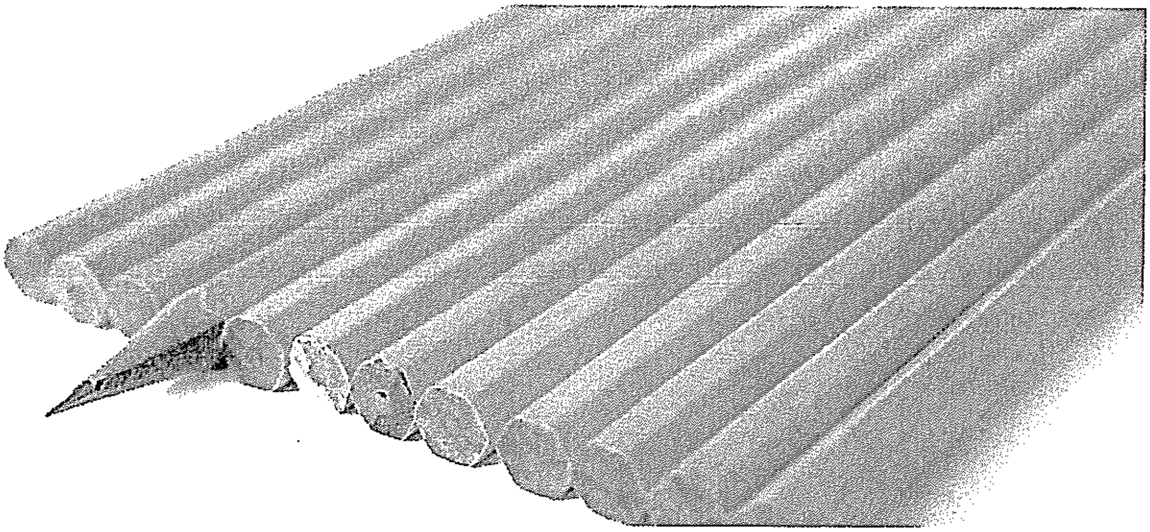
Auditory Verbal Therapy

Elizabeth Rosenzweig MS CCC-SLP LSLS Cert. AVT



About

Elizabeth Rosenzweig MS CCC-SLP LSLS Cert. AVT is Listening and Spoken Language Specialist, Certified Auditory-Verbal Therapist in private practice. She provides auditory-verbal therapy, aural rehabilitation, and educational advocacy services to families around the world using teletherapy. Elizabeth also mentors aspiring listening and spoken language therapists and has worked to build the capacity of professionals in developing countries, especially in Latin America. She has authored two children's books featuring characters with cochlear implants (Ellie's Ears and Happy Birthday to My Ears) and is active in research on hearing technology and speech, language, and literacy outcomes for children with hearing loss.



For Children with Hearing Loss, Not Just Any SLP Will Do

Posted on September 2, 2014 by earosenzweig

I am a Speech-Language Pathologist (SLP) by training. I think SLPs are *great*! But I strongly believe that for children with hearing loss, not just any SLP will do. Why?

Speech-language pathology training programs in the United States are governed by the American Speech-Langauge Hearing Association's Council on Academic Accreditation (ASHA CAA). In other countries with developed communication disorders professions, similar organizations exist (for example, SAC-OAC in

those hours could be spent working in a manual communication mode. It could also mean hours spent learning listening and spoken language techniques and practicing them under the guidance of a Listening and Spoken Language Specialist. All SLP graduate students will take at least one class on "aural rehabilitation" or "speech for the hearing impaired," but who is teaching that course, and what is the outlook that is being presented? Preparation varies so wildly between programs. *But they all get the same CCCs at the end. How is a consumer to know?*

And this is where I think that schools, early intervention agencies, and private practices can sometimes start to pull the wool over parents' eyes…

Schools will often argue that their staff SLP is qualified to work with a child with hearing loss to fulfill IEP goals because, after all, she "has experience working with children with hearing loss." The school SLP, often a lovely but insanely overburdened woman, most often sees students in mixed groups assigned not by need, but by convenience. (Have you ever thought about the logistics of pulling a caseload of roughly 80+ children a week from their classes while making sure they don't miss important academic material? It's enough to make you pull your hair out.) A child with hearing loss may be placed in a group with a child who has articulation difficulties, a child with autism, and a child who stutters. Is this the ideal environment for growing listening and spoken language? And even if the child is fortunate enough to snag a coveted one-on-one session with the school SLP, did her one course in "speech for the hearing impaired" in graduate school prepare her to meet the needs of today's child with hearing loss in the 21st century?

coursework. They are also required to keep up their continuing education hours to remain certified. This means that LSLS Cert. AVTs have demonstrated a commitment to furthering their knowledge in the field of listening and spoken language not once, but on a continual basis, so that their knowledge and skills keep pace with the rapidly-changing world of information about hearing loss. You want someone who is LSLS certified or who is in the process of certification under the guidance of a highly qualified mentor.

- During their training, LSLS Cert. AVTs practice under the guidance of a mentor. They are constantly evaluating their own skills as well as working with seasoned, experienced AVT mentors who guide and coach them to improve their practice. You can't be a "lone wolf" practicing whichever way feels best to you, whether or not it is based in research and evidence based practice.

- To earn the LSLS Cert. AVT credential, applicants must pass a rigorous test. This standardized assessment gives families assurance of the quality of this professional's knowledge and skills. Any SLP can claim "experience with hearing loss." How many can prove it?

- We know that it takes approximately 10,000 hours of practice to be able to perform a task or skill effortlessly, to really master something. If a generalist SLP is spending only a small portion of her day working with children with hearing loss, how is she accumulating those 10,000 hours of practice to become an "expert"? I simply don't believe that you can be a jack of all trades AND a master of all trades. The field of speech-language pathology is HUGE, and only by focusing on a specialty can one truly excel for that patient population.

information so that you have the best possible professional team backing you as you learn to help your child soar. Need help finding services? Contact me! I'm just an email away.

BABY HEARING

www.babyhearing.org

BabyHearing.org is brought to you by a team of professionals at Boys Town National Research Hospital. We are: Audiologists, Speech-Language Pathologists, Teachers of the Deaf, Geneticists, and Parents of Children who are Deaf or Hard of Hearing. This website was originally developed with support from the National Institute on Deafness and Other Communication Disorders.

Español

Choosing a Communication Approach

Deciding How to Communicate with Your Child

Adults and children communicate through language (e.g., English, Spanish, French, American Sign Language, British Sign Language). Babies and parents share a common language so that they can understand each other. Hearing babies begin to pay attention to language as soon as they are born. Deaf babies with deaf parents also begin to pay attention and learn as soon as they are born through sign language exposure.

When parents are hearing and their babies are deaf or hard of hearing, they need to find effective ways to communicate and model language for their babies.

> The family must find a form of communication that everyone can understand.
>
> Decisions about how to communicate in your family are very important to your child's early development.

Because each baby and family is different, the decision about how to communicate must be made carefully, based on your baby's and family's needs. Approaches vary in the amount of emphasis placed on listening, spoken language, and/or visual approaches. Sometimes one approach works for children. Sometimes combinations of communication styles are more appropriate.

Any decision will require commitment from you and from the professionals on your baby's team. You may see people refer to this as "communication modality." This means whether communication will

Cued Speech

This is a visual approach to communication that uses handshapes and placements in combination with the mouth movements of speech to make the sounds of spoken language look different from each other. For example, look in a mirror – if you turn off your voice and say "mom, pop, or Bob," you cannot tell these apart on the lips. Cued Speech adds visual information to make these and many other confusable sound combinations clear. Many sounds look alike on the face. Cued speech is a way of showing English clearly. More information about cued speech.

Manually Coded English (MCE)

Manually Coded English is a way of expressing the English language on the hands. Signs are used in combination with spoken English. Some families use a manual code of English as a tool for learning English grammar and beginning to read. For long and complicated ideas, MCE is not always the best way to communicate visually; however, many hearing, English speaking parents use MCE with their babies.

American Sign Language (ASL)

American Sign Language is the predominant sign language of the Deaf Community in the United States. Any idea that can be expressed in English can be completely expressed visually in ASL. Parents who want to learn ASL benefit from meeting and interacting with people who are fluent in ASL. To learn ASL efficiently, babies will benefit from access deaf adults who are fluent in ASL. Bilingual-bicultural approaches include an emphasis on ASL, learning English, and learning about Deaf cultural traditions and perspectives.

A Lot Depends On the Learning Needs of Your Child

Sometimes families will find a single form of communication works best, and other families may use more than one form. For example:

> One family may choose listening and spoken language methods for a child who is going to receive a cochlear implant at one year of age. Another family in this situation may sign to the baby until the implant is received, and then transition to spoken language approaches. Others may sign before and after the cochlear implant.
>
> A baby with both deaf and hearing family members may learn sign language while using residual hearing to develop spoken language.
>
> Another child may speak clearly but do best with an educational interpreter in noisy settings, like in school.

Resources

BEGINNINGS OF N.C.

www.ncbegin.org

BEGINNINGS for Parents of Children who are Deaf or Hard of Hearing is a non-profit that helps parents and families understand hearing loss, and the diverse needs of children who are deaf or hard of hearing. Our impartial support helps families make informed decisions and empowers them to advocate for their child's needs. We support deaf parents who have children who are hearing and collaborate with the professionals who serve all of our children.

beginnings®

EMPOWERING PARENTS OF CHILDREN
WHO ARE DEAF OR HARD OF HEARING
THROUGH EDUCATION AND SUPPORT

guidance for your child's journey™

Approaches to communication

Information to help parents make decisions

More than 9 out of 10 children born with hearing loss have parents with typical hearing, according to the National Institute on Deafness and Other Communication Disorders.

Most of these families have no experience with hearing loss or the associated terminology. Families often do not understand how typically hearing children develop language, or how hearing loss affects language development.

Families may feel they are alone in this journey, but they are not. Studies indicate that as many as 6 children per 1,000 in the United States are born with a hearing loss each year.

Families need access to impartial, accurate information early on, and they need to know *they* are the true experts for their child and their family.

> *Families should have access to information about all intervention and treatment options and counseling regarding hearing loss.*
>
> *Intervention programs should recognize and build on strengths, informed choices, traditions, and cultural beliefs of the families.*
>
> Joint Commission on Infant Hearing

The Joint Commission on Infant Hearing (JCIH) endorses early hearing detection and intervention for infants to maximize linguistic competency and literacy development for infants and children who are deaf or hard of hearing.

There is so much focus on early identificiation and early intervention because we know birth to age 3 are the critical years for children to develop expressive and receptive language, communication skills, and speech (when appropriate). Research tells us that infants with hearing loss who begin services before 6 months of age will develop language (spoken or signed) on par with their hearing peers.

During these early months, parents are asked to make decisions quickly. The sense of urgency can be overwhelming. Some choices will be easy, some will take more time to make. And not all families will need to make a decision immediately about which language will be right for them or whether or not they want to pursue amplification.

Families who face these choices are encouraged to research their options, do their homework, meet other families and community members, and seek out professionals for information.

There is no one way to raise a child who is deaf or hard of hearing. Each family finds and chooses what works best for them. That may include more than one language or communication method.

Learn more about the options inside.

Learn more about BEGINNINGS at
www.ncbegin.org

ommunication

g a spoken language (A tory oral)	Cued speech (Combined visual and auditory)	Simultaneous communication (Combined visual and auditory)
h that teaches a child to use his/ g hearing through and the use of ng/natural gestures/visual signals ld's understanding of language.	• An auditory-visual communication approach combining a system of hand cues with the natural mouth movements of speech, specifying each sound (phoneme) of spoken language clearly. • A hand shape (consonant groups) at a location (vowel groups) cues a syllable. This integration provides clear access to all the phonemes (sounds) as parents coo, babble and talk.	• An educational philosophy that uses spoken language and sign language simultaneously. • Uses an English-based sign language system, which can include speech, speech-reading, fingerspelling, natural gestures and the use of residual hearing.
spoken language through visual signals. spoken language and on skills necessary for school ntegration into the hearing	• To provide clear communication in the spoken language of the home. • To develop the phonemic language base to achieve full literacy in conversation, reading and writing. • To support speechreading, speech and auditory skill development.	• To provide a bridge to the development of spoken language in the very young child. • To provide communication between the child and his/her family, teachers and peers using sign language. • To support integration into both the hearing and the Deaf communities.
elo internal language through en[illegible]ing nd [illegible]lopmentally herapy, which includes speech- he use of hearing technology.	• The child absorbs language through early, consistent, clear communication using Cued Speech, speechreading and hearing. • Cueing boosts auditory awareness, discrimination and understanding.	The child develops language through speechreading, listening and exposure to a combination of speech and sign-based systems in English order.
ritten English	Cued, spoken and written English or other languages (60+ cued languages)	Spoken English using sign language in English word order, and written English
tent and appropriate use of ology (hearing aid(s), ant(s), bone-conduction aring assistive technology portant with this approach. going auditory management.	• Early, consistent and appropriate use of hearing technology (hearing aid(s), cochlear implant(s), bone-conduction implant(s), hearing assistive technology system) is important with this approach. • Requires ongoing auditory management.	• Consistent and appropriate use of hearing technology (hearing aid(s), cochlear implant(s), bone-conduction implant(s), hearing assistive technology system) is strongly encouraged. • Requires ongoing auditory management.
expected to provide arry-over of goals, strategies es from the child's classroom individual therapy sessions ines and play activities. d to work with the child's l/or therapist(s) to learn [illegible]es for developing chrea[illegible]g and speaking skills in ng environment.	• Parents are expected to learn to speak-and-cue at all times in order for children to absorb the phonemes critical to language and reading readiness. • Families need to provide consistent use of cues and speech during daily routines and play activities. • The system is taught in less than 20 hours. Consistent daily use and practice leads to conversational ease within a year.	• Families are expected to learn and consistently use the chosen English-based sign language system. • Parents need to work with the child's teacher(s) and/or therapist(s) to learn strategies that promote language expansion.

beginnings.

EMPOWERING PARENTS OF CHILDREN
WHO ARE DEAF OR HARD OF HEARING
THROUGH EDUCATION AND SUPPORT

guidance for your child's journey™

Family responsibility

Raising a child who is deaf or hard of hearing: It's a family affair

When you discover your child has a hearing loss, your life changes forever. As your child's first and lifelong teacher, you will need to learn about hearing, communication, language development, how hearing loss impacts your family, and your child's unique needs.

Though this journey may be initially overwhelming, there are resources available to help you make decisions to ensure your child's success. It's important to remember you are not alone.

All families face challenges along their journeys. Families with children who are deaf or hard of hearing face challenges different from those of their extended family and friends.

Communication decisions are key for the child and the entire family. Unlike their typically hearing peers, children with hearing loss have limited access to incidental learning, which means they learn very little by "overhearing" what others are saying and accidentally learning language. For this reason, it's imperative everyone in the family understands how hearing loss impacts a child's access to communication.

Patience, a willingness to learn, and determination will serve you and your child well. Remember, your child is an important member of your family and community. Make sure they know it by including them and ensuring they have access to all communication.

Model self-advocacy skills

You quickly learn your child needs help navigating life. This is no different for children with hearing loss, who need support to access communication. Once you understand what your child needs, it's important to share that information with other people in your family's circle and beyond. Teaching others about hearing loss and your child's needs is the first step to teaching your child how to self advocate, a necessary life skill.

When you encounter someone who is new to your child's life explain hearing loss in simple terms and encourage the person to:

- Get you child's attention before speaking
- Face your child to provide access to facial cues
- Speak at a natural volume, don't shout; speaking loudly can cause distortion
- Don't over enunciate
- Check for understanding

Though it may not seem possible when you have a very young child, it won't be long before your child will be able to explain his or her own needs to those around them. Modeling good advocacy skills and self-confidence early and often will pay off later on.

Learn more about BEGINNINGS at
www.ncbegin.org

beginnings® EMPOWERING PARENTS OF CHILDREN
WHO ARE DEAF OR HARD OF HEARING
THROUGH EDUCATION AND SUPPORT

guidance for your child's journey™

Minimal loss of hearing

Could your child be missing out at home and at school?

Children with hearing loss of any degree have been shown to have academic, social and behavioral difficulties stemming from the inability to understand or learn the language that surrounds them. These children often choose not to participate in group settings or in loud environments because they cannot understand what is happening.

- For a child who has no language, a mild loss can cause speech issues in the future.
- A child who misses subtle conversation cues may respond in an inappropriate way, which is frustrating for all involved.
- A child who misses classroom instructions may be seen as a behavior problem because of his or her lack of response to the teacher.
- A child who cannot hear the teacher is not learning.
- If a child does not hear a sound, he/she cannot produce the sound. This affects writing, reading, and speech.
- If a child does not hear soft speech, he/she will not hear peers in the classroom or on the playground, will not "overhear" conversation and will have limited opportunities for incidental learning. This will lead to reduced language and literacy skills.

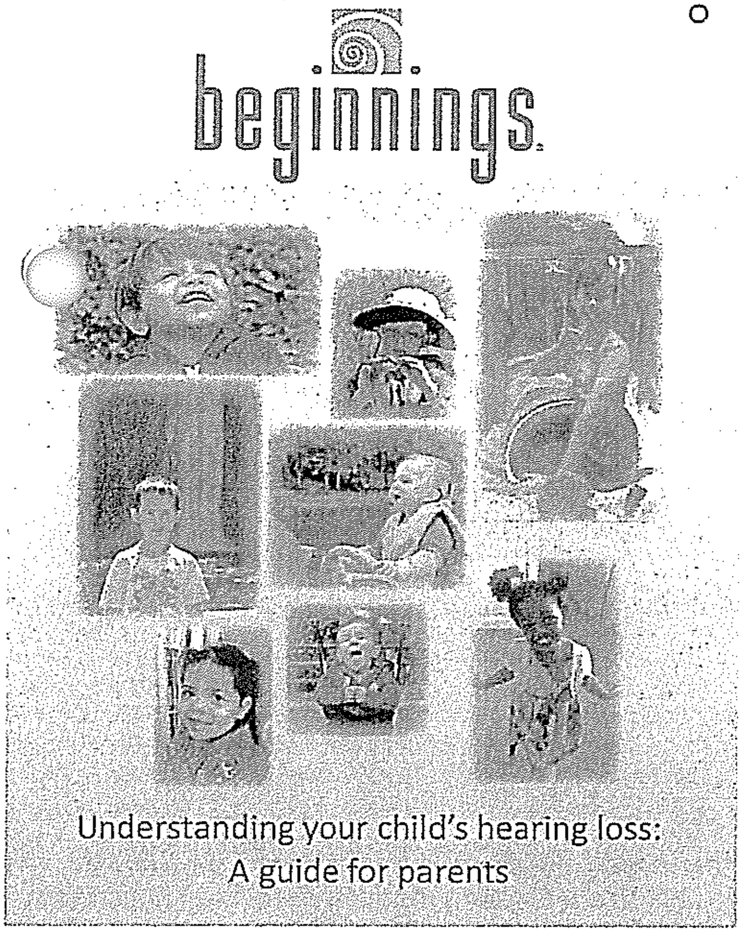
Competing noise levels	What is understood
Speech at 50 dB in quiet	84%
Speech at 35 dB in quiet	56%
Speech at 50 dB when surrounding noise is at 45 dB	58%
Speech at 50 dB when surrounding noise is at 50 dB	46%
Speech at 35 dB when surrounding noise is at 35 dB	34%

Normal conversation takes place at 50 dBHL and soft conversation takes place at 30 dBHL. Speech is best understood when competing noise is 10 decibels below the dB of conversation. In realistic situations, including tests of classroom decibel levels, speech is often only 5 dB or less above the competing noise.

Hearing 85% of a conversation
is like putting together a 500 piece puzzle
without 75 of the pieces.

Learn more about BEGINNINGS at
www.ncbegin.org

Understanding Your Child's Hearing Loss: A Guide for Parents



0

Understanding Your Child's Hearing Loss: A Guide for Parents

$20.00

This manual was originally written by a parent, revised in 2006, and again in 2010. The Manual includes chapters on acceptance of feelings and coping strategies, the auditory systems, childhood hearing loss, assistive technology, communication options, education and advocacy, and a national resource listing.

1 ADD TO CART

Category: Beginnings Products ()

Description Additional information

Description

This manual was originally written by a parent, revised in 2006, and again in 2010. The Manual includes chapters on acceptance of feelings and coping strategies, the auditory systems, childhood hearing loss, assistive technology, communication options, education and advocacy, and a national resource listing.

Assurances from Beginnings of North Carolina Regarding Cultural Inclusion & Sensitivity of Deaf Culture

Source: **Interview with Diane Doak, Executive Director of Beginnings NC**

Date: **08-02-2018**

History:

Beginnings was founded by a group of families in 1985 whose sole purpose was to provide unbiased information concerning the options, choices, and responsibilities parents of children who are deaf and hard of hearing face, whether the parents of the child hear or are deaf / Deaf.

The founding group included families who represented all of the main modes of communication for which were prevalent at the time:

- American Sign Language or Other Visual Language Systems
- Total Communication (now Simultaneous Communication)
- Cued Speech
- Auditory Oral / Auditory Verbal

Today:

Beginnings NC's fundamental philosophy concerning the materials they produce and services they provide is that *"what's important to the parents is what is important to Beginnings"*. This philosophy is of primary importance because regardless of the communication mode a deaf or hard of hearing child uses, all research points to the critical and fundamental role of his/her parent(s). Parents must be informed and empowered for a child who is deaf/hard of hearing to learn language.

Because Beginnings' goal is to serve ALL parents by providing education materials and training, the sensitive and often polarizing debates surrounding modes of communication are handled with utmost care and respect for all.

To effectively meet the needs of ALL parents of children who are deaf / hard of hearing, Beginnings employs staff members and Parent Educators who:

- Are themselves deaf
- Are conversant in American Sign Language
- 2 of their Parent Educators have Deaf children who use ASL as their primary language
- 3 of their Parent Educators are certified Teachers of the Deaf (includes sign language certifications)

In addition to cultural sensitivity for those who are Deaf and use ASL, Beginnings also employs 2 Parent Educators who are fluent in Spanish.

CENTER FOR DISEASE CONTROL
EHDI
(Early Hearing Detection & Intervention)

www.cdc.gov

- Decision Guide to Communication Choices
- Making a Plan For Your Child
- Early Intervention: Communication and Language Services for Families of Deaf and Hard-of-Hearing Children

Decision Guide to Communication Choices

For Parents of Children Who Are Deaf or Hard of Hearing

> *"I wish I knew when my son was little that the decisions I made for him were my decisions for that time. I wish I knew I could change course and that was okay. It would have taken a lot of pressure off. I wish I realized that as he grew older, he would become the decision-maker and I would become his consultant and biggest fan."*
>
> Candace Lindow-Davies, Luke's mom, © 2008 MN - Hands & Voices

National Center on Birth Defects and Developmental Disabilities
Division of Human Development and Disability

CDC

You may use separate sheets if you need more space.

From whom have you received support?	Name:	Name:	Name:
Which option does this person prefer?			
Is this person pressuring you?			
How can this person support you?			
What part of the person's background affects their opinion?			

Advantages *and* Limitations of Communication Options

This chart helps you work through your needs in the four categories (A, B, C and D) in Step 2 above.

You may use separate sheets if you need more space.

	Advantages: Reasons to choose this option	**How much it matters. Add ★ to ★★★★★**	**Limitations:** Reasons to avoid this option	**How much it matters. Add ★ to ★★★★★**
Option 1				
Option 2				
Option 3				
Combination of Options				

B. Knowledge

- ☐ Are you confident that you know all the options available? ☐ Yes ☐ No
- ☐ Have you considered the advantages and limitations to each option for your family? ☐ Yes ☐ No
- ☐ Have you looked for more information or talked with others who can help you find more information? Yes ☐ No

In the Advantages and Limitations table above: List the options and the main advantages and limitations that you already know. <u>Underline</u> the advantages and limitations that you think you are most likely to experience.

C. Values

Are you clear about which advantages and limitations matter most to you? ☐ Yes ☐ No

In the Advantages and Limitations table above: Use stars (★) to show how much each advantage and limitation matters to you. Five stars (★★★★★) means that it matters "a lot." Zero stars means it matters "not at all."

D. Certainty

At this point do you feel confident that you know enough about each option and how it might affect your family? ☐ Yes ☐ No

In the Advantages and Limitations table above: Circle the option or combination of options with the advantages that (1) matter most to you and (2) you believe are most likely to happen.

*See **Step Three** on next page . . .*

Making a Plan for Your Child

IFSP Considerations for Children who are Deaf and Hard of Hearing

National Center on Birth Defects and Developmental Disabilities
Division of Human Development and Disability

CDC

A good team listens to the concerns and ideas of each of its members. You are the decision-maker for your child's **modality**. Your confidence in your decision making comes from listening to and learning from the professionals who surround you. Know what you want, or at least which approach you most favor. Understand that your family's needs might change over time depending on many factors. These factors could include:

- Degree of your child's hearing loss,
- Technology your child might use,
- Primary language used in your home,
- And other special needs your child might have.

With your qualified team, develop family goals and outcomes that address the strengths and challenges specific to your child. You will be gaining knowledge about emerging **communication** considerations and making decisions related to communication. The outcomes you develop should reflect your new knowledge. The outcomes should be functional; that is, they should take into consideration communication during important family routines, such as meals, bedtime, and play. The "Communication Plan" on the next page will help you gather your thoughts and help shape discussions with your team.

Notes:

2. Assistive technology (AT) is any item that supports a child's ability to participate actively in his or her home, child care program, school, or other community settings. (Some examples are hearing aids, cochlear implants, special FM systems, closed captions, videophones, and adaptive toys.)

a. We are currently using the following assistive technology devices:

b. We are considering or would like more information on the following:

Action Plan, if any:

3. Identify opportunities for direct communication with others who are deaf/hard of hearing. Discuss what supports are needed to: Get adult role model connections for the family and identify opportunities for the child to have direct interaction with other children the same age who are deaf or hard of hearing.

Opportunities considered:

Action Plan, if any

4. Discuss supports the family needs to access the services and resources recommended or developed by the early intervention team. That could include the environment in which these might need to be provided.

Services/Programs considered:

Action Plan, if any:

5. List the qualified service providers on the IFSP team who have expertise, experience, and training in assessing and working with children from birth to 3 years of age who are deaf or hard of hearing. Specifically, indicate those service providers with the expertise, experience, and training in the child's and family's chosen communication option(s), if the family has decided on the option(s). (Make sure the providers have appropriate certification).

Considerations:

Action Plan, if any:

6.a. Identify the community opportunities and activities in which the family would like to participate (for example, playgroups, baby gyms, music programs, and story time at the library).

Considerations:

Action Plan, if any:

b. Discuss resources and supports needed to let the child and family fully participate in these community settings with full communication access (for example: visuals, seating, interpreting, FM systems, sound field, and appropriate group size).

Considerations:

Action Plan, if any:

EARLY INTERVENTION: COMMUNICATION AND LANGUAGE SERVICES FOR FAMILIES OF DEAF AND HARD-OF-HEARING CHILDREN

Our child has a hearing loss. What happens next?

What is early intervention?

What can we do to help our child learn to communicate with us?

We have so many questions!

You have just learned that your child has a hearing loss. You have many questions and you are not alone. Other parents of children with hearing loss have the same types of questions. All your questions are important. For many parents, there are new things to learn, questions to ask, and feelings to understand. It can be very confusing and stressful for many families.

Many services and programs will be available to you soon after your child's hearing loss is found. When a child's hearing loss is identified soon after birth, families and professionals can make sure the child gets *intervention services* at an early age. Here, the term *intervention* services include any program, service, help, or information given to families whose children have a hearing loss. Such intervention services will help children with hearing loss develop communication and language skills. There are many types of intervention services to consider. We will talk about *early intervention* and about *communication* and *language*. Some of the services provided to children with hearing loss and their families focus on these topics. This booklet can answer many of your questions about the early intervention services and choices in communication and languages available for you and your child.

Understanding Hearing Loss

Timing: The age when a hearing loss has occurred is known as "age of onset." You also might come across the terms *prelingual* and *postlingual*. A prelingual hearing loss occurs before a child has learned to understand and use language. A postlingual hearing loss occurs after a child has learned some language.

Infant and Toddler Services: Part C Program

One way to help early intervention services work well together is through a state program called the "Part C program". This is a program in each state for children from birth up to 3 years old who have a developmental delay (that is, a lag in development), or who are at risk of such a delay. Most children with hearing loss are considered to have or be at risk for a developmental delay. The Part C program is required under federal law (Individuals with Disabilities Act 2004 [IDEA 2004]). Each state program has its own rules about who may get these services based on what kind of condition the child has.. Your state's rules will say whether or not your child qualifies for this program. Find out more about IDEA 2004 is at http://idea.ed.gov/ .

Every family who takes part in the Part C program is assigned a *service coordinator*. The coordinator is a person who works closely with the family to set up services through the program. Each child is assessed by a team of experts who work with children. The team first learns about the child's strengths and needs by talking to the family and doing an assessment. Then the team advises the family and the service coordinator on the best services and interventions for the child. Together the family, the service coordinator, and the team of professionals put together a plan for the child and family called an *individualized family service plan.*

Individualized Family Service Plan (IFSP): The IFSP outlines all of the early intervention programs and services your family and child will need. The IFSP also outlines how you will receive the services, as well as any equipment and devices you will get. The IFSP should be family focused. The strengths and needs of your child and your concerns and priorities are very important when making this plan. Each child has his or her own plan, so no two plans will be the same. It is very important that your family work closely with the service coordinator and other professionals. The goal is to learn about your child and the interventions available to you in order to get the most out of the IFSP process.

Once the IFSP is completed, you and your child will receive the early intervention services and equipment that are written into the plan. As time goes on, your family, the service coordinator, and other professionals from your child's team will look to the IFSP to ensure your child is getting the services and equipment detailed in the IFSP. You and the service coordinator can change the IFSP as your child grows or when your child's needs change. The service coordinator will meet with you at least every 6 months to make any necessary changes in the IFSP. You can request that your child's plan be looked at sooner if you see the need to make changes.

Parents often find the Part C program to be an essential resource. If you have not been referred already to the Part C program in your state, please ask one of the professionals who are working with you and your child to tell you how to contact this program. You also can contact the National Early Childhood Technical Assistance Center (NECTAC) (http://www.nectac.org/default.asp). NECTAC is funded by the U.S. Department of Education, Office of Special Education Programs. It provides information about the Part C program and support to families. Once children are 3 years of age, they change from Part C to Part B services. The transition plan should begin when the child is about 2½ years of age. Please talk with your service coordinator about this.

Communication and Language Options

As a parent, it is never too early to begin thinking about how you can help your child build a solid language foundation. This is even more important for a child with hearing loss because children with hearing loss are more likely to have language delays. That is, they may learn language more slowly than children who do not have a hearing loss. When a child's hearing loss is identified soon after birth, families and professionals can make sure the child gets intervention services at a very early age. This will help the child build communication and language skills using his or her best abilities.

There are many ways children with hearing loss can build communication and language skills. Many states and communities already have educational programs for infants and young children. Each program takes a different approach to communication. You might have heard about these five educational programs:

- Auditory-Oral
- Auditory-Verbal
- Bilingual American Sign Language (ASL)-English (Bi-Bi)
- Cued Speech
- Total Communication

These five programs will be discussed later in this booklet.

Eye contact: Eye contact is very important when you are signing in ASL. If you have eye contact with your child, then you can be sure that you are paying attention to each other.

Fingerspelling: Fingerspelling began as a part of ASL. Fingerspelling spells words by forming each letter using the hands and fingers. Very young children do not need to know how a word is spelled to understand fingerspelling. Instead they learn fingerspelled words by the shape and movement of the hand.

Spoken English

Spoken words: Spoken words are formed using the vocal cords (voice) and mouth and are made of speech sounds such as vowel and consonant sounds.

Auditory training and listening: Auditory training teaches a child or an adult to rely on listening to communicate. It takes advantage of a person's *residual hearing*. That is the amount of hearing that a person with a hearing loss still has, even if it is very minimal. Many children who are deaf have some residual hearing.

Speech: Speech uses the mouth, lips, tongue, and vocal cords to produce sounds for communication. Speech and auditory training (or listening) are often used together. Different speech sounds can make a difference in the meaning between two words. For example, the only difference between the two words "big" and "pig" is in the first speech sound ("bŭ" rather than "pŭ").

Speech reading: In speech reading (also known as "lip reading") a person who is deaf or hard of hearing watches a speaker's mouth and facial expressions to understand what is being said. Speech reading is also used along with other building blocks, such as listening, to communicate.

English Coding Systems

Note: English coding systems use visual methods to express the spoken English language. Coding systems are not a language of their own. Instead of using speech and hearing, coding uses signs borrowed from ASL to represent the English language. English grammar and word order are used.

Natural gestures: Natural gestures are body movements and facial expressions that you often use to help others understand your message. For instance, if you want to hold a child, you can simply stretch your arms towards the child. Or, when you put your index finger over your mouth and nose you are telling someone to be quiet. These are examples of natural gestures.

The critical period for language development

It is extremely important to remember that children have a "critical period" for learning language This is true no matter which communication strategies and communication tools you choose to help your child learn language,. Children learn language best during early childhood. It is more difficult to learn a language later in life. This is true for sign languages, like ASL, and for spoken languages, like English.

The Five Educational Programs

There are many ways children with hearing loss can build communication and language skills. Many states and communities already have educational programs for infants and young children. Each program takes a different approach to communication. The five educational programs (Auditory-Oral, Auditory-Verbal, Bilingual Bicultural (Bi-Bi), Cued Speech, and Total Communication) emphasize different languages, communication strategies and other communication tools that we have just talked about.. Some educational programs use more ways to communicate than others. This does not mean one program is better than the others. It just means different programs emphasize different ways to communicate. Here is a short description of each program.

Auditory-Oral: The Auditory-Oral approach stresses technology to make the most of residual hearing) to develop spoken language. Examples include the use of hearing aids or cochlear implants. This approach also includes the use of speech reading and natural gestures.

Auditory-Verbal: The Auditory-Verbal approach also stresses technology to make the most of residual hearing to develop spoken language. However, this approach focuses on listening and, therefore, does not encourage the use of speech reading.

Bilingual-Bicultural (Bi-Bi): The Bi-Bi approach focuses on the use of two languages: ASL and the native language of the family (for example, English or Spanish). ASL usually is taught as the child's first language. English (or the family's native language) is taught as the child's second language through reading, writing, and speech. Respect for Deaf culture also is taught.

- Touch (such as rocking and holding your child)
- Vision (facial expressions, eye contact)
- Gestures, and
- Sound

Extending your arms to your child shows that you are about to pick him or her up. Other ways of communicating include smiling, laughing, hugging and letting your child keep you in sight. Your physical and visual contact with your child tells him or her that you are there and everything is safe.

Many children with hearing loss have some hearing and can partially hear voices, especially if the person talking is very close. So try speaking to your child while he or she is close to you and talk in a voice that you would use with a child who has full hearing. Your child might be very interested in looking at faces and will begin to understand that your face and mouth are sending important messages. So make sure that you often talk to your child when he or she is able to see your face.

Some things to remember when communicating with your child:

- Set your child close to you so that he or she can see your face.
- Try to minimize background noises so that your child can use the hearing he or she has to the best of his or her ability.
- Use good lighting. Be sure that the room is not too dark or the lights too bright. And don't sit or stand in front of a bright light such as a window. If you are in front of a bright light, your face will be in a shadow and your child will not be able to see your mouth.
- Make eye contact often.
- Imitate the movements and sounds your child makes, then wait for him or her to repeat them.
- Work on communicating with your child during activities that you both enjoy.
- Take time to communicate with your child many times throughout the day.
- Make some quiet time for both you and your child. If your child becomes restless, he or she may be overwhelmed by all of the communication.
- And most importantly, enjoy the time you and your child spend together.

CUED SPEECH

www.CuedSpeech.com

Cued speech is a visual communication system - mouth movements of speech combined with "cues" to make all the sounds (phonemes) of spoken language look different.

CuedSpeech.com

Making Spoken Languages Visible
for Communication, Language and Literacy

View Cart

Make A Donation
to National Cued
Speech
Association
Donate

| Home | What Is Cued Speech | Products | Calendar | Job Opportunities | Links | Contact Us | NCSA Membership | How To's... |

What is Cued Speech

Cued Speech defined

Cued Speech is a visual communication system — mouth movements of speech combine with "cues" to make all the sounds (phonemes) of spoken language look different.

What are the "cues"?

When cueing English, eight handshapes distinguish consonant phonemes and four locations near the mouth distinguish vowel phonemes. A handshape and a location together cue a syllable.

Can I use Cued Speech with other communication systems?

Yes! Cued Speech complements all the various auditory and signed language approaches. The typical deaf cuer is flexible, able to communicate with speech, speechreading, Cued Speech, and signed language.

Why should I use Cued Speech?

Literacy is the original and primary goal of Cued Speech, by providing the appropriate phonemic language base for learning to read. Cued Speech also supports the development of lipreading, auditory discrimination, and speech. Can I use Cued Speech with other languages? Cued Speech has been adapted to more than 55 languages and dialects! Cued Speech associations and centers are located around the world.

Who uses Cued Speech?

- Persons who are concerned for those with speech, hearing, language, and literacy needs: Family members, friends, educators, speech-language pathologists, transliterators, audiologists, babysitters,...
- Children and adults with communication, language and literacy needs Whether an individual is able to hear or is unable to process auditory information effectively, Cued Speech presents spoken sounds visually, integrating the senses, to avoid confusion and frustration.
- Cued Speech can accelerate learning the phonics of any language, articulation therapy and remediation of learning disabilities.
- For individuals unable to speak, Nu-Vue-Cue adapts Cued Speech into a grid.
- Children who are deaf or hard of hearing
- With Cued Speech, deaf children see and absorb the same phonemic language that hearing children hear.
- For children whose parents are deaf and whose native language is a signed language, Cued Speech can be used with other cuers and at school to facilitate the child's acquisition of a second language, such as English.
    - Adults who are deaf or hard-of-hearing
    - Adults with progressive or sudden hearing loss find that Cued Speech helps
        - overcome the frustration of lip-reading, and
        - maintain functional speech.

What does research and experience tell us about Cued Speech?

Hearing

Cued Speech assists in processing auditory information by breaking through the confusion of incomplete and distorted sound. Continued use of Cued Speech can lead to significant improvement in speech discrimination. Cochlear implants and Cued Speech are powerful partners.

For many, Cued Speech accelerates the recognition of sounds received via the implant. Implant users of all ages appreciate the use of Cued Speech in difficult listening situations.

Speech

If development of speech is desired, Cued Speech can support speech and articulation skills by:

- focusing attention on the mouth
- reinforcing the pattern of phonemes within a word or phrase
- identifying the speech sound(s) and syllables being targeted
- being a motoric reminder and trigger of speech production
- integrating sound, sight, and motor aspects to make learning more fun!

Speechreading

Cued Speech clarifies speechreading in cued situations and often improves speechreading in non-cued situations.

Language

- Without additional disabilities, deaf children with four or more years of consistent use of Cued Speech master the syntax and grammar of spoken language.
- Deaf students reach their full language and literacy potential if their family members and educators continue to communicate consistently with Cued Speech.
- Deaf cuers often learn two or more languages.

Reading

Having access to and understanding the phonemic base of spoken languages is key to learning to read for ALL children. Cued Speech:

- cues every phoneme
- focuses attention on the sequence of sounds (phonemes) and syllables of language
- provides visual access to rhyming
- enables the child to develop a complete phonemic model of language

With consistent, effective use, deaf children who communicate with Cued Speech develop the language base that enables them to read at the same level and use similar reading strategies as if they were hearing. Cued Speech use can solve the literacy problem for most deaf children.

Cued Speech Discovery | 23970 Hermitage Road | Cleveland, OH 44122-4008 | 216-292-6213 v/ty | Toll-free: 877-283-2030 (877-CUE-2030)

DEAF BLIND RESOURCES

NATIONAL DEAF BLIND

www.nationaldb.org

NCDB, in partnership with state projects, has worked to refine a vision statement for our national collaborative work. The following statements message our values as a network and offer a public expression to our collective objective.

Vision Statement
Children and youth who are deaf-blind receive supports and services that allow them to experience full integration and participation in society including education, employment, community, and social relationships.

Our Mission is to provide families, professionals, and the community with:

- Opportunities for shared leadership and collaboration
- A national network of supports and services across the age range
- Personnel who are qualified and knowledgeable
- Systems with improved capacity

NATIONAL CENTER
ON DEAF-BLINDNESS

Home / Groups / Early identification and referral

Please login.
You must first login before joining this group.

Login or Make a Profile

Early Identification and Referral

This initiative promotes strategies and processes that state deaf-blind projects can use to:

- Improve early identification and referral outcomes
- Provide appropriate and effective intervention to infants, toddlers, and their families

It emphasizes building partnerships between state deaf-blind projects and with the broader early intervention community, especially Part C.

Initiative Lead

Megan Cote
NCDB, Initiative Lead for Early Identification/ Referral & Family Engagement

✉ megan.cote@hknc.org
☎ 913-707-3280

Technical Assistance & Support

Information

Work in this initiative has involved the development of a number of resources and tools that state deaf-blind projects can use to improve early identification and intervention. These include:

- Early Identification of Infants Who Are Deaf-Blind – A report on early identification needs in the field of deaf-blindness, and steps NCDB has taken to address them
- Monthly EI &R News - The latest information about activities, materials, and opportunities related to early identification, referral, and intervention
- 2015-2017 Webinar Series – Recordings of webinars that describe state deaf-blind project experiences as they work to improve early identification and referral (includes useful examples, suggestions, and strategies)

See also, "Tools for Technical Assistance" below.

Improving Early Identification and Referral

blind projects are encouraged to use any combination of resources from the framework to design their own trainings.

Network Collaboration

Part C Workgroup

This group of state deaf-blind project personnel was formed in 2016 to assess Part C provider training needs related to:

- The identification of children with deaf-blindness
- The impact of a combined vision and hearing loss on early learning
- Effective intervention strategies

Group members subsequently developed presentations for Part C providers in Pennsylvania and Indiana that were incorporated into *The Sooner the Better* framework described above.

Early Identification, Referral, and Intervention Discussion Groups

Twelve state deaf-blind projects are engaged in ongoing targeted peer-to-peer technical assistance via monthly discussion groups related to the technical assistance areas described above:

- Improving early identification and referral using the *Self-Assessment Guide*
- Increasing service provider knowledge and skills using *The Sooner the Better* framework

Group members share successes, discuss challenges, and collectively identify strategies that promote finding infants and toddlers, getting them referred to their state deaf-blind projects, and providing effective intervention.

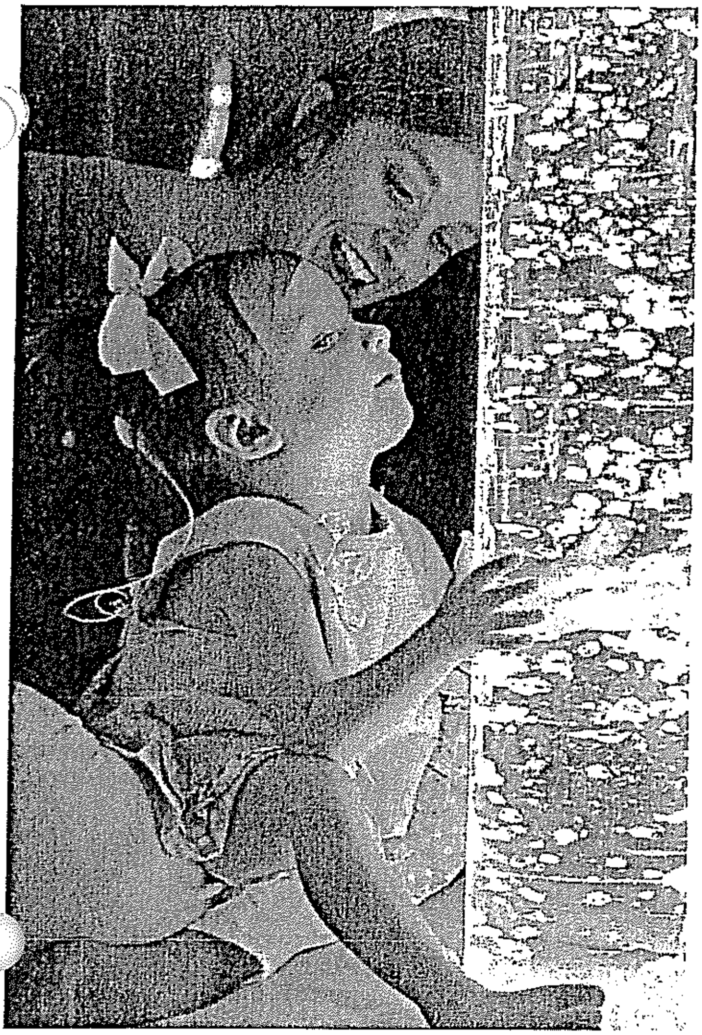
Current Initiative Activities

Join 158 members in this community!

Peggy Malloy added a new wiki page titled Self-Assessment Guide Stories . 6 Days Ago in Early Identification and Referral

Jan Hearing has joined your group Early Identification and Referral. 6 Days Ago in Early Identification and Referral

Charlotte Spinkston has joined your group Early Identification and Referral. 7 Days Ago in Early Identification and Referral



Alabama Initiative for Children and Youth who are Deaf-Blind

Thank you so very much for your commitment to serving children and youth with sensory loss!

If you serve a child with **BOTH** vision and hearing loss, please check both **"Visual Disability"** and **"Deaf"** on the on-line Alabama Instructional Resource Center for the Blind (AIRCB) **Student Registration Form** at www.aircb.org!

What: AIDB now administers Alabama's initiatives for children and youth who are deaf-blind through a U.S. Department of Education Office of Special Education Programs (OSEP) Award.

Why: To provide one-on-one and/or group Technical Assistance directly to you and your school system, tailored to meet your individual instructional needs and that of the students you serve along with their caregivers.

Who: Children with both vision and hearing loss, birth to 22; caregivers, instructors, professionals and school systems!

When & Where: Anytime, In-Home/In-School/AIDB Regional Centers (Birmingham, Dothan, Huntsville, Mobile, Montgomery, Talladega, Tuscaloosa and Tuscumbia –serving all 67 Counties!)!

Please **CONTACT US NOW** on specific needs (Orientation and Mobility, Braille, Interpreting, Assistive Technology, Instructional Best Practices, IEP Development, Personal Futures Planning, Deafblindness Resources, etc.); workshop topics; or other ideas/means whereby we can assist.

AIDB is truly excited about this initiative and is looking forward to working with you to ensure the project is child-centered and needs-driven, translating into successful school, work and independent living outcomes.

Contact Jessica L. Edmiston: 256.761.3470; 256.493.3360 or edmiston.jessica@aidb.state.al.us or visit www.aidb.org for more information!

The National Family Association for Deaf-Blind

Toll-free: 1.800.255.0411
Email NFADB

Donate

Search

Find us on Facebook

Who We Are

WHO WE ARE

The National Family Association for Deaf-Blind (NFADB) is the largest national nonprofit organization serving families of individuals who are deaf-blind. We believe that individuals who are deaf-blind are valued members of society and are entitled to the same opportunities and choices as other members of their community. We exist to empower families of individuals who are deaf-blind and to advocate for their unique needs.

What We Do

Through collaboration and partnerships with organizations and agencies in the deaf-blind community, we:

- ADVOCATE for all persons who are deaf-blind of any age and cognitive ability
- SUPPORT for all families of persons who are deaf-blind
- CONNECT families to information, resources and other families for support and learning
- NETWORK & provide training opportunities for families and individuals who are deaf-blind
- COLLABORATE with other organizations to make sure the voices of consumers and families are at the state and national levels

Our website, webinars, listserv, trainings and online resources provide valuable insight and connections to the deaf-blind world. Become an NFADB member and enjoy all the benefits of our community. We look forward to connecting with you!

NFADB Board of Directors

NFADB Bylaws

NFADB State Affiliates

NFADB Families

NFADB History

This presentation gives an overview of NFADB:

DONATE NOW

Your donation will help us inform, empower and connect families of individuals who are deaf-blind. Thank you!

Donate

JOIN NFADB

Interested in becoming a member of the National Family Association for Deaf-Blind? **Click here** to get started today!

CONNECT WITH US

Have a question? Want to speak with one of our board members? **Click here**

Connect with our community!

Find us on Facebook

Instagram

UPCOMING EVENTS

Free NCDB Webinar: Laying the Foundation for Communication Exchange – Part 1

NATIONAL CENTER ON DEAF-BLINDNESS

Home / Groups / Family engagement

Please login.
You must first login before joining this group.

Login or Make a Profile

Family Engagement

Parents of children with deaf-blindness face significant, long-term challenges in acquiring the knowledge they need to effectively engage with school and community systems. In addition, families are widely dispersed across the country, making it difficult to find and maintain supportive connections. This national initiative collaborates with state projects and national family organizations to ensure that families have the support they need to partner effectively with education and service providers and to create a cohesive network of family leaders across the country.

Initiative Lead

Megan Cote

NCDB, Initiative Lead for Early Identification/ Referral & Family Engagement

✉ megan.cote@hknc.org
☎ 913-707-3280

Technical Assistance & Support

The national technical assistance within this initiative focuses on facilitation, training, collaboration, and the creation of publicly available tools and information to support and educate families. Opportunities and resources include:

- The Family Specialist MasterMind Group, an information and support group for state deaf-blind project family specialists
- Consultation to state projects on building training and support for families in their states
- Resources and strategies for building collaboration with state parent centers
- *Families Matter* videos stories for engagement and sharing
- Online study opportunities for families to understand the role of the intervener

Questions related to technical assistance or one-on-one consultations are available with Initiative Lead, Megan Cote.

Many state deaf-blind projects have Family Specialists, specific staff members or consultants who support and mentor families. Since January 2015, a growing group of family specialists has been meeting monthly online to network and share ideas and resources. In July 2016, the group met in Texas, prior to the NFADB Symposium, for training and to create action plans to collaboratively improve support and services for families in their states. Contact Megan Cote about joining this group.

Raising Awareness About Deaf-Blindness

NCDB, NFADB, and the CHARGE Syndrome Foundation partner to expand knowledge about deaf-blindness and the education of children who are deaf-blind.

- The NFADB Symposium in July 2016 offered training for family leaders
- Follow along the journey with the Family Engagement Coordinator scarf that is traveling around the states to raise awareness!

Family to Family Support

Building Family to Family Communities

The Family-to-Family Communities Project offers a unique way for families to connect, share information and resources, and offer support to one another. Groups meet once per month for 90 minutes via phone and/or video conference (based on group preference). This project was developed by deaf-blind projects in the Southeast who worked with NCDB and NFADB to organize ongoing conference calls for parents of children with deaf-blindness. A summary of the results of the 2014-2015 pilot program that was the start of the communities can be found herePDF.

Grief Support for Families of Children With Deaf-Blindness

NCDB, NFADB and state deaf-blind project personnel have been collecting grief resources for families related to child loss. NCDB is offering a series of web-based, peer-to-peer meetings where parents who have lost a child will have an opportunity to process their grief and learn about coping strategies that have helped others. Full information can be found at this link. For additional information, please contact Megan Cote, NCDB Family Engagement Initiative Lead.

Initiative Partners

State Project Family Specialists

State Deaf-Blind Projects

National Family Association for Deaf-Blind↗

CHARGE Syndrome Foundation↗

Regional Parent Centers↗

Current Initiative Activities

DEAF SENSE

www.deafsense.com

Here at Deaf Sense, we believe everyone can and should succeed. We are educators and parents of Deaf children who desire that each deaf child have every opportunity to thrive. We know that it truly is 'what is between the ears that counts,' and when we use that mind to its full ability, nothing can stop us. Life is 20% what you do and 80% what you think about. It is time to teach valuable mental tools that can move and empower others to greatness.

Deaf Sense
COLLABORATE • INSPIRE • THRIVE

Home Camp Ollin Mariposa Mentoring Blo

About

Welcome to Deaf Sense where we inspire you with a sense of pride of Deaf people who believe they can succeed. Our products and services are uniquely delivered to you with a mind to inspire you to thrive in your life, and in turn inspire others to thrive in theirs.

Designed by Deaf, educators, parents and a historian, every product is visually appealing, eye-catching, and fun to read. Students, teachers, parents, and community members will be drawn and uplifted by Deaf Sense products displayed in classrooms, hallways, homes, community centers and offices. Each one stands as a constant reminder that others have succeeded and so can they.

Here at Deaf Sense, we believe everyone can and should succeed. We are educators and parents of Deaf children who desire that each deaf child have every opportunity to thrive. We know that it truly is 'what is between the ears that counts,' and when we use that mind to its full ability, nothing can stop us. Life is 20% what you do and 80% what you think about. It is time to teach valuable mental tools that can move and empower others to greatness.

Our training and mentoring services reach deaf youth and their families, as well as those who serve them in the community. Tailored to each audience's needs, Deaf Sense provides training and tools to empower and inspire deaf youth to thrive. The time of dependence and weakness is past. The time for success in all areas of life for every deaf youth has arrived. We make a difference through collaborating with families and communities, inspiring youth to thrive as leaders of tomorrow.

We invite you to join us. Each purchase made will lift and inspire dozens of youth who are able to interact with the product. Each service given will inspire those involved to change their own lives and lift and inspire the youth they work with. Presentations and programs for youth will leave a lasting impression that will lead each one to greater success.

FIRST YEARS

Oberkotter Foundation

www.oberkotterfoundation.org

The work of the Oberkotter Foundation has always been driven by the Trustees' passionate belief that all children who are deaf or hard of hearing should have the opportunity to reach their full potential. The Oberkotter Foundation focuses its efforts on supporting families who have chosen listening and spoken language for their child and on opportunities for children learning listening and spoken language to develop their social, emotional, language and educational skills.

To produce the best outcomes for every child and to capitalize on the critical stages of cognitive and language development between birth and age five, we believe that families must have access to comprehensive information and quality services as quickly as possible.

FIRST YEARS > **Communication Options Chart**

Communication Options

Recall that language and speech are not the same. *Speech* is the **motor act of articulation**, producing sound, whereas *language* is the **knowledge/use of a symbol system** to *communicate* with others.[1] Language is normally learned through hearing it. When hearing is impaired, however, special means must be devised for each child to learn that language. These "communication options" may include body language, lip reading, finger-spelling, and sign language.

All the communication strategies listed below work toward developing communication, stressing receptive language (understanding) and expressive language development. All work on reading skills; and most on speech development. All require a significant, sustained commitment on the part of the parents/family as the key to the child's success in developing language.

Keep in mind that since every hearing loss is different and every child learns differently, there is no single approach to communicating the meaning of language which is best for all children.

	American Sign Language/ English as a Second Language (ASL/ESL) ***Bilingual/ Bicultural - BiBi***	**Cued Speech**	**Oral** ***Auditory-Oral***	**Auditory-Verbal** ***Unisensory***	**Total Communication**
Definition	The "language of the deaf," American Sign Language (ASL) is a manual language, taught as the child's primary language, and English as	A visual communication system using 8 handshapes in four different locations ("cues") in combination with the natural mouth movements	The "traditional" auditory training approach, AO is conducted with the child in individual therapy and also often includes placement in a group	Similar to the auditory/oral approach, AVT has a strong emphasis on maximizing audition (therefore,	A philosophy more than a communication method, it uses a *combination of methods* to teach a child, including a formal sign-

	communities.			mainstreaming - "<u>inclusion</u>" - as soon as possible.	
<u>Receptive</u> Language	Language is developed through the use of ASL. English is taught as a second language *after* the child has mastered ASL.	Child learns to speak through the use of amplification, speech reading and use of "cues" which represent different sounds.	Child learns to speak through a combination of early, consistent and successful use of amplification and speech reading.	Child learns to speak through the early, consistent and successful use of a amplification *only*.	Language (spoken, signed, or a combination of the two) is developed through exposure to oral speech, a formal sign language system, speech reading, and amplification.
<u>Expressive</u> Language	ASL is child's primary expressive language in addition to written English.	Spoken English (sometimes with the use of cues) and written English.	Spoken and written English	Spoken and written English	Spoken English and/or sign language and finger spelling and written English
Hearing	Use of amplification is not a requirement for success with ASL.	Use of amplification is strongly encouraged to maximize the use of remaining hearing.	Early and consistent use of amplification (hearing aids, cochlear implant, FM system) is critical to this method.	Early, consistent and successful use of amplification (hearing aids, cochlear implant, FM system) is critical to this approach.	Use of a personal amplification system (hearing aids, cochlear implant, FM system) is strongly encouraged to allow child to make the most of his/her remaining hearing.
Family / Parental Responsibility	Child must have access to deaf and/or hearing adults who are fluent in	Parents and family members are the primary teachers of cued speech	Parents and family members must be highly involved with child's	Parents and family members play the *primary* role in AV	Parents and family-members should learn the chosen sign

Gallaudet University

Science of Learning Center Visual Language and Visual Learning

www.gallaudet.edu

A standardized comprehensive checklist used to assist in tracking young children's sign language development from birth to age 5.

Who should conduct the assessment?

The VCSL should be completed in collaboration with people who are familiar with the child's expressive and receptive language. Deaf and hard of hearing professionals could assist family members or professionals with less fluent signing skills, using a team approach.

This can include:

- Teachers who are familiar with the child's language abilities
- Early Interventionists
- ECE service providers who are fluent signers and work directly with the child and family
- Families
- Speech Language Pathologists

Cost

Manual and kit, includes DVD ASL glossary - $149

Rating sheets (one per student), including licensing fee per assessment - $1.10/each

Shipping and handling - $8.75

Discounts available for bulk orders.

Our Team

Our team of experts, drawn from multiple disciplines, is committed to conducting research of the highest scientific caliber, and also to sharing important findings with educators and parents in ways that will directly benefit the children we serve.

Questions?
Contact Us!

Science of Learning Center on Visual Language and Visual Learning
Early Education and Literacy Lab
Gallaudet University
SLCC 1200
800 Florida Avenue NE
Washington DC 20002

Web: VL2.gallaudet.edu
E-mail: VCSL@gallaudet.edu
Phone (Voice): 202-651-5866
Phone (VP): 202-558-9782

GALLAUDET UNIVERSITY

SCIENCE OF LEARNING CENTER VISUAL LANGUAGE AND VISUAL LEARNING: VL2

Early Education and Literacy Lab

THE UNIVERSITY of TULSA

VCSL

Visual Communication and Sign Language Checklist
for Deaf and Hard of Hearing Children

A standardized comprehensive checklist used to assist in tracking young children's sign language development from birth to age 5.

Authors:

Laurene Simms, Ph.D.
Gallaudet University
Laurene.simms@gallaudet.edu

Sharon Baker, Ed.D.
The University of Tulsa
Bakers@utulsa.edu

M. Diane Clark, Ph.D.
Gallaudet University
Diane.clark@gallaudet.edu

VCSL

Visual Communication and Sign Language Checklist

Name of student:________________________________
D.O.B.:________________________ Chronological Age: ______years ______months
Evaluator:____________________ Date of assessment: ____________________

Birth to 12 Months	Not Yet Emerging	Emerging	Inconsistent Use	Mastered
Looks in direction to which the signer is pointing				
Hand babbling emerges (ex: opens and closes hands, wiggles fingers, wrists twist)				
Waves bye-bye				
Copies physical movements involving the arms, hands, head, and face				
Enjoys finger-plays and finger-games				
Follows the eye gaze of the signer				
Attends to signed motherese (ex: Sign with slow tempo, repetitions, and exaggerated movements)				
Distinguishes facial expressions (ex: anger or friendliness)				
Joint reference (ex: parent and child look at same object)				
Participates in communicative play (ex: peek-a-boo)				
Enjoys holding and cuddling				
Enjoys hand play: Plays with hands and fingers				
Looks attentively at a person's face				
Looks at the visual environment with alertness				
Smiles when sees a familiar person				
Laughs when seeing fingers approaching to tickle				
Turns head in response to attention getting behaviors (ex: hand waving, lights on and off, or foot stomping)				
Smiles, makes eye contact and laughs				
Expresses excitement and displeasure				
Eyes track/following movement with alertness				
Fixates on the face				

1 year to 2 years	Not Yet Emerging	Emerging	Inconsistent Use	Mastered
Recognizes own name sign				
Recognizes names signs of family members (ex: siblings)				
Finger babbles back to conversations or to self				
Points to self and objects in his/her environment				
Uses negative headshake alone or with sign				
Responds to simple commands (ex: COME HERE; EAT DINNER)				

Advancing the Science of Learning

Language Comes First

Gallaudet University and the National Science Foundation's
Science of Learning Center

Visual Language and Visual Learning, VL2

GALLAUDET
UNIVERSITY
CONNECT. DISCOVER. INFLUENCE.

With its four hubs VL2 has become a resource for the world

Brain and Language Laboratory for Neuroimaging

Dr. Laura-Ann Petitto, Founder and Scientifi[illegible]ect
Dr. Clifton Langdon, Assistant Director

BL2 investigates how the brain intera
its environment to make possible lang
learning, reading, and bilingualism.

Renowned cognitive neuroscientist Dr. Laura-Ann Petitto and h
use cutting-edge, integrated fNIRS neuroimaging, thermal infrar
eye-tracking technologies to conduct research on how young de
children best learn language and reading.

BL2 is the site of many collaborative research activities, project
scientific knowledge, and federal and foundation grants invol
and international visiting scholars.

BL2 is a core training site for Gallaudet's Ph.D. in Educa
Neuroscience (PEN) program, offers neuroimaging train
certification, and serves as a resource for the Washingto
area and the nation in advancing basic science knowle
about how children learn language, read, and become healthy bilinguals.

Motion Light Lab

Melissa Malzkuhn, Founder and Creative Director
Dr. Lorna Quandt, Science Director

ML2 innovates technologies to help improve and advance research-based translation.

Examples include the world's first interactive ASL-English bilingual storybook apps and a storybook creator platform, built on research from BL2 and EL2, and other reading and learning tools for bilingual language and reading development.

Ongoing projects include collaboration with BL2 to use motion capture technology to create avatars for incorporation in a robot-avatar-thermal enhanced learning tool (Petitto, PI).

ML2 keeps Gallaudet on the front line of advances in visually based learning technologies. It offers students rich opportunities for training in computational and digital media innovation.

Early Education and Literacy Lab

Dr. Thomas Allen, Director

EL2 develops and distributes toolkit
measure young deaf and hard of hea
children's language and cognitive dev
and gathers and stores this data.

EL2 engages in classroom and home-ba
focusing on the changeable and unchangeable factors that
the development of literacy in a deaf child's early y

Researchers identify individual differences among child
the impact these differences have on emerging literacy. T
variety of statistical modeling approaches to analyze large
data sets. Students working in EL2 benefit from opportunit
on and analyze this data for their theses and dissertation
of which are published.

EL2 also develops, validates, and distributes new [illegible]ess
that measure the language and cognitive development of
children, and collaborates with TL2 and ML2 on evaluatio
Center translational products.

ith

earchers
aging, and
hearing

advance
ational

ment

tudies
ibute to

nd
se a
udinal
train
ny

Translation in the Science of Learning Lab

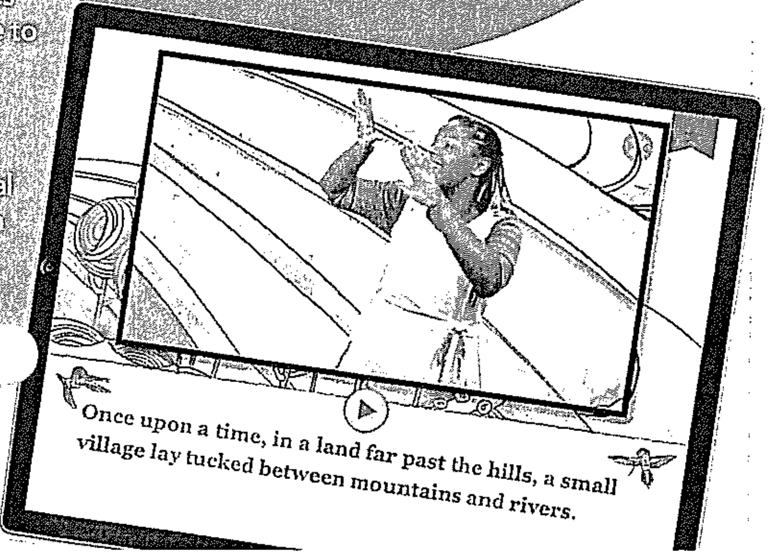
Dr. Melissa Herzig, Director

TL2 translates VL2 research discoveries for application in the wide range of learning environments that deaf children experience.

pr[illegible]es publications and resources — such earch briefs, information packages, and websites — t summarize research in easy-to-read language for parents, educators, doctors, policymakers, and other professionals.

TL2 staff also provide training for educators on bilingual education and language policy, and they oversee mechanisms for quality control and risk assessment for publicly available products from VL2 and elsewhere.

To download publications, visit our website at vl2.gallaudet.edu or request copies by emailing vl2@gallaudet.edu.



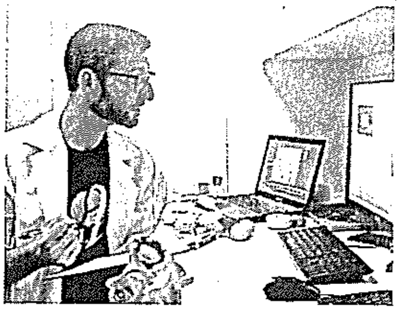
Once upon a time, in a land far past the hills, a small village lay tucked between mountains and rivers.

The next generation

Students in our pioneering Ph.D. in Educational Neuroscience (PEN) program gain state-of-the-art Cognitive Neuroscience training in how humans learn, with a special strength in the neuroplasticity of visually guided learning processes. While Cognitive Neuroscience includes studies of learning and higher cognitive processes across the lifespan, its sister discipline, Educational Neuroscience, includes intensive study of five core domains crucial in early childhood learning, including language and bilingualism, reading and literacy, math and numeracy, science and critical thinking (higher cognition), social and emotional learning, and the study of action and visual processing.

Students choose from among the world's cutting-edge neuroimaging methods — fNIRS, EEG, fMRI, and others — in which to become experts. They study Neuroethics, gain strong critical analysis and reasoning skills in science, and develop expertise in one of the five core content areas of learning.

While becoming experts in contemporary neuroimaging and behavioral experimental science, students also learn powerful, meaningful, and principled ways in which science can be translated for the benefit of education and society today.



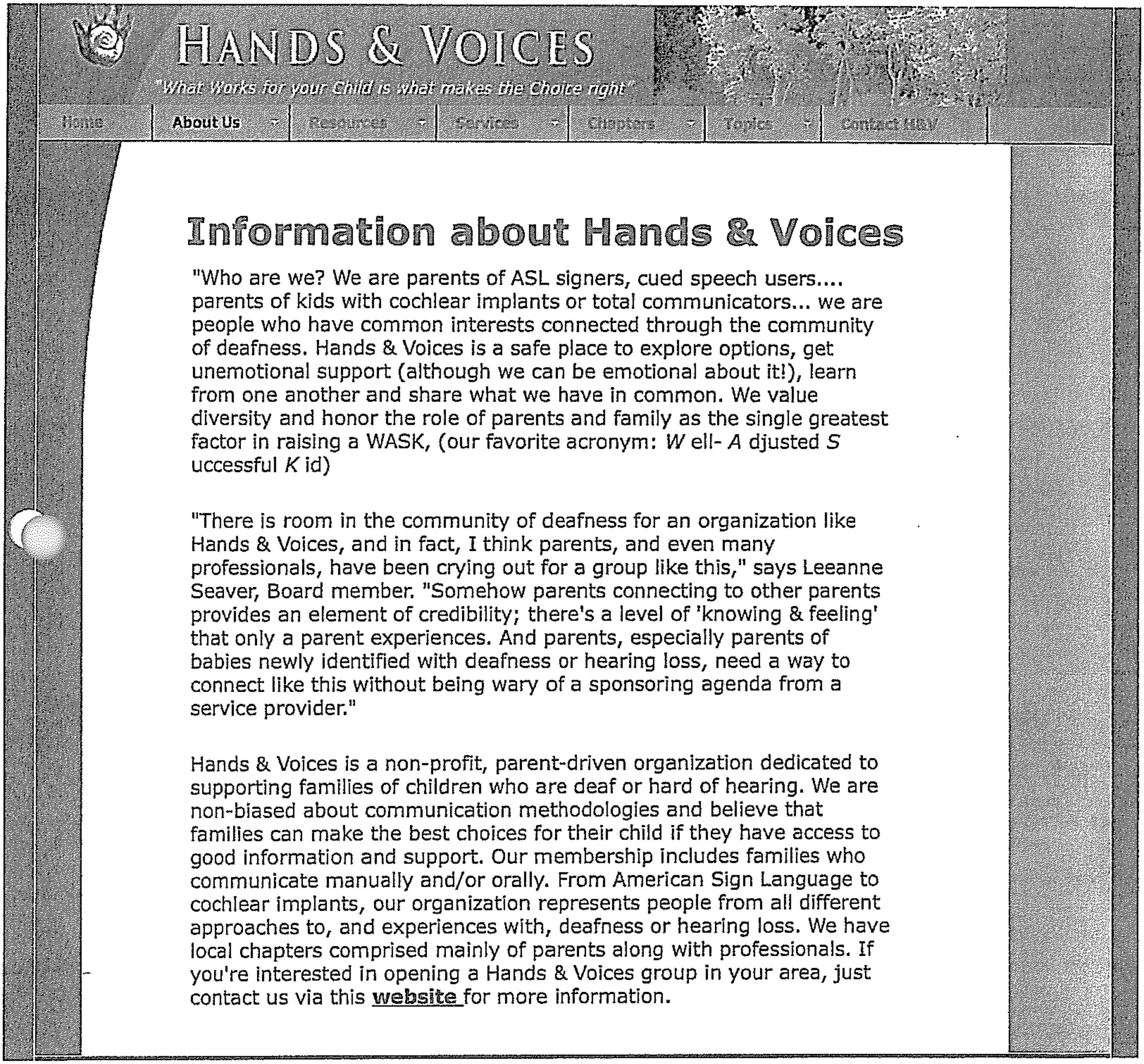
Students benefit from access to an in-house, research-dedicated neuroimaging facility in the Brain and Language Laboratory for Neuroimaging (BL2), founded and directed by Professor Laura-Ann Petitto. Students can also choose to become certified in one of the world's most advanced neuroimaging technologies ideal for the study of young children and individuals across the lifespan: fNIRS (functional Near Infrared Spectroscopy).

Our students graduate prepared to become groundbreaking scientists!

HANDS AND VOICES

www.handsandvoices.org

Hands & Voices is a non-profit, parent-driven organization dedicated to supporting families of children who are deaf or hard of hearing. We are non-biased about communication methodologies and believe that families can make the best choices for their child if they have access to good information and support. Our membership includes families who communicate manually and/or orally. From American Sign Language to cochlear implants, our organization represents people from all different approaches to, and experiences with, deafness or hearing loss. We have local chapters comprised mainly of parents along with professionals. If you're interested in opening a Hands & Voices group in your area, just contact us via this **website** for more information.



Information about Hands & Voices

"Who are we? We are parents of ASL signers, cued speech users.... parents of kids with cochlear implants or total communicators... we are people who have common interests connected through the community of deafness. Hands & Voices is a safe place to explore options, get unemotional support (although we can be emotional about it!), learn from one another and share what we have in common. We value diversity and honor the role of parents and family as the single greatest factor in raising a WASK, (our favorite acronym: *W* ell- *A* djusted *S* uccessful *K* id)

"There is room in the community of deafness for an organization like Hands & Voices, and in fact, I think parents, and even many professionals, have been crying out for a group like this," says Leeanne Seaver, Board member. "Somehow parents connecting to other parents provides an element of credibility; there's a level of 'knowing & feeling' that only a parent experiences. And parents, especially parents of babies newly identified with deafness or hearing loss, need a way to connect like this without being wary of a sponsoring agenda from a service provider."

Hands & Voices is a non-profit, parent-driven organization dedicated to supporting families of children who are deaf or hard of hearing. We are non-biased about communication methodologies and believe that families can make the best choices for their child if they have access to good information and support. Our membership includes families who communicate manually and/or orally. From American Sign Language to cochlear implants, our organization represents people from all different approaches to, and experiences with, deafness or hearing loss. We have local chapters comprised mainly of parents along with professionals. If you're interested in opening a Hands & Voices group in your area, just contact us via this **website** for more information.

HEARING FIRST

www.hearingfirst.org

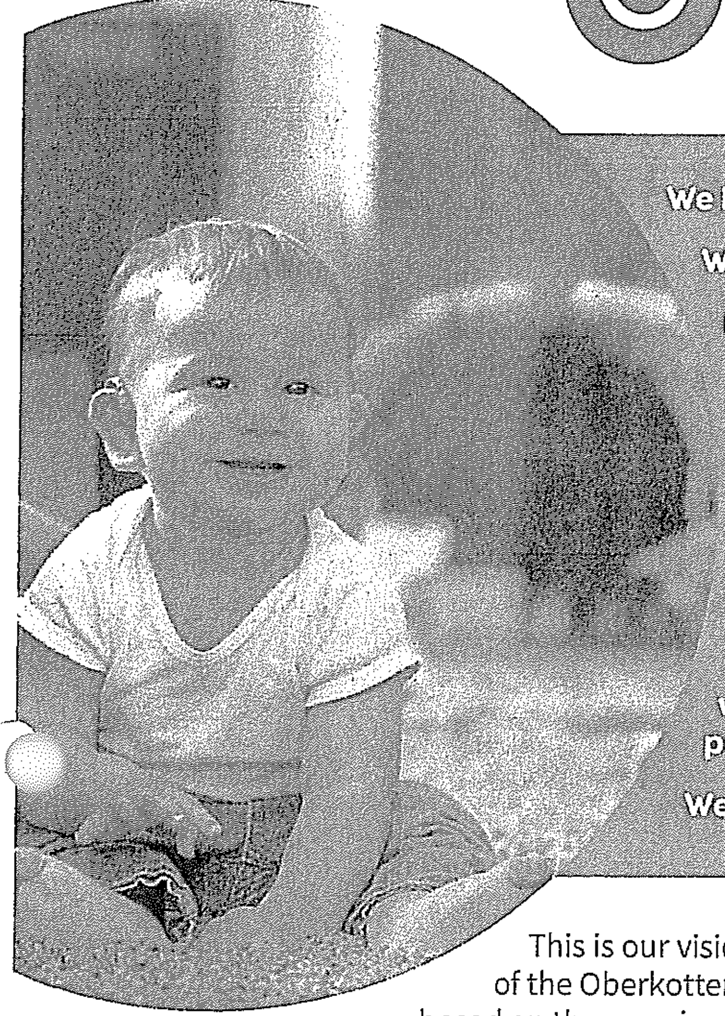
Hearing is the foundational building block for children to learn to listen and talk, become healthy readers, and do well in school. Hearing powers language, literacy, dreams, opportunities, and lifetime success. Hearing powers a child's potential.

Today, children who are deaf or hard of hearing can learn to listen and talk and can achieve learning and literacy outcomes on par with their hearing peers. But the first days, weeks, and months of a baby's life are critical.

At Hearing First, we want all children to benefit from the availability of newborn hearing screening, the advances in technology, and the early learning services in their communities. We want all children to have the opportunity to take advantage of access to sound – a critical building block for future success.

HEARING FIRST

Powering Potential



We believe in starting small and thinking big.

We believe in little ones with big plans.

Plans to play ball or ride the yellow bus with their brothers and sisters.

Plans to grow up to be doctors, coaches, gardeners, lawyers, singers, writers, teachers and community leaders.

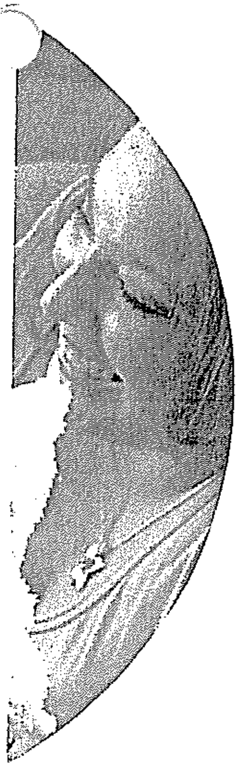
Plans to be parents, mentors, dreamers and doers.

We believe in a future where children who are deaf or hard of hearing have the potential to be whatever they want to be.

We exist to power their potential.

This is our vision at Hearing First, an educational endeavor of the Oberkotter Foundation. We launched in October 2015 based on the premise that hearing is a foundational building block for children to learn to listen and talk, become healthy readers and do well in school. Through collaborative efforts, our activities are dedicated to ensuring that children who are deaf or hard of hearing have opportunities to reach their full potential.

Hearing First recognizes that families and professionals are partners when it comes to improving outcomes for children. The Hearing First website is a multimedia digital experience and connection point designed to link families who have chosen listening and spoken language (LSL) for their children with hearing loss, and the professionals who work with them, with the resources, information, tools, community and learning experiences they need to ensure the children in their lives succeed.



Hearing First Powers Collaboration

LSL as a developmental approach is in alignment with the early learning field and literacy development. The current national and international focus on the importance of early learning and grade-level reading by third grade reinforces the goals and strategies that LSL professionals use daily with children and their families to develop language.

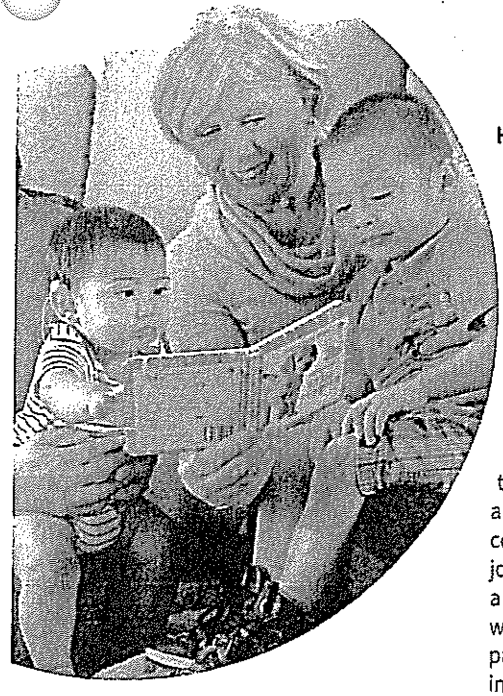
By collaborating with partners beyond the LSL community, we take what we know about listening and language development, and share it outside our field with more organizations and professionals. By raising general awareness of the importance of newborn hearing screening and the LSL opportunities today, we will broaden our reach and develop more channels to reach families quickly so they can access LSL intervention services from supportive professionals throughout their journey.

POWERING DISCUSSIONS, CONNECTED LEARNING & LSL OUTCOMES

LISTENING & SPOKEN LANGUAGE (LSL)
HEARING TESTING & DEVICES
LISTENING & READING CONNECTION
LSL SERVICES & SUPPORT
LEARNING & GROWING LSL
CELEBRATE LSL

PROFESSIONAL LEARNING COMMUNITY

FAMILY SUPPORT COMMUNITY



Hearing First Powers Connections

Parent-to-parent support is important in the family journey. Yet families are often isolated in early intervention services outside of specialized LSL programs, and have limited contact with other families who understand the decisions and challenges they face. Through a parent support community, Hearing First will be a connection point for families looking for a supportive online community, not limited by geography, schedules or time zones, to provide encouragement, insight, leadership and guidance.

Just as parents seek support from other parents, professionals seek support from other professionals throughout their career journey. Too often, LSL professionals are isolated in their work place and have limited opportunity to connect with LSL peers to receive support, ask questions, solve challenges and grow in their LSL knowledge and skills. Through a professional learning community, Hearing First will provide a LSL connection point across the career journey for professionals to have access to peers and thought leaders. Through a community of practice, professionals, from novice and aspiring to advanced, will have a wide range of opportunities to share and grow in their skills, participate in coaching and mentoring activities, advance the LSL field and improve child outcomes.

POWERING POTENTIAL

Listening and Spoken Language (LSL) makes it possible for children who are deaf or hard of hearing to learn to listen and talk, which powers language, literacy, and lifetime success.

OUR STORY

t Hearing First, we want all children to benefit from the availability of newborn hearing screening, the advances in technology, and the early learning services in their communities. We want all children to have the opportunity to take advantage of access to sound – a critical building block for future success.

We are a subsidiary organization of the Oberkotter Foundation, a private foundation with a thirty-year history of supporting opportunities for children who are deaf or hard of hearing to learn to listen and talk. We know that listening and spoken language (LSL) is possible for children who are deaf or hard of hearing. We have met the babies and talked with their families; we have watched them grow up and make friends in the mainstream; and succeed through LSL.

Every parent needs to know the status of their baby's hearing first. The earlier a child with hearing loss is identified, amplified, and receiving help, the more opportunities that child will have. Period.

Hearing First is dedicated to walking this journey with families – from newborn hearing screening, through diagnosis, and into early intervention services. We are a multimedia connection point for families and professionals to improve outcomes for children who are deaf or hard of hearing through listening and spoken language. We are dedicated to powering children's potential.

Join us at Hearing First. Together, we will power potential.

Learn more about our vision and how we're working with children and their families. Download this handout.

SION AND MISSION

Professional to Professional Learning

Fledgling ideas can grow into life-changing advancements when you join the Hearing First Professional Learning Community.

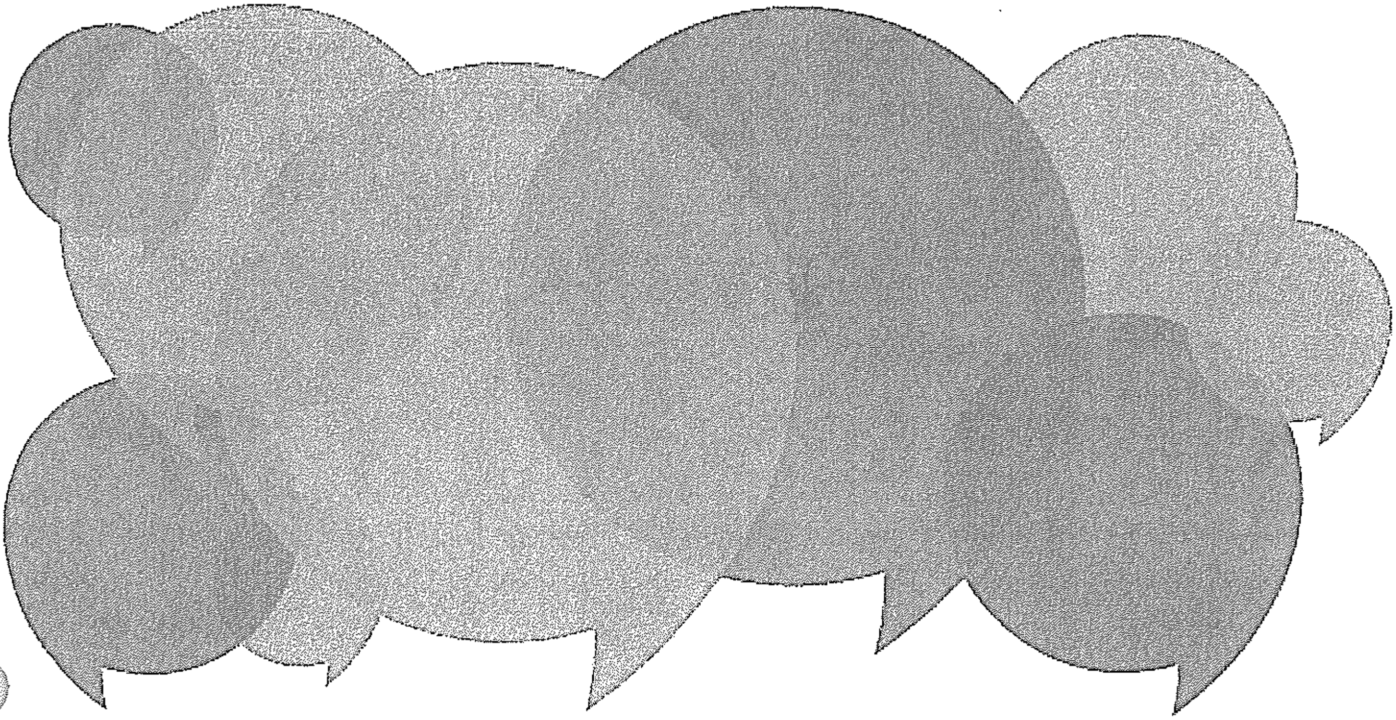
Collaborate with leading Listening and Spoken Language (LSL) professionals to discover new solutions, improve outcomes for children and their families, and advance the LSL practice. There's no reason to go it alone in the digital age. Add your voice to the conversation.

JOIN →

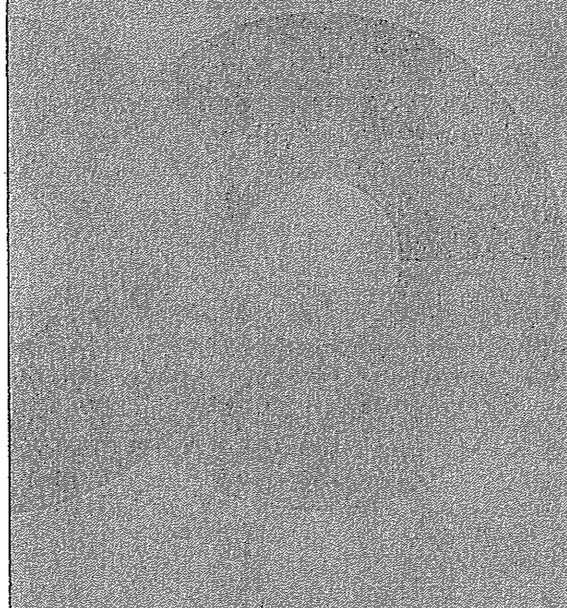
LEARN MORE →

LEARN MORE →

SIX WAYS TO START ENGAGING IN AN ONLINE COMMUNITY



1. Find a discussion that interests you and join in the conversation.
2. Follow other community members to learn from their insights.
3. Download our most popular resources to enhance your LSL exercises.
4. Read the days' conversations to see what LSL topics are trending.
5. Start a discussion around a topic you are wondering about or want to learn more.
6. Complete your profile so that others can find you.



START WITH THE BRAIN AND Connect the Dots:

Supporting Children Who Are Deaf or Hard of Hearing to Develop Literacy Through Listening and Spoken Language

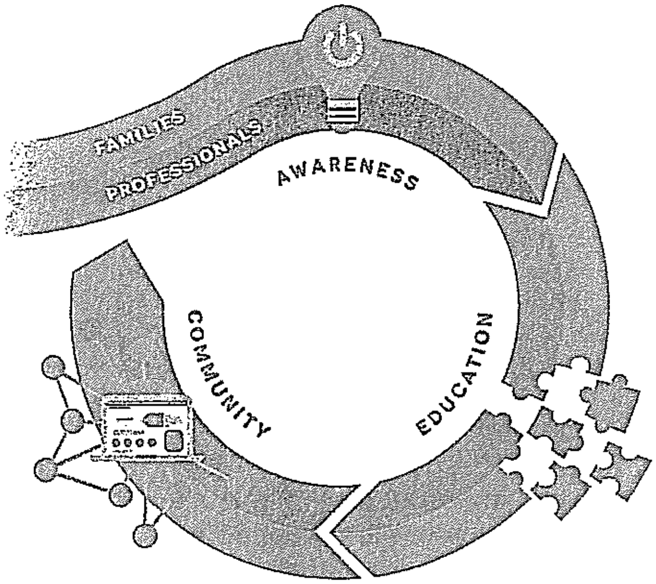
HEARING FIRST
Powering Potential

About Hearing First

Today, children who are deaf or hard of hearing can achieve learning and literacy outcomes on par with their hearing friends. At Hearing First, we exist to support the families and professionals on the Listening and Spoken Language (LSL) journey through Awareness, Education and Community.

Awareness

Hearing First informs families and professionals of the importance of newborn hearing screening and the Listening and Spoken Language (LSL) opportunities for children who are deaf or hard of hearing.



Education

Hearing First learning experiences and resources equip families and professionals with the knowledge and skills needed to maximize LSL outcomes for children.

Community

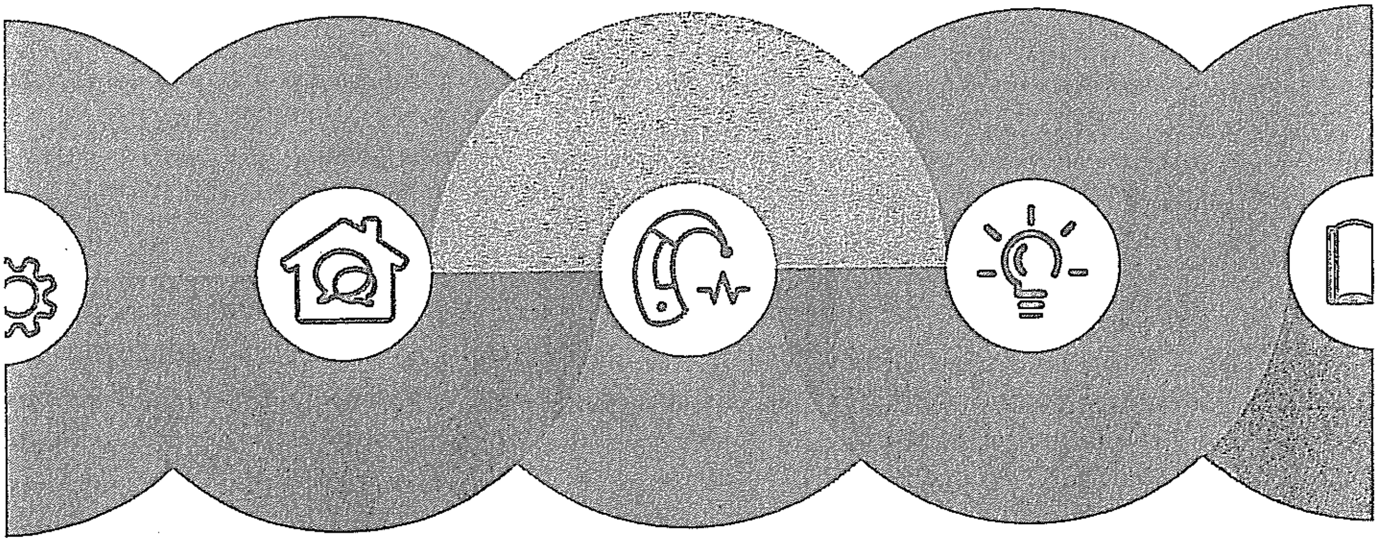
Hearing First provides a Family Support Community and a Professional Learning Community as an online connection point for each to share, grow and learn on the LSL journey.

Hearing First is dedicated to strengthening the lives of LSL families and professionals so children who are deaf or hard of hearing can learn to listen and talk. Together, we can power potential.

The purpose of this paper

is to identify the logic and research underlying what we know about how today's children with hearing loss develop literacy through listening and spoken language. As professionals, we are working with a new generation of children who are deaf or hard of hearing—a generation that is not only benefiting from advances in early hearing screening and the use of advanced hearing technology, but a generation that is also the beneficiary of what we now know about brain development, early childhood development, and language and literacy development. Below is our Logic Chain and samples of supporting research to connect the dots between basic biology and the development of literacy during elementary school. The Logic Chain summarizes what we know, at this point in time, about the ingredients necessary to create a reading brain. Specifically, the Logic Chain represents a system of foundational structures that must ALL be in place to optimize the attainment of a listening, spoken language and literacy outcome; no link can be skipped.

Table of Contents



Sample and Brief Summaries of Articles about Auditory Brain Development and the Auditory Cortex

• • •

Cardon, G., Campbell, J., & Sharma, A. (2012). Plasticity in the developing auditory cortex: Evidence from children with sensorineural hearing loss and auditory neuropathy spectrum disorder. Journal of the American Academy of Audiology, 23, (6), 396-411(16).

The authors report that the auditory cortex is highly plastic (aka "neuroplastic," i.e., the ability of neuronal groups to adjust function based on auditory input) particularly during the first 3.5 years of life with respect to visual, auditory, and pre-frontal cortices. By 12 months of age, the cortex has generally developed all six layers, and by age 4 years "pruning" occurs. During pruning, extraneous synapses and neurons that do not contribute to the (same) system are eliminated from the specific sensory system (likewise, "neurons that fire together, wire together"). Indeed, age 3.5 years has been described as the end of the "sensitive period" for cochlear implantation in congenitally deaf children. Multiple studies have shown significantly improved outcomes for children implanted earlier in infancy, rather than later.

Two major components impact clinical outcomes: (1) the quality and quantity of auditory information (to the cortex) and (2) the timing of the input/auditory information. Of note, the mere existence of (normally) developed intrinsic (organic) pathways cannot guarantee normal transmission or function of sensory information—extrinsic (environmental) stimulation is of significant importance, too. The authors report that if environmental input, such as spoken language conversation/information, is not delivered to the auditory cortex during periods of optimal plasticity, deficits will remain, even after auditory stimulation occurs.

interactions between the primary and secondary auditory cortex, further complicating auditory learning.

The disconnection between primary and secondary cortex has significant functional implications for auditory and spoken language development. When auditory signals are not efficiently and effectively transmitted from primary to secondary auditory cortex, the secondary cortex cannot distribute spoken language and other meaningful sounds/ information to the rest of the brain to create auditory meaning and knowledge; this negative process is called "downstream degradation". Kral uses this connectome model of deafness to explain inter-individual variations in cochlear implant outcomes.

The bottom line is, babies/children must have very early access to intelligible speech and meaningful acoustic information to fully develop all auditory areas of the brain for optimization of spoken language, knowledge and literacy capacity. Hearing is a stepping stone to cognition.

Hearing is a stepping stone to cognition.

• • •

Moon, C., Lagercrantz, H., & Kuhl, P. K. (2013). Language experienced in utero affects vowel perception after birth: A two-country study. Acta Pœdiatrica, 102(2),156-160.

Infant phonetic perception can be measured shortly after birth by noting differences in responding to familiar vs. unfamiliar vowels. Therefore, the ambient language (e.g., the mother's speech) to which the brains of fetuses are exposed in the womb, affects their perception of their family language at a phonetic level.

General Infant/Child Spoken Language Development in the Family's Home Language

To begin with, what is language? Simply put, language is an organized system of communication used to share information.

Spoken language consists of sounds, words and grammar used to express inner thoughts and emotions. Language includes facial expressions, gestures, and body movements. Language is the platform for the acquisition and sharing of knowledge.

The language environment at home is the basis of an infant's brain growth and best predicts the child's language, reading and IQ outcomes. Language learning and knowledge acquisition begins in infancy. Because language/information is learned best in a social interaction with the people who love the baby, it is the parents who generally become their child's first teacher and teach the child the language and knowledge of the home.

• • •

Chen, S. H., Kennedy, M., & Zhou, Q. (2012). Parents' expression and discussion of emotion in the multilingual family: Does language matter? Perspectives on Psychological Science, 7(4), 365-383.

Parents regularly use words to express and discuss emotion with their children. The results in this study suggest that self-reported expressivity and observed emotional expression have more impact when delivered in the family's home language. The family's home language carries critical emotional content and social expressions.

• • •

Hart, B., & Risley, T.R. (1999). The social world of children: Learning to talk. Baltimore: Brookes Publishing Company.

This book summarizes a landmark study of child language development. The authors found that the average number of words per hour addressed to children by parents (Hart & Risley, 1999, p. 169) is as follows: 2,100 in a professional family, 1,200 in a working-class family, 600 in a family receiving welfare. Hart and Risley noted that, "The extra talk of parents in the professional families and that of the most talkative parents in the working-class families contained more of the varied vocabulary, complex ideas, subtle guidance, and positive feedback thought to be important to cognitive development" (Hart & Risley, 1999, p. 170). They further explained that, "Parents who talked a lot about such things [ideas, feelings, or impressions] or only a little, ended up with 3-year-olds who also talked a lot, or only a little" (Hart & Risley, 1999, p. xii). Hart and Risley concluded that their data "show that the first 3 years of experience put in place a trajectory of vocabulary growth and the foundations of analytic and symbolic competencies that will make a lasting difference to how children perform (talk, read and learn) in later years" (Hart & Risley, 1999, p. 193).

• • •

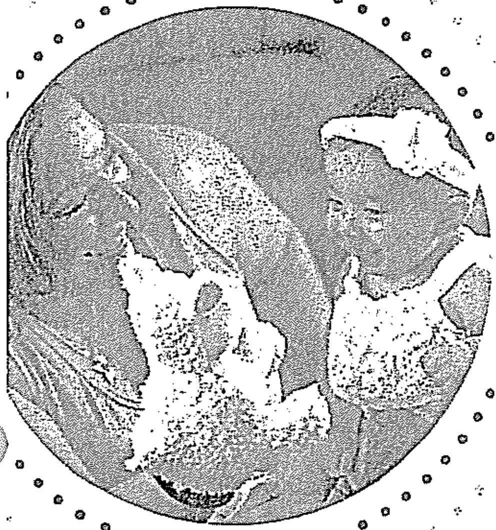
Hirsh-Pasek, K., Adamson, L.B., Bakeman, R., Owens, M.T., Golinkoff, R.M., Pace, A., Yust, P.K.S., & Suma, K. (2015). The contribution of early communication quality to low-income children's language success. Psychological Science, 26(7), 1071-1083.

Suskind, D. (2015). Thirty million words: Building a child's brain. New York: Penguin Random House.

These publications offer research about the importance of family conversation in the development of every baby/child's language and neural/cognitive capacity. In the first three years of life, there

The family's home language carries critical emotional content and social expressions.

who had been participating in an auditory-emphasized therapy approach, to the children with normal hearing from the first experiment. A second objective in both investigations was to evaluate the role of familiarity in these preferences. Participants were exposed to randomized blocks of photographs and sounds of ten familiar and ten unfamiliar animals in auditory-only, visual-only and auditory-visual trials. Results indicated an overall auditory preference in children, regardless of hearing status, and a visual preference in adults. Familiarity affected modality preferences only in adults who showed a strong visual preference to unfamiliar stimuli. The comparable degree of auditory responses in children with hearing loss who were in an auditory-based therapy program, to those from children with normal hearing, lends support to an auditory emphasis for intervention.



Early and Consistent Use of Hearing Technologies

• • •

Dillon, H., Cowan, R., & Ching, T.Y. (2013). Longitudinal outcomes of children with hearing impairment (LOCHI). International Journal of Audiology, 52, (Suppl 2: S2-3). doi: 10.3109/14992027.2013.866448.

Although the importance of early identification and intervention is well-established, the Longitudinal Outcomes of Children with Hearing Impairment (LOCHI) study has provided further clarification on the impact of early amplification on language outcomes of children with hearing loss. In the study, 75% of the participating families chose to use an exclusively LSL mode of communication with their children.

The LOCHI study has provided world-first evidence for the benefits at 5 years of age of early hearing-aid fitting by 6 months or cochlear implantation younger than 12 months of age, combined with educational intervention for auditory language development of children.

The LOCHI study has provided world-first evidence for the benefits at 5 years of age of early hearing-aid fitting by 6 months or cochlear implantation younger than 12 months of age, combined with educational intervention for auditory language development of children.

Background: The LOCHI study is a population-based, prospective study that directly compares the outcomes of children with hearing loss who received early or later intervention (https://www.nal.gov.au/project/longitudinal-outcomes-of-children-with-hearing-impairment-lochi-study/). The study includes approximately 450 children with hearing loss born in NSW, Queensland, and Victoria between 2002 and 2007. Depending on the stage of implementation of universal newborn hearing screening (UNHS) programs in the respective states at the time, the hearing loss of children was identified via either UNHS or standard care. Nonetheless, all the children shared the same post-diagnostic, free, expert audiological services from Australian Hearing, with a loss to follow-up rate of less than 1%. This means that the results of the children can be fairly compared, whenever and wherever their hearing loss was discovered. The uniqueness of the study on the world scene has been recognized with on-going grant funding from the U.S. National Institutes of Health, which enables the children to be followed up to age 9 years.

• • •

Leigh, J.R., Dettman, S.J., & Dowell, R.C. (2016). Evidence-based guidelines for recommending cochlear implantation for young children: Audiological criteria and optimizing age at implantation. International Journal of Audiology, S55, S9-S18.

The purpose of this study was to establish up-to-date evidence-based guidelines for recommending cochlear implantation for young children. Speech perception results for early-implanted children (under 3 years of age) were compared to children using traditional amplification. Language of early-implanted children was assessed over six years and compared to hearing peers. Speech perception outcomes suggested that children with a pure tone average (PTA) greater than 60dB HL have a 75% chance of benefitting from a CI over traditional amplification. More conservative criteria applied to the data suggested that children with PTA greater than 82dB HL have a 95% chance of benefit. The authors concluded that children with hearing loss, under 3 years of age, may benefit from cochlear implantation if their pure tone average (PTA) exceeds 60dB HL, bilaterally. Implantation as young as possible should minimize any spoken language delay resulting from an initial period of auditory neural deprivation caused by a lack of auditory information to the brain.

• • •

McCreery, R.W., Walker, E.A., Spratford, M., Bentler, R., Holte, L., Roush, P., Oleson, J., Van Buren, J., & Moeller, M.P. (2015). Longitudinal predictors of aided speech audibility in infants and children. Ear & Hearing, 36, pp. 24S-37S.

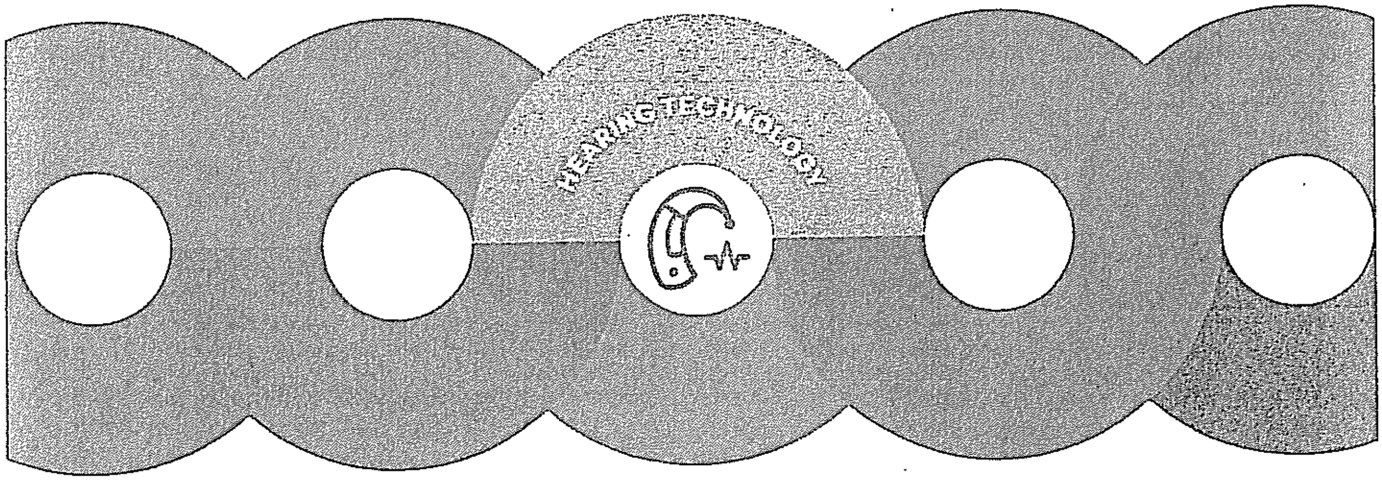
Children fit early with hearing aids had better early language achievement than children fit later.

The Outcomes of Children with Hearing Loss (OCHL) study, conducted by researchers at the University of Iowa, Boys Town National Research Hospital, and the University of North Carolina at Chapel Hill, examined the impact of early identification and intervention on children with hearing loss. The study collected data from 317 children who are hard of hearing and a comparison group of 117 children with normal hearing. The children were recruited from locations surrounding the three collaborating sites and ultimately came from 17 states.

The following results were revealed: hearing aid provision in early infancy results in better early language outcomes; children who were fit later showed delays in language development although this delay diminished with extended hearing aid use; consistent daily hearing aid use (at least 10 hours per day) provides some protection against language delay and

Summary of Early and Consistent Use of Hearing Technologies

The studies on the use of hearing technologies confirm what we would expect from our knowledge of brain development and language development. Access to sound/auditory information and fluent and abundant language interactions during the critical periods of brain and early childhood development is essential. For families choosing an LSL outcome, children who are deaf or hard of hearing must be fit by an audiologist with appropriate hearing technology as early as possible, wear the devices at least 10 hours per day, be monitored audiologically to prime their brains for spoken language and knowledge development, and be immersed in a conversation-enriched environment.



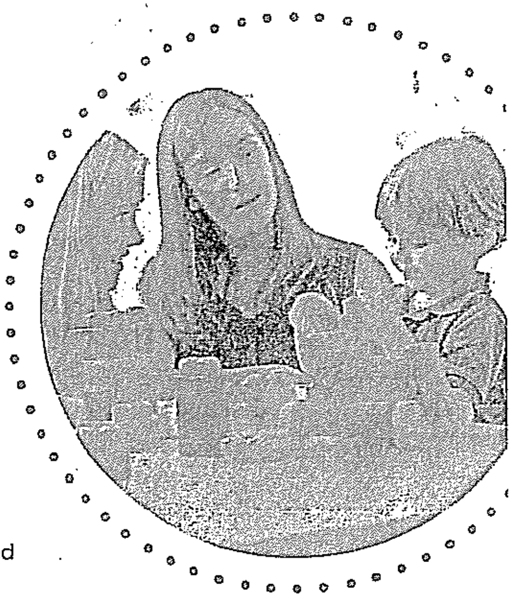
The child's brain needs continuous enrichment with intentional exposure to auditory information (e.g. more conversations and read alouds, active teaching of phonemic awareness, maybe additional tutoring) because (1) we are making up for lost time and the delay in auditory brain access, and (2) although they are very effective, auditory technologies are not perfect. A child using hearing technology will miss some casual auditory information that is floating around the environment due to distance from the signal or noise in the environment. Therefore, listening, which is purposeful attention to auditory information as evidenced by activation of the prefrontal cortex (Musiek, 2009), must be taught to the child. To summarize, LSL family-focused early intervention with an emphasis on listening, is critical for children with hearing loss to maximize the effectiveness of their hearing technology, and catch up to and maintain pace with their hearing friends in terms of language and knowledge development (Estabrooks, MacIver-Lux & Rhoades, 2016; Rhoades & Duncan, 2017).

• • •

Eriks-Brophy, A., Ganek, H., & DuBois, G. (2016). Evaluating the research and examining outcomes of auditory-verbal therapy. In W. Estabrooks, K. MacIver-Lux, & E. A. Rhoades, eds. Auditory-Verbal therapy. (pp. 35-94). San Diego: Plural Publishing.

Lim, S. R, & Hogan, S.C. (2017). Research findings for AV practice. In E.A. Rhoades, & J. Duncan, eds. Auditory-verbal practice: Family centered early intervention, 2nd ed. (pp. 52-64). Springfield, IL: Charles C. Thomas.

There are a number of studies investigating listening and spoken language intervention – also known as auditory-verbal therapy (AVT). Two current chapters offer first-rate examinations of AVT studies. A chapter by Eriks-Brophy, Ganek and Dubois (2016) focuses on evidence informed practice (EIP). EIP uses both scientific research outcomes and insights from practitioners and families for decision-making regarding auditory-verbal therapy. A chapter by Lim and Hogan (2017) scrutinizes current research, identifies study limitations and details future research needs for auditory-verbal therapy. Both chapters are excellent and detailed sources of information.



children with hearing loss born in NSW, Queensland, and Victoria between 2002 and 2007. Depending on the stage of implementation of universal newborn hearing screening (UNHS) programs in the respective states at the time, the hearing loss of children was identified via either UNHS or standard care. Nonetheless, all the children shared the same post-diagnostic free, expert audiological services from Australian Hearing, with a loss to follow-up rate of less than 1%. This means that the results of the children can be fairly compared, whenever and wherever their hearing loss was discovered. The uniqueness of the study on the world scene has been recognized with on-going grant funding from the U.S. National Institutes of Health, which enables the children to be followed up to age 9 years.

• • •

Dornan, D., Hickson, L., Murdoch, B., & Houston, T. (2007). Outcomes of an auditory-verbal program for children with hearing loss: A comparative study with a matched group of children with normal hearing. The Volta Review, 107(1), 37-54.

Children enrolled in AVT program and who received parent-focused intervention performed similarly to typically developing peers on speech and language assessments.

• • •

Dornan, D., Hickson, L, Murdoch, B., & Houston, T. (2009). Longitudinal study of speech perception, speech, and language for children with hearing loss in an auditory-verbal therapy program. The Volta Review, 109(2-3), 61-85.

Children receiving AVT for over 21 months improved their live voice speech perception, language and speech scores significantly and in a similar fashion to their hearing peers. Both groups were in the normal range for receptive vocabulary development, but the typically hearing group outperformed the children in AVT. These results are similar to the LOCHI studies.

• • •

Dornan, D., Hickson, L., Murdoch, B., Houston, T., & Constantinescu, G. (2010). Is auditory-verbal therapy effective for children with hearing loss? The Volta Review, 110(3), 361-387.

Children receiving AVT for 50 months had speech, language and self-esteem levels similar to their hearing peers and comparable reading and math scores. Over time, and with ongoing

This epilogue report focuses on how speech perception, speech production, language, and literacy performance in adolescence is influenced by a common set of predictor variables obtained during elementary school. Use of an LSL mode of communication positively influenced verbal rehearsal speed, which was a strong predictor of all early outcomes, which in turn strongly influenced later outcomes. These analyses suggest early communication mode exerts a powerful influence on early outcomes that persist into later years. Phonological processing skills, reflected in word attack and spelling skills, also were associated with teenagers achieving the highest literacy scores.

• • •

Hogan, S., Stokes, J., & Weller, I. (2010). Language outcomes for children of low income families enrolled in auditory-verbal therapy. Deafness and Education International, 12(4), 204-216.

Children with hearing loss living in low income families can attain listening and spoken language outcomes if the appropriate intervention is provided. Socio-economic status (SES) did not play a role in spoken language outcomes for the children in this AVT study.

• • •

Lew, J., Purcell, A., Doble, M., & Lim, L. (2014). Hear here: Children with hearing loss learn words by listening. International Journal of Pediatric Otorhinolaryngology, 78(10), 1716-1725.

Intervention directed at listening alone improves vocabulary and speech skills without having to focus on them as specific goals.

• • •

Morrison, H. (2012). Co-articulation in early vocalizations by children with hearing loss: A locus perspective. Clinical Linguistics and Phonetics, 26(3), 288-309.

Children who received hearing aids by 5 months had anticipatory coarticulation patterns similar to typically developing peers. Anticipatory coarticulation patterns were affected by whether or not the child had acquired that syllable before or after cochlear implantation.

Listening and Spoken Language (LSL) Early Intervention for Literacy Development

Literacy is tied to knowledge - word/sound knowledge and world knowledge. In fact, in today's world, the word literacy can have an even broader meaning than simply reading and writing.

Literacy can include being good in math, having technology skills and being able to solve problems. High levels of literacy are needed to do well in school and in a job, and will open doors for life-long career flexibility and success.

phonological awareness made a significant contribution to children's reading ability (for both words and non-words), after controlling for variations in receptive vocabulary, cognitive ability, and a range of demographic variables. Dr. Ching and her team have found that children who have deficits in phonological awareness also struggle to develop age-appropriate literacy skills. The researchers learned that a significant number of children with hearing loss struggle to develop even basic phonological awareness abilities. This link between phonological awareness and literacy development is very relevant. Early interventionists must evaluate phonological awareness skills in children with hearing loss, and provide enriched, early intervention to support its development.

• • •

Fairgray, E., Purdy, S., & Smart, J. (2010). Effects of auditory-verbal therapy for school-aged children with hearing loss: An exploratory study. The Volta Review, 110(3), 407-433.

After 20 weeks of AVT, children showed improvement in speech perception, speech production, and receptive language measures. There was less improvement shown in the area of reading. This study, like the LOCHI study and Dornan studies, shows that extra attention needs to be paid to reading development, beginning with phonological awareness.

Better readers were in LSL programs from the beginning. Early sign language use before or after CI did not offer any advantage. In fact, early use of sign language interfered with the acquisition of phonological awareness.

• • •

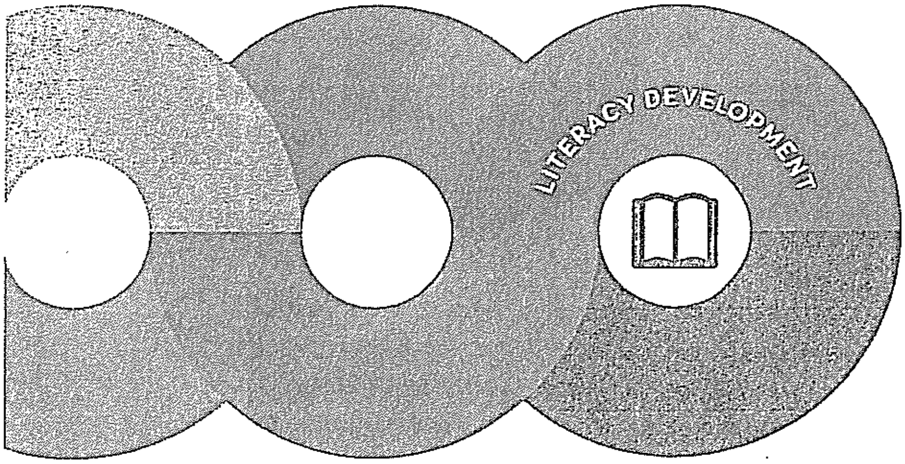
Geers, A. (2016). Emergence of literacy in Children with prelingual profound hearing loss. American Academy of Audiology Conference, Phoenix, Arizona.

Geers, A.E., Mitchell, C.M., Warner-Czyz, A., Wang, N.Y., Eisenberg, L.S., & the CDaCI Investigative Team. (2017). Early sign language exposure and cochlear implantation benefits. Pediatrics, 140(1). e20163489

Predictors of better reading outcomes include: earlier implantation or less duration of deafness, education of the mother and higher family SES, better speech production, better language, better phonological skills, and mainstreaming. Strong support was provided for the benefits of spoken language input from the start for promoting verbal and literacy

Summary of Listening and Spoken Language (LSL) Early Intervention for Literacy Development

Consistent with national education and literacy goals, our desired outcome is for all children who are deaf or hard of hearing to attain age-appropriate literacy skills by third grade along with their hearing friends. An early and solid neurological foundation in listening, spoken language and knowledge is needed to develop high levels of literacy.



Bibliography

Cardon, G., Campbell, J., & Sharma, A. (2012). Plasticity in the developing auditory cortex: Evidence from children with sensorineural hearing loss and auditory neuropathy spectrum disorder. Journal of the American Academy of Audiology, 23, (6), 396-411(16).

Caskey, M., Stephens, B., Tucker, R., & Vohr, B. (2011). Importance of parent talk on the development of preterm infant vocalizations. Pediatrics, 128(5), 910- 916.

Chen, S. H., Kennedy, M., & Zhou, Q. (2012). Parents' expression and discussion of emotion in the multilingual family: Does language matter? Perspectives on Psychological Science, 7(4), 365-383.

Ching, T.Y. (2016). Population outcomes of children with hearing loss: Early treatment is crucial, but not sufficient. American Academy of Audiology Conference, Phoenix, Arizona.

Dettman, S.J., Dowell, R.C., Choo, D., Arnott, W., Abrahams, Y., Davis, A., Dornan, D., Leigh, J., Constantinescu, G., Cowan, R., & Briggs, R.S. (2016). Long term communication outcomes for children receiving cochlear implants younger than 12 months: A multi-centre study. Otology and Neurotology, 37(2): e82–e95.

Dillon, H., Cowan, R., & Ching, T.Y. (2013). Longitudinal outcomes of children with hearing impairment (LOCHI). International Journal of Audiology, 52, (Suppl 2: S2-3). doi: 10.3109/14992027.2013.866448.

Dornan, D., Hickson, L., Murdoch, B., & Houston, T. (2007). Outcomes of an auditory-verbal program for children with hearing loss: A comparative study with a matched group of children with normal hearing. The Volta Review, 107(1), 37-54.

Dornan, D., Hickson, L, Murdoch, B., & Houston, T. (2009). Longitudinal study of speech perception, speech, and language for children with hearing loss in an auditory-verbal therapy program. The Volta Review, 109(2-3), 61-85.

hearing loss. American Academy of Audiology Conference, Phoenix, Arizona.

Geers, A.E., Mitchell, C.M., Warner-Czyz, A., Wang, N.Y., Eisenberg, L.S., & the CDaCI Investigative Team. (2017). Early sign language exposure and cochlear implantation benefits. Pediatrics, 140(1). e20163489

Geers, A.E., Strube, M.J., Tobey, E.A., Pisoni, D.B., & Moog, J.S. (2011). Epilogue: factors contributing to long-term outcomes of cochlear implantation in early childhood. Ear & Hearing, 32(1 Suppl.), 84S-92S.

Hart, B., & Risley, T.R. (1999). The social world of children: Learning to talk. Baltimore: Brookes Publishing Company.

Hirsh-Pasek, K., Adamson, L.B., Bakeman, R, Owens, M.T., Golinkoff, R.M., Pace, A., Yust, P.K.S., & Suma, K. (2015). The contribution of early communication quality to low-income children's language success. Psychological Science, 26(7), 1071-1083.

Hogan, S., Stokes, J., & Weller, I. (2010). Language outcomes for children of low income families enrolled in auditory-verbal therapy. Deafness and Education International, 12(4), 204-216.

Houston, D. M., et al. (2012). Word learning in deaf children with cochlear implants: Effects of early auditory experience. Developmental Science, 15(3), 448-461.

Kral, A. (2013). Auditory critical periods: A review from system's perspective. Neuroscience, 247, 117-133.

Kral, A., Kronenberger, W. G., Pisoni, D. B., & O'Donoghue, G. M. (2016). Neurocognitive factors in sensory restoration of early deafness: A connectome model. The Lancet Neurology, 15(6), 610-621.

Kral, A., & Lenarz, T. (2015). How the brain learns to listen: deafness and the bionic ear. E-Neuroforum, 6(1):21-28.

Kral, A., & Sharma, A. (2012). Developmental neuroplasticity after cochlear implantation. Trends in Neurosciences, 35(2): 111-122.

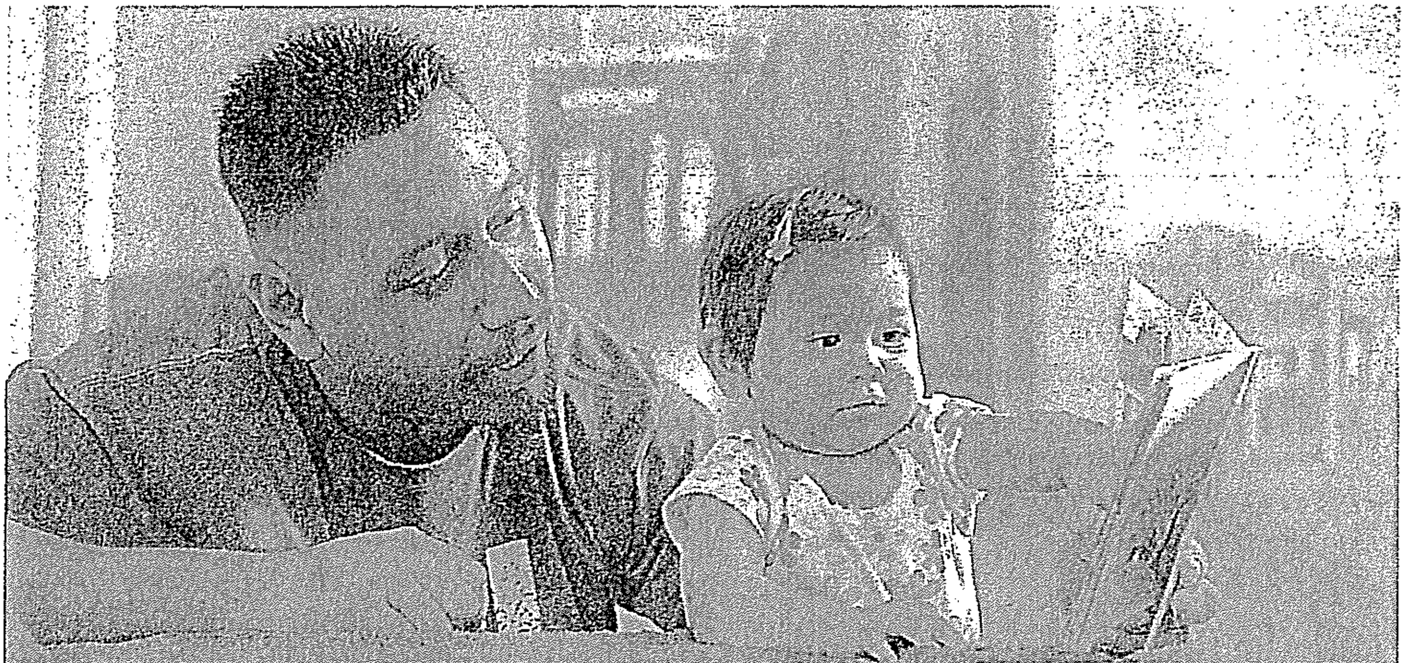
Sininger, Y.S., Grimes, A., & Christensen, E. (2010). Auditory development in early amplified children: Factors influencing auditory-based communication outcomes in children with hearing loss. Ear & Hearing, 31(2), 166-185.

Suskind, D. (2015). Thirty million words: Building a child's brain. New York: Penguin Random House.

Von Muenster, K., & Baker, E. (2014). Oral communicating children using a cochlear implant: Good reading outcomes are linked to better language and phonological processing abilities. International Journal of Pediatric Otorhinolaryngology, 78(3), 433-444.

Vouloumanos, A. & Werker, J.F. (2007). Listening to language at birth: Evidence for a bias for speech in neonates. Developmental Science, 10(2), 159-164.

Zupan, B., & Sussman, J.E. (2009). Auditory preferences of young children with and without hearing loss for meaningful auditory-visual compound stimuli. Journal of Communication Disorders, 42, 381-396.

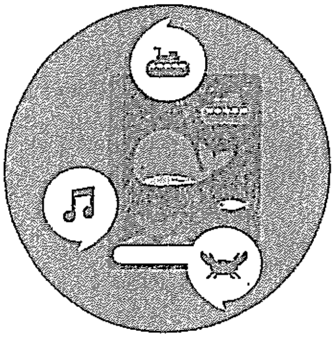


Growing Listening, Language, and Literacy Skills

TIPS FOR LSL INTERVENTIONISTS

By Hearing First

Table of Contents



Chapter 1

Read Together, Learn Together

"Encourage families to start early from day one."

There is a direct connection between the development of Listening and Spoken Language (LSL) and literacy skills, such as reading and writing. By incorporating full time wear of hearing devices and the listening and reading connection into a baby's daily life, families of children with hearing loss can grow their child's brain for a lifetime of reading and unlimited possibilities.

When many families think about learning and literacy, they envision school-aged children. In reality, we know the road to reading begins much earlier. It sounds improbable, but as an LSL interventionist, you know the LSL journey is incredible and very possible!

Ask your families to take a moment and imagine a child who is learning to read. Ask them to close their eyes and see what comes to mind. Did they picture a freckle-faced kindergartener hunched over his first book? Perhaps they imagined a little girl with braids in her hair, trying to sound out a word she has never seen before.

Help families understand: We begin working on literacy skills in the cradle, not the classroom.

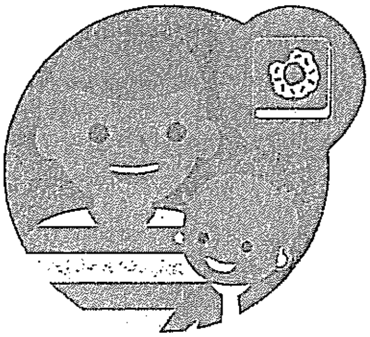
In your LSL intervention sessions with families, observe together how their baby takes in information about the world around them. Long before they memorize their ABCs, their early hearing experiences create pathways in the brain needed to learn to listen and talk, and later to read and write.

- Establish a lifelong habit of daily reading to be carried into adulthood.
- Prepare their child for literacy and school success.

Additionally, guide and coach parents to have their child wear their hearing technology all waking hours. Eyes open, technology on!

Reading aloud doesn't always occur to families until their baby gets older. They may be thinking, "How much can my baby hear, let alone understand?" By encouraging families to make time for regular reading, they are able to help their child gain important LSL and literacy skills that will pave the way for their success in school and in life.

Here are a few strategies you can share with families building literacy skills through sharing books every day.



Chapter 2

The Benefits of Books with Repeatable Lines

"Embed LSL strategies into routines of sharing books."

The more words a child hears in their first years of life, the better their vocabulary and language will become. The same meaningful interactions and repeated experiences between parents and children that grow their brain for LSL also begin building the foundation for literacy.

Teaching a child who is deaf or hard of hearing to read can be a fun time of learning and exploration. By using tools like predictable books which we will discuss below, together you can implement important LSL strategies as children start learning to read.

Ask families to take a second to look back to their early childhood and try to remember their favorite books. Were they constantly returning to the same book that kept them engaged and entertained? Did the words flow together with ease? Could they memorize and recite each line without looking at the book?

As it turns out, there is actually a rhyme and reason to these writing styles used by popular children's book authors. Experts call books using repeatable lines "predictable books." This practice is a key factor in helping children learn spoken language and enjoy reading. When you introduce books with repeatable lines in your intervention sessions, you are guiding families along the path to help their child to listen, talk, and read on par with their hearing friends by the third grade.

Share these steps with your families and practice with their children in your LSL intervention sessions.

1.

Take a book and use Post-it® notes to cover several pictures on each page. The Post-it® note creates a flap the child can remove or peel off. And you don't have to worry about the flap getting torn off like you do in ready-made "lift-the-flap" books!

2.

Talk about the object or picture that is covered. Name the object and make the Learning to Listen (LTL) sound. Encourage the child to vocalize or attempt to imitate the LTL sound. As they get older, don't just stick to labels. Provide clues about what might be hidden behind the flap such as, "This is an animal, it lives on the farm, it gives us eggs, and it says, 'bak bak bak.' Do you know what it is?" Expect and encourage a response from the child. Older children may reply, "Chicken?" While younger children may first reply by making the LTL sound. It all just depends upon the child's level.

3.

Have the child lift or peel off the Post-it® note. Talk more about the picture. Make comments or sing a fun made-up song together about what is on the page.

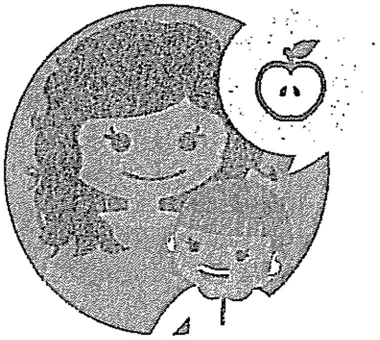
Such simple things are big-time learning opportunities for children with hearing loss.

- It uses the LSL strategy Audition First, which emphasizes letting a child hear a sound before it is shown to them. This strategy is important for growing the child's brain to understand spoken language.
- It also uses the strategy Sabotage, which capitalizes on the unexpected to keep the child's attention as well as teaches them flexibility in their thinking and language skills.
- It provides opportunities for children to follow familiar commands, such as, "lift the flap." Babies understand language many months before they begin saying their first words.

Help families understand familiar commands and phrases in routines that happen over and over to help their child start making sense of the auditory information around them. It is a great diagnostic tool for both interventionists and parents in an LSL partnership to note when a child begins following familiar commands.

Research has shown that reading aloud and sharing books is one of the most important things adults can do early to make a significant difference in a child's later success in school. We know this to be true for children who are deaf who are fitted with appropriate hearing devices and wear them all waking hours. Creating your own "lift-the-flap" books are not only fun but also a great investment in your client's future.

Here's a guide so you can get flapping today!



Chapter 4

How to Make Your Own Experience Books

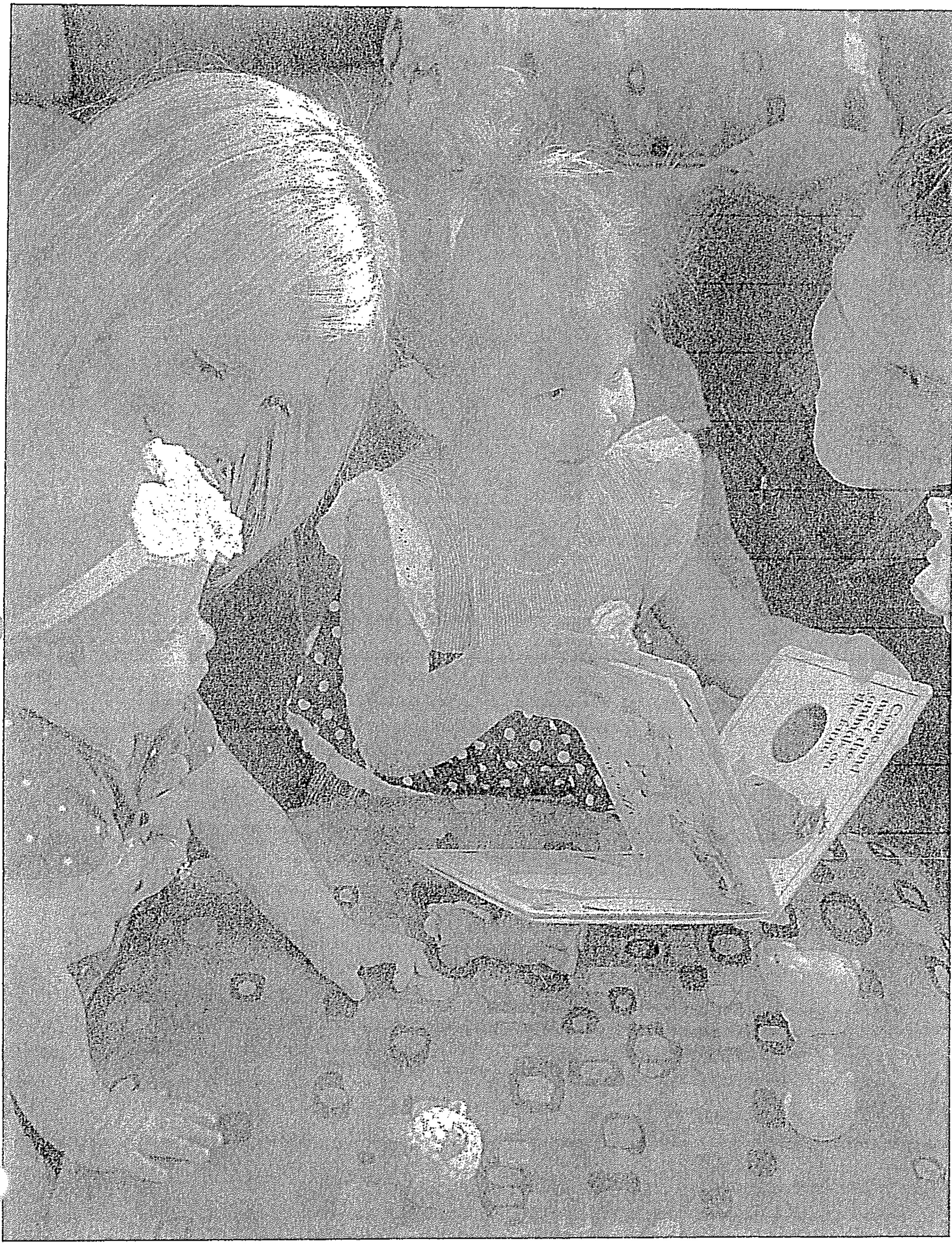
"Encourage families to find opportunities for more shared experiences."

Experience books are an effective technique for developing the skills a child needs for conversational competency.

"What did you do today?" This is a common question families ask their young child, hoping for an answer with more than "I don't know" or no response. Since you may not spend every day with their child, you really want to know what activities they enjoyed or what made them smile.

This may be a particular goal for the children you serve. Sharing and describing personal experiences requires an ability to know what information the listener needs, the order in which to provide the information, how much detail to include, and how the listener will relate to the story. This is a tall order for little ones to master.

Early learning research has reinforced to families that sharing books and reading aloud will help children in language and literacy development. Research has also emphasized that oral narrative development, the ability to share about yourself and your experiences descriptively, requires more than just exposure to reading aloud: It requires meaningful conversation practice. This can occur through sharing conversations about a book as well as engaging in ongoing conversations about events and daily routines.



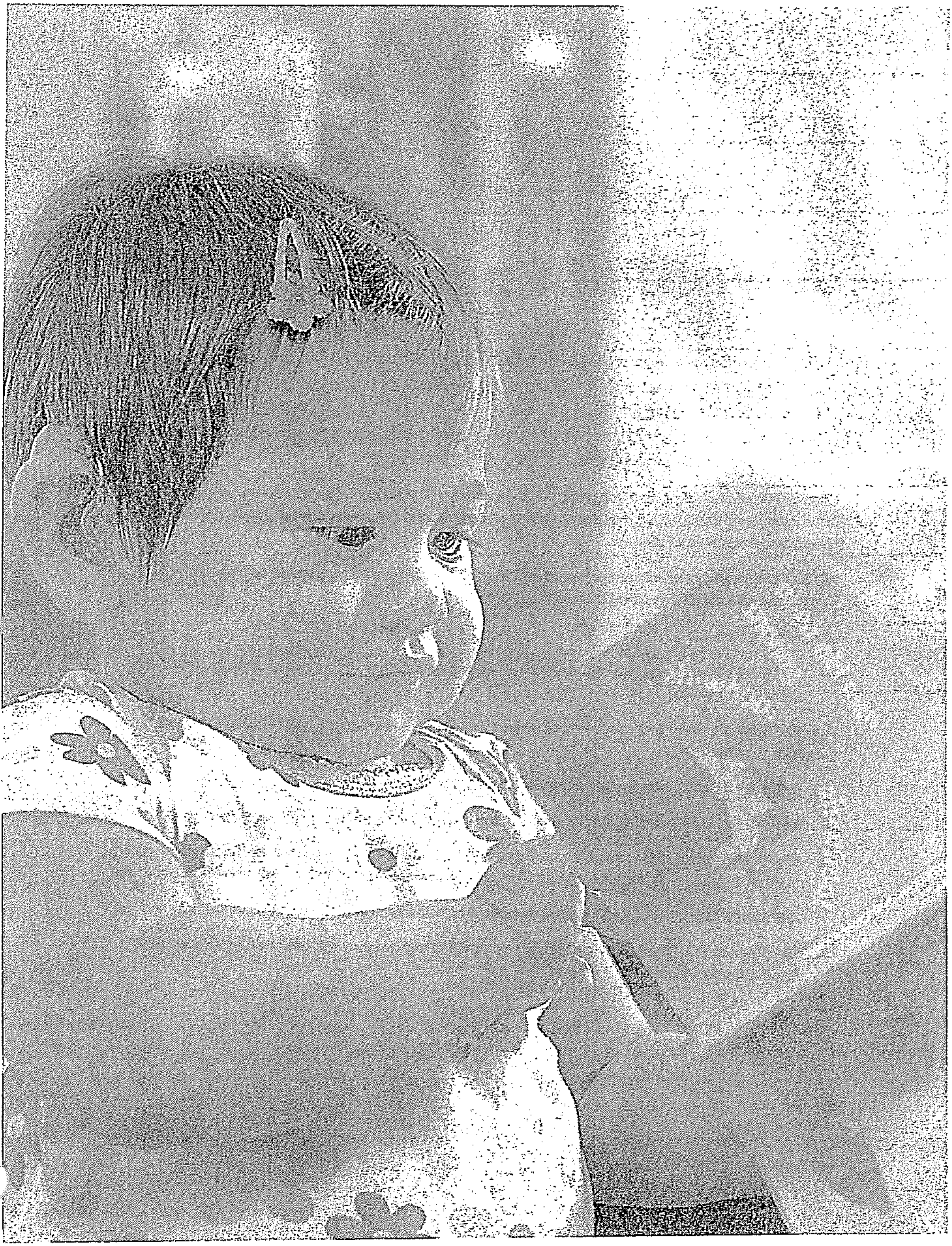
JUST BECAUSE IT'S IMPORTANT DOESN'T MEAN IT'S ALWAYS EASY

LSL interventionists and families can value reading and still struggle to get their children interested in being read to. If a child struggles to stay still for even short periods, the battle to get them to sit for a story might seem overwhelming. Sometimes parents may not have age-appropriate expectations for what their burgeoning book lover can reasonably enjoy.

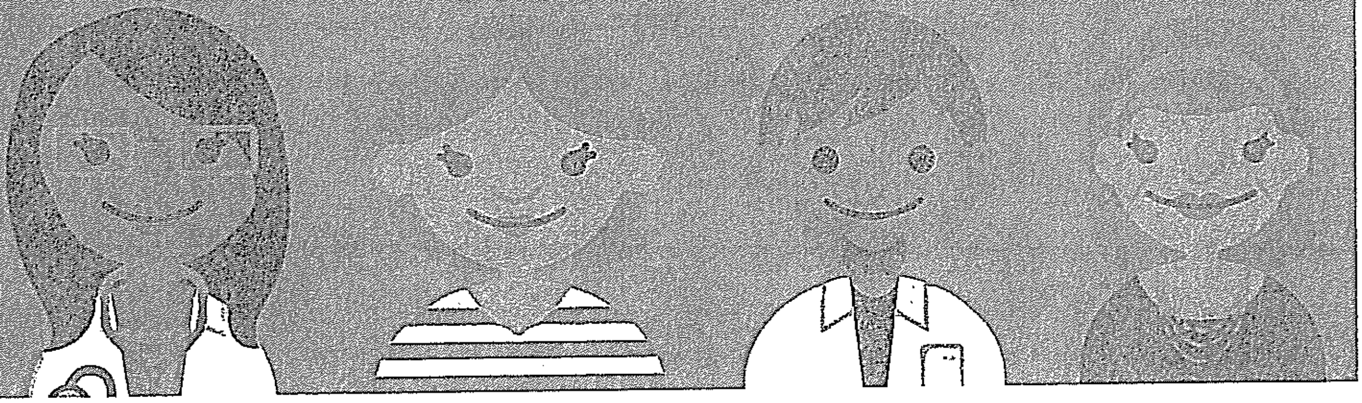
IDEAS TO TRY AT READING TIME:

These ideas are designed to make reading time more enjoyable for small children and their families. Talk about and practice these in your LSL intervention sessions with families first, then ask families to choose one they would be willing to try at home. Add more from the list over time and discover which ones were effective for their reluctant reader.

- **Establish a routine.** Children thrive with rhythm and routine. Building books into their daily routine is a great way to start a successful habit.
- **Reading at bedtime** is often a good idea, since it is likely the child is not as active as they prepare to sleep. Make sure the room is quiet and comfortable.
- **Snack time and meals** are also great times for read aloud sessions. While the child is enjoying their favorite snack and seated at the table or in a high chair, read a book, or two (or three).
- **Make reading a family affair.** If there are older children in the house, get them involved. While an active child is in their car seat, ask an older child to read aloud on the way to your destination.
- **Set the example.** Modeling is a powerful teacher. Let the child see their family members reading. This allows literacy to become one of the many things they will want to mimic as they grow.
- **Give yourself permission to skip parts.** Remember, a "win" doesn't require reading every word. If there's too much text to hold a child's attention, feel free to paraphrase. It's more important to end the read aloud session on a successful note, even if that means telling the story in your own words.
- **Build story stamina.** There's no need for a parent to read the *Moby Dick* of children's books right away. Start in short increments and build the length of time that the child will listen. Start with a one-minute story, if that's how long they will tune in. Next time, expand to two minutes (and so on).
- **Employ silliness to get back on track.** If a child becomes fussy, try to do something unexpected such as singing, sound effects, or a different voice to re-establish interest. Then wrap things up quickly.



The Hearing First Professional Learning Community is an online platform for professionals to learn together and improve the LSL practice. Collaborate with other LSL interventionists to discover new solutions and improve outcomes for children and their families. Whether you're an aspiring or advanced practitioner, you can share and grow in your skills. **There's no reason to go it alone in the digital age.**



JOHN TRACY CLINIC

www.jtc.org

Who We Are:

John Tracy Clinic's provides parent-centered services locally and globally to young children with hearing loss, offering families hope, guidance and encouragement.

Established in 1943 by Louise Treadwell Tracy, JTC is now one of the world's most acclaimed private providers of audiology diagnostics, education, resources and support for families who have infants or young children with hearing loss. Today we serve more than 3,200 families annually.

Our goals are to help children develop the speech, language and listening skills they need to thrive in the hearing world. Further, we equip their parents with the necessary knowledge and training to help their children achieve their full communication potentials.

Our services include comprehensive pediatric audiological evaluations, a parent-infant program, auditory-verbal therapy services, family and parent support programs, counseling services, worldwide parent education, an auditory verbal preschool, as well as professional education, including a master's degree program in partnership with Mount Saint Mary's University Los Angeles.

JTC JOHN TRACY CLINIC

The leading diagnostic and education
center for young children with hearing loss

Ideas & Advice
for Parents of Children with Hearing Loss

First Words for Parents Learning About Hearing Loss

This is a short list of beginning words for parents of children newly diagnosed with hearing loss. It is meant to be simple not comprehensive. Many other terms are discussed in publications, explained on the Internet or defined in depth in dictionaries. Use can vary from country to country and even within the communities in one country. To understand these new words and begin to use this unfamiliar vocabulary parents will need to keep asking about the meaning and correct use of terms.

Parents want their children to be seen for what they can do, who they are and what wonderful people they will become. Children are not defined by their hearing. Families wish to obtain for their young children with hearing loss what is needed for success. Parents can begin assisting their children by learning about the words used in reports, meetings and appointments. Understanding terms helps parents to ask better questions and make informed decisions.

Amplification: increased loudness of sound, or hearing devices that change sound levels

Articulation: production of speech sounds

ASL: American Sign Language, a complete language used by many Deaf North Americans with its own grammar and sentence order separate from English. Meanings are conveyed by hand shapes, finger, hand and body movements as well as facial expressions. Each country's sign language is different and there is no universal sign language.

Audiogram: graph showing an individual's responses to sounds during a hearing test

Audiologist/Doctor of Audiology: a specialist in hearing and balance who does evaluations, diagnosis and selection and managing of listening devices

Audition: sense of hearing or act of listening

Auditory Brainstem Response (ABR): a test used to measure how the auditory nerve and brainstem respond to sound

Air-Conduction Testing: hearing evaluation using head phones or insert earphones

Auditory Neuropathy (dys-synchrony): hearing disorders characterized by the inability of the auditory nerve to transmit sound clearly to the brain

Auditory Nerve: the VIII cranial nerve which carries sound from the cochlea to the brain

ditory-Verbal Therapy: intervention that emphasizes guiding parents in teaching their children to listen, understand spoken language and speak

Behavioral Observation Audiometry (BOA): hearing test that documents observable responses to sound such as facial expressions, eyebrow furrowing and eye movements

Bilingualism: fluent in two languages

Bilateral Hearing Loss: occurring in both ears.

Binaural Hearing: hearing with both ears

Bone Conduction Testing: measuring hearing through a small vibrator on the skull which stimulates the inner ear (cochlea)

LSLS Cert. AVT: Listening and Spoken Language Specialists include Certified Auditory Verbal Therapists and Educators, professionals trained in coaching parents to help their children use hearing to develop spoken language.

Cochlea: inner ear that contains the sense organ for hearing

Cochlear Implant (CI): a device implanted in the inner ear that provides electrical stimulation to the auditory nerve which the brain perceives as hearing

Combined Approaches: using more than one language or method to encourage communication development

Conductive Hearing Loss: occurs in the outer or middle ear, is often temporary and may be medically or surgically correctable

Consonants: sound in spoken language formed by stopping the flow of air through the mouth; in English all the letters except /a/, /e/, /i/, /o/, and /u/

Cued Speech: system of eight hand shapes and four hand positions used to make speech visible in any spoken language

Words commonly used in English in the USA when a child is identified include "hearing loss," "deaf," hard of hearing," "Deaf," and "hearing impaired". There is not one standard definition for each. When Deaf is capitalized it indicates the cultural group sharing values and language (ASL) of the Deaf community. Medical professionals may use terms for the causes or amount of hearing loss. Education or intervention staff may use words connected to eligibility for services. Individuals might be described with the same term but have very different ways of hearing and communicating in addition to varied personal preferences for what words feel acceptable.

Parents can ask other families, persons who are deaf or hard of hearing and professionals working with their family what words are appropriate and respectful. Individuals might sometimes be described as a person using a hearing aid, cochlear implant or listening device. Words are powerful and need to be chosen carefully but labels provide limited information. Children can be best described by the wonderful skills they are learning and the beautiful personal names given to them by their families. As parents become their children's advocates they will find the words!

JTC JOHN TRACY CLINIC

Centro líder para el diagnóstico y educación
de niños pequeños con pérdida auditiva

Ideas y consejos
para padres de niños con pérdida auditiva

Etapas en la audición de los niños

La audición de un niño se puede examinar a cualquier edad y tan temprano como un par de horas después de haber nacido. En los Estados Unidos se estima que 12.000 niños nacen cada año con pérdida de audición. La audición de los niños también debe ser evaluada regularmente, ya que la pérdida de audición puede ocurrir en cualquier momento y por diferentes razones. La pérdida de audición no detectada en los niños pequeños puede causar dificultades en la comunicación y el aprendizaje. Los padres pueden pedir que la audición de su hijo sea evaluada cada vez que tengan una inquietud. Si un niño no está demostrando logros típicos de audición, las evaluaciones realizadas por audiólogos pueden ayudar a identificar si existe pérdida de audición. ¡El diagnóstico y la intervención temprana pueden ayudar con el lenguaje, la audición y el habla!

0-3 meses

Reconoce la voz de los padres. Reacciona a sonidos fuertes. Medio se despierta con las conversaciones cercanas. Sonríe cuando se le habla.

A los 6 meses

Responde a los cambios en los tonos de voz. Reacciona a los juguetes ruidosos. Comienza a buscar de dónde viene el sonido. Usa muchos sonidos del habla mientras que balbucea.

A los 9 meses

Responde a las peticiones simples. Localiza la dirección de los sonidos. Reacciona a su nombre propio. Balbucea sonidos de diferentes duraciones.

A los 12 meses

Comprende una variedad de palabras. Imita algunos sonidos del habla. Disfruta de juegos como "Las Escondidas". Dice su primera palabra(s).

A los 18 meses

Sigue instrucciones sencillas. Le gusta que le lean. Señala algunas partes del cuerpo. Usa más de seis palabras.

2 años

Responde a preguntas de si/no. Entiende el significado de muchas palabras. Apunta a retratos cuando se lo piden. Usa frases de dos palabras.

3 años

Entiende muchas palabras de acción. Reconoce melodías conocidas. Usa oraciones de tres palabras. Habla con suficiente claridad para que la familia le entienda.

4 años

Sigue instrucciones de dos pasos. Responde cuando se le llama desde otra habitación. Usa oraciones de cuatro o más palabras. Habla con claridad suficiente que personas fuera de la familia pueden entender la mayor parte del tiempo.

5 años

Responde a diversas preguntas. Canta canciones completas e incluye acciones. Su vocabulario es cada vez mayor. Usa oraciones detalladas.

devices (hearing aids and/or cochlear implants), many children with significant hearing loss develop listening and speaking skills. Sign language, cues or a combination of speech and sign are other approaches that might be preferred by a family. Decisions can be changed as needs and information are explored but constant, clear communication helps a baby build language through family interactions.

Consider devices

Follow-up testing will be done to monitor hearing and recognize any changing needs. An audiologist will work closely with parents to identify, obtain and monitor the device(s) a child might use. Parents can contact their hearing professionals regularly to share observations and decide on next steps. When families wish the child to develop strong auditory skills, hearing aids are usually tried for several months or more. If the benefit from hearing aids is minimal, a cochlear implant (CI) might be suggested. In most countries CI surgery may be done after a child has used hearing aids with limited benefit and is one year or older. Use of a hearing aid or implant is often supplemented by sessions with a speech or a language specialist who helps parents encourage a child's language and listening.

Enroll in education

Early education services for children with hearing loss are offered in many countries. A professional can make a referral but parents can also contact their doctor or local school to obtain services. Programs can vary greatly in what they do and how they work with families. Parents can explore what types of services are available to find what fits their family's preferences. Early educators or interventionists do assessments and coach parents in encouraging their child's development. Teachers help identify goals, describe strategies and offer ideas for family activities. Educators might also connect families with other parents who have child with hearing loss. These first teachers partner with parents to nurture a child's learning, communication and school readiness.

Become an advocate

At identification of hearing loss, families are often unsure what to do and uncertain about their child's future. As parents begin learning, they gradually become experts on their children and start working closely with others. Early identification, technological advances, educational research and achievements of deaf and hard of hearing persons have contributed to high expectations for children with hearing loss. Awareness of the potential for a child's future without limits can give parents the strength to keep looking for answers, searching for services, asking for support and obtaining what their child needs to succeed. Over time, parents can develop skills to become advocates for their child and create a team of family, friends, educators and specialists who join their efforts.

Enjoy Interactions

The joys of connecting and playing with parents help children develop early brain skills and form effective relationships. Looking, touching, moving, feeling, thinking, sharing, responding and communicating are the start of language. Families can engage in the typical hugs, actions, songs, games, stories, turn-taking and interactions done with any child. The identification of hearing loss takes families in directions they did not expect, but enjoying interactions is part of realizing that hearing loss is only one aspect of a child. Just as children vary in reaching developmental milestones, the steps families take will be individualized as they choose how to begin. Parents can cherish their child's communication as they identify excellent resources and experienced persons to interact with across the world.

806 W. Adams Blvd • Los Angeles, CA, USA 90007
www.jtc.org • (213) 748-5481

confirms that these cells amplify sound, ANSD might be identified. Diagnostic OAE assesses more frequencies (tones) for additional nformation about hair cell function. In some cases and over time, OAE responses might decrease or not be obtainable.

Screening or diagnostic Auditory Brainstem Response Test (ABR) evaluates the response of the hearing nerve. Absent or abnormal response indicates the possibility of ANSD especially when normal results are obtained from OAE testing. Diagnostic ABR testing also might show a cochlear microphonic which means the cochlea is functioning and the hearing nerve is not.

Middle ear muscle reflex (acoustic reflex) checks the response of the hearing nerve to loud sounds. The reflex is absent or elevated when the nerve is unable to stimulate the muscle. Used with ABR and OAE, these results help identify ANSD.

Identifying Hearing Levels

Audiology evaluations are similar for any type of hearing loss but the results for a young child with ANSD may identify broad, not exact, levels of hearing. Hearing may also decrease or remain the same over time. Even when there is no change in hearing, testing should be ongoing. If there appears to be a significant difference in a child's responses to sounds, immediate re-testing can be done.

or some babies who have been diagnosed with ANSD, hearing might improve or become normal within the first 8 – 12 months. This is called Transient Auditory Neuropathy. If a child has Transient Auditory Neuropathy, assessments conducted regularly until the third birthday can document listening and spoken language progress.

Clearer responses might be obtained from Visual Reinforcement and Play Audiometry evaluations done when a child is able to participate by looking or doing an action when a sound is heard. Results can vary from test to test and identifying the hearing of a child with ANSD may require multiple evaluations.

Parents can report when their child responds to speech, what environmental sounds he hears, and if he seems not to hear as well during certain situations. Together parents and audiologists can define the child's broad hearing levels. What a child hears will become clearer as parents continue to communicate with the audiologists and combine home observations with hearing evaluation results.

Using Listening Devices (hearing aids, cochlear implants)

To help a child with ANSD develop listening and speech, audiologists may suggest listening devices. The cause of ANSD, other health conditions, hearing levels and speech recognition skills are considered in a device recommendation. The benefit of using a hearing aid is not certain since ANSD is a neural condition. During a trial period with hearing aids families can watch closely for reactions to sound, especially speech. If a hearing aid does not help significantly then a cochlear implant (CI) might be considered. The benefit from a CI is also not certain but tends to be more effective since it stimulates the hearing nerve. The results from a CI vary but families can share observations and ask about ongoing expectations as they work with the implant team. There are some children with ANSD who use both a hearing aid and a CI but some will use neither.

Considering Communication

There is not one specific communication approach for ANSD. Listening, language and speech milestones can be assessed starting from infancy to determine a child's communication strengths. The approach initially used by the family might change as the child gains language and shows how he learns best.

If a child is responding to speech, families are encouraged to use spoken language. When a child seems to hear but not understand speech easily, parents might add strategies such as getting down on his level and using natural gestures to help him comprehend. More visual or auditory strategies might be suggested to enhance interactions.

If a child seems not to hear speech well, families can explore with service providers other communication approaches. They might consider sign language or total communication (a combination of speech and signs). After benefitting from a combined approach, a child may show a preference to use only speech or only sign.

Partnering with Service Providers

Auditory Neuropathy Spectrum Disorder involves a range of responses and skills. Parents can learn much about their child's hearing by working closely with audiologists and other service providers. Continuing research is providing information and insight for professionals studying ANSD. Together with families they can problem solve and devise plans. Listening devices, strategies and services can be identified as parents address a child's ANSD to help him acquire the language and skills needed for school!

5. Are two implants better than one?

Bilateral implants (two implants) may provide awareness of sound from both sides and better understanding of speech in situations with background noise. The quality of speech of a cochlear implant user may improve from listening with two implants but results are very individual and not guaranteed.

Receiving bilateral implants at the same time is referred to as simultaneous implantation.

Sequential implantation refers to receiving the second implant after the first.

You can talk to other parents whose children have bilateral implants (simultaneous or sequential) and meet with adults who use implants. Discuss the information you receive with your cochlear implant team to determine if two implants seem right for your child.

6. How do I know if my child needs to use an implant in one ear and a hearing aid in the other?

If a child is able to hear some speech with a hearing aid, the combination of an implant and hearing aid can be helpful. There is no consensus about using both an aid and implant, and this benefit is not documented by research. However, many children and adults report that their hearing aid provides low frequency sound which carries more depth and quality of voice, while their implant gives better high frequency hearing and provides more clarity. The result appears to be a richer sound.

You can talk with your audiologist about the speech sounds your child can hear with a hearing aid. You might discuss possible benefits of having your child use an implant on one side and a hearing aid on the other and when it might be best to introduce that arrangement.

7. What is expected when the implant is activated?

Implantation is a process and not an immediate fix resulting from simply purchasing a device. Families often have high hopes for clear and quick speech but usually the process starts with sound awareness, listening, understanding words and then beginning to talk.

You can begin by encouraging your child to listen to everyday sounds. Then introduce new sounds. Be enthusiastic! Listening can be fun.

8. How soon do children respond to sounds with a cochlear implant?

If a child has heard no sounds before implantation, he will need to learn to listen. This can take a few months, since sounds from the initial stimulation are often soft and then increased as the child becomes comfortable. If a child has developed listening skills before getting an implant, he might respond to sounds soon after activation.

You can find ongoing new and meaningful experiences for your child to hear so that listening is a process of discovery. You can document what he is responding to and discuss this with your CI team.

9. Does speech sound the same to my child with an implant as it does to me?

Speech heard through an implant is not the same as speech perceived by a person with typical hearing. There are recordings which attempt to demonstrate sounds as heard through an implant, but your child might hear differently. A child's brain will learn to interpret sounds from an implant, but how you and your child hear sounds will not be the same. The brain makes sense of sounds and those sounds become natural hearing to the child.

You will not know exactly how your child perceives sounds but you can observe what he hears. You can begin using the Ling Six Sound Test with your child after his implant is activated to document what he hears at what distances.

10. How soon do children talk?

There are many factors involved in the development of speech with an implant. If a child has awareness of voice and some language, the process of understanding and speaking may be faster than for a child who did not have these skills. A child who receives an implant at one year of age may develop spoken language at a different rate than a six year old.

You can discuss your child's listening skills with your service providers to recognize his current abilities. Then learn about the stages of listening, language and speech development and determine what your child needs to progress.

11. Will my child need speech therapy?

After an implant is activated, a child's brain may not immediately understand many new sounds. A speech therapist can help him learn to respond to sounds and assist you in developing his listening skills. Parents often feel that more therapy sessions will quickly improve their child's listening. However speech therapy is an isolated practice and follow-through at home is necessary.

You can provide your child with constant conversation at home. You can also specifically create opportunities that build on the focus of therapy sessions. Then your child has much experience with listening in a meaningful way during typical routines.

JTC JOHN TRACY CLINIC

The leading diagnostic and education
center for young children with hearing loss

Ideas & Advice
for Parents of Children with Hearing Loss

Early Expectations for a Child with a Cochlear Implant

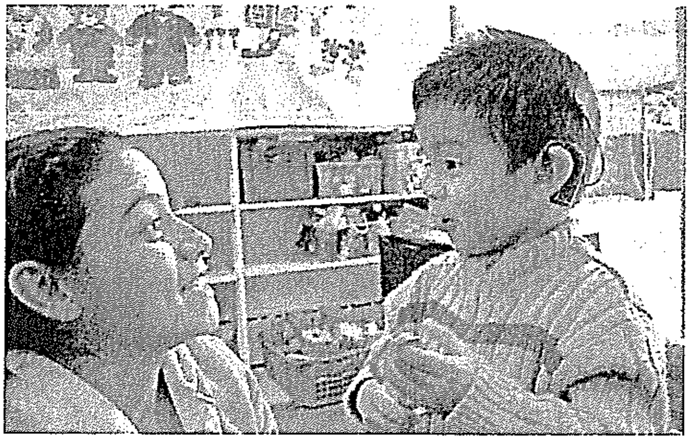
Families often have many emotions about their child's cochlear implant (CI). One common feeling is of uncertainty. Parents are unsure of what changes they will see and when their child might talk. Surgery and being fitted with external equipment begins the process. The first use of the activated implant is awareness of sounds. Family members can be very involved in helping a child develop a range of listening skills. As a child increases his listening and understanding, his speech skills can expand.

Mapping

he sounds transmitted through a CI are not the same as those heard with a hearing aid. A child's brain needs practice recognizing these new sensations as sound. How quickly a child uses his CI depends on many factors including when he was deafened, when the loss was diagnosed, the time between diagnosis and implantation, the amount of hearing provided by hearing aids and the cause of the hearing loss. All these factors and more impact a child's recognition and understanding of new sounds.

After implant surgery there are several follow-up appointments to program or MAP it. When the CI is first activated a child might become very quiet or his vocalizations may increase. He may not yet be attentive to other voices or sounds. These varied beginning responses are a natural part of the listening process but parents often worry that the implant is not working. Learning to listen takes time and the family can feel assured that few or no responses can be typical at the start.

After the initial mapping is complete, most children visit their audiologist every 3-4 months. The audiologist can suggest expectations for the child's responses. Families, teachers and therapists can help document their observations of how the child is meeting those expectations. Parents can also request additional appointments at any e if their child's responses change unexpectedly.



Listening

A child with a CI discovers and uses sound through the same developmental steps as a child with typical hearing. During the first three months after the implant is activated, parents may notice spontaneous reactions when certain sounds are heard. A child might look up or startle slightly. Then the child may begin to search for the sound as he looks in the direction of what he hears.

A child learns to listen from parents talking, singing and pointing out sounds. Parents might use "bye, bye" "uh oh" and other sing-song words in addition to typical speech. Sounds from the microwave, musical toys, water running or an airplane overhead are examples of natural events that can be part of early listening. A family's enthusiasm and interest in sounds can encourage a child to be aware and become excited about many sounds around him.

The developmental stages for listening are detection, discrimination, identification and comprehension.

Detection

The first level of listening is an increasing awareness of sound. A child might now show interest or reactions to an increasing amount of sounds. Parents can call attention to different sounds and search with their child for sound sources to encourage increased "detection".

Discrimination

The next level of auditory development is noticing differences between sounds. A child now might repeat "mmmm" after someone says "yummmm". He does not yet understand the meaning of sound but he is able to "discriminate" between sounds.

LISTENING FOR LIFE

www.listeningforlife.com

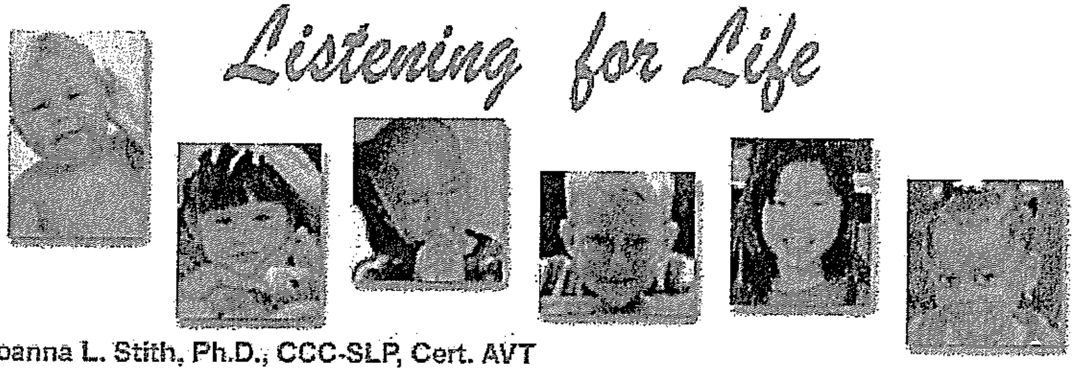
This website is designed for parents of children with hearing impairments, to better understand the practice of Auditory-Verbal Therapy. It will provide an introduction to AVT and its principles. It will guide you through the wonders of AVT and the possibilities for your child as he/she develops into a healthy, happy hearing adult.

You will find information about what AVT is, who is involved in the AVT process, how AVT can help your child and what you can do at home to facilitate language learning. Keep a contact page to log information you receive when speaking with various individuals, (ENT, Audiologist, Physician, Speech Pathologist, etc.)

This website is meant to be an introduction to AVT for parents and professionals. Over the course of your child's therapy there will be a world of questions you may have. I am available to answer questions you and your family may have. I have also compiled a list of web sites you may find helpful to look at. Any time you are interested in learning more about AVT or need a few extra home therapy activities you may find these sites beneficial!

Welcome Auditory-Verbal Therapy Parent Support Resources About Dr. Stith

Listening for Life



Joanna L. Stith, Ph.D., CCC-SLP, Cert. AVT

14037 Park Cove Drive, Broomfield, CO, 80020 - (303) 465-2687 - joanna@listeningforlife.com

What is Auditory-Verbal Therapy?

Auditory-Verbal Therapy is a specialized type of therapy designed to teach a child to use the hearing provided by a hearing aid or a cochlear implant for understanding speech and learning to talk. The child is taught to develop hearing as an active sense so that listening becomes automatic and the child seeks out sounds in life. Hearing and active listening become an integral part of communication, recreation, socialization, education, and work.

- The philosophy of Auditory-Verbal Therapy (AVT) is for deaf and hard of hearing children to grow up in a regular learning environment, enabling them to become independent, participating, and contributing citizens in the mainstream society.
- AVT is a parent centered approach that encourages the use of naturalistic conversation and the use of spoken language to communicate.
- AVT is an approach that emphasizes the use of residual hearing to help children learn to listen, process verbal language, and to speak.
- AVT Maximizes the use of the child's aided residual hearing for the detection of sound.
- The earliest possible identification of hearing loss with immediate fitting with amplification, as well as prompt intervention helps to reduce the extent of language delays commonly associated with hearing impairment.
- AVT is based on teaching parents, during their child's individual therapy sessions to emphasize residual hearing and interact with their child using the auditory-verbal approach.
- AVT encourages interaction and mainstreaming children from the beginning with normal-hearing peers.
    - Participation in playgroups, library story hours, and attendance in community schools can provide children highly motivating natural language models.
- AVT teaches the child to develop self-monitoring skills.
    - The child learns to listen to his/her own voice as well as to others during natural conversations thereby promoting natural voice quality.
- AVT follows a logical and critical set of guiding principles. The parent, therapist, and child engage in play activities that teach the child to his or her amplified residual hearing to learn auditory-verbal communication like children with normal hearing.

AVT is...	**AVT is not...**

- These children can learn to talk through listening, because they have been given access to spoken language.
- Listening is a major force in the development of a child's personal, social, and academic life.
- AVT can help these children develop conversational skills.
- In order to benefit from the "critical period" of development, then the identification of hearing loss, use of appropriate amplification and medical technology, and stimulation of hearing must occur as early as possible.
- If hearing is not accessed during the critical language learning years, a child's ability to use this information meaningfully will deteriorate.
- Current information about normal language development provides the framework and justification for the structure of Auditory-Verbal practice.
- As verbal language develops, reading skills can also develop.

Importance of Auditory-Verbal Therapy

- When aided properly, children with even profound hearing losses can detect, most if not all, speech.
- A child who has a hearing impairment need not automatically be a visual learner (i.e. sign language), rather he/she can learn how to be an auditory learner.
- Children learn language most effectively through consistent and continual, meaningful learning interactions in a supportive environment.
- As verbal language develops, with audition, reading skills can also develop.
- Parents in AVT programs do not need to learn sign language.
- AVT uses and encourages the maximum use of hearing, and stresses listening rather than watching.
- AVT uses a team approach to therapy that allows for a more complete education environment.

Why Should My Child Learn to Listen?

- Children with normal hearing learn to readily detect sounds in their environment during infancy. They listen and learn that certain sounds have certain meanings. In this way, they learn to recognize, understand and speak words. This is auditory (listening) and verbal (speaking) communication. As they grow, they continue to build their vocabulary and language skills as they interact and communicate with others.
- Children with hearing impairments can also communicate in this way, however, they need help to learn to detect and recognize sounds around them. They must be taught that listening is useful and necessary to verbally communicate.
- Children with hearing impairments CAN LEARN TO LISTEN TOO!!

Terms You Will Hear Along the Way with AVT

- **Learning to Listen Sounds-** The list of sounds that are used to represent objects. For instance, "aaah" represents an airplane and "moo" represents a cow. They are used with the beginning listener.
- **Ling 6 Sound Test-** A test of listening that is done periodically throughout the day where the child which requires the child to respond to 6 sounds (ah, oo, ee, sh, s, and m) presented auditorally. The child completes an action or imitates the sound when heard. These sounds represent the sounds across the frequency range for speech.

for learning. It does not use formalized visual communication systems such as sign language and cued speech. Research has shown that children who do not use sign language develop more sophisticated use of their hearing and speaking skills. Modifications to this approach are recommended on a case by case basis, taking the child, family, and community factors into account.

What age is best to begin Auditory-Verbal Therapy?

No infant is too young to work with. As soon as the infant has been fitted with hearing technology, therapy should begin. Because the human brain learns most rapidly in infancy, these important years should be capitalized on by starting therapy and parent training immediately.

How often should a child go to therapy?

In many cities, children receive one or two, hour-long sessions each week. Children and their parents participate in the sessions with the therapists. Families who are limited by distance may receive fewer sessions, such as every other week. The amount of therapy the child receives is not the main factor in a child's progress; rather it is the amount of time the parents spend engaging their child in verbal dialogue and language learning!

- *Is therapy covered by insurance?*
  This often depends on the credentials of the therapist, the insurance policy, and the state where the policy is in effect. Some policies are more likely to pay for therapy with hearing aid users. Some will pay for therapy only to restore speech/language/hearing functions, which were lost through injury or illness; others pay if the child was born with a hearing loss.
- *What results can be achieved by using Auditory-Verbal Management?*
  A generation of profoundly deaf graduates from Auditory-Verbal programs throughout North America have received careful study (Goldberg and Felxer ,1993). Even though the subjects were trained with hearing aids and did not have the advantage of cochlear implants, a vast majority are reported to have perceived themselves as fully integrated in the hearing community, received a mainstreamed education, did not use sign language, used the telephone to send and receive messages and pursued careers of their choice. Results of Auditory-Verbal training vary with the age of the child, presence of multiple disorders, parent participation, availability of appropriate services, type of educational programs, and other factors. The goal of Auditory-Verbal training is to maximize the child's use of hearing. Each child responds to this in a unique manner.

From Hear in Dallas, Co.

What is an Auditory Verbal Therapist?

- Auditory-Verbal therapists are professionals who have been trained in one or more of the disciplines of speech pathology, audiology, and education of the deaf.
- They recommend an Auditory-Verbal treatment plan as the first option for developing a speech, language, and education program for hearing-impaired children.
- Auditory-Verbal therapists seize the auditory component of any life experience and promote and develop the use of sound for speaking and understanding spoken language.
- Auditory-Verbal therapists have expertise in the use of acoustic emphasis of speech sounds and language patterns for the purpose of maximizing the hearing-impaired child's verbal development.

NAD

www.nad.org

The National Association of the Deaf (NAD) is the nation's premier civil rights organization of, by and for deaf and hard of hearing individuals in the United States of America. Established in 1880, the NAD was shaped by deaf leaders who believed in the right of the American deaf community to use sign language, to congregate on issues important to them, and to have its interests represented at the national level. These beliefs remain true to this day, with American Sign Language as a core value.

(http://www.nad.org)

DONATE (/donate) | JOIN (/join) | CONTACT (/contact-us) | EN ESPAÑOL (/sobre-nosotros/) (https://www.facebook.com/NAD1880) (https://www.twitter.com/nad1880) (https://www.youtube.com/user/NADvlogs) (https://www.instagram.com/nad1880)

Search the Site... Search

ABOUT ⌄ **MEMBERS** ⌄ **YOUTH** ⌄ **PARENTS** ⌄ **RESOURCES** ⌄ **EVENTS** ⌄

The NAD is the nation's premier civil rights organization of, by, and for deaf and hard-of-hearing individuals in the United States of America.

Ask Howard Anything / January 2018 (https://www.nad.org/2018/01/22/ask-howard-anything-january-2018/)

01/22/18


(https://www.nad.org/2018/01/19/president-updates-january-2018/)

President Updates — January 2018 (https://www.nad.org/2018/01/19/president-updates-january-2018/)

01/19/18

@NAD1880 PHOTOFEED

ABOUT

The NAD (/about-us)
Board (/about-us/board)
Staff (/about-us/staff)
[illegible]mittees (/about-us/committees)
Priorities (/about-us/priorities)
Law & Advocacy (/about-us/law-advocacy-center)
Vision 2020 (/about-us/vision-2020)
Bylaws (/about-us/bylaws)
Position Statements (/about-us/position-statements)
Annual Reports (/about-us/annual-reports)
NADmag (/about-us/nadmag)
Monthly eBlasts (/about-us/monthly-eblasts)
Strategic Web Partners (/about-us/strategic-web-partners)
Advertise (/about-us/advertise)
Ask Howard (/about-us/aha)
FAQ (/about-us/faq)

MEMBERS

Affiliates (/members/organizational-affiliates)
Sections (/members/sections)
State Associations (/members/state-association-affiliates)
#NADHandwaves (/members/nadhandwaves)
Golden Hand (/members/golden-hand-award/)

Junior NAD (/youth/junior-nad)
Youth Leadership Camp (/youth/youth-leadership-camp)
Youth Ambassador Program (/youth/youth-ambassador-program)
College Bowl (/youth/college-bowl)

American Sign Language

NAD values deaf and hard of hearing Americans with diverse perspectives, experiences, and abilities. We embrace diversity and inclusiveness as core values in achieving our mission. It is the philosophy of the NAD that diversity encompasses a wide range of human abilities and perspectives. The NAD is committed to building and maintaining an inclusive environment where differences of opinions, beliefs, and values are sought, respected, and valued.

The NAD recognizes that American Sign Language (ASL) is the backbone of the American deaf culture. The NAD values the acquisition, usage and preservation of ASL and is a recognized leader in promoting the acquisition, learning, teaching, and interpreting of ASL. The NAD was created in part to promote and preserve ASL as a legitimate language and an optimal educational tool for deaf children and adults.

Developments in the field of linguistics and an emerging body of research in education have validated the historical views of the NAD on ASL and its value in the education of deaf and hard of hearing children. The inherent capability of children to acquire ASL should be recognized and used to enhance their cognitive, academic, social, and emotional development. Accordingly, the NAD supports the bilingual approach for deaf and hard of hearing children. Deaf and hard of hearing children must have the right to [illegible]e early and full exposure to ASL as a primary language, along with English. Studies have shown that when deaf and hard of hearing children are exposed to ASL at an early age, they are given the opportunity to reach their full potential.

Health Care and Mental Health Services (/resources/health-care-and-mental-health-services)
Justice (/resources/justice)
Media (/resources/media)
Senior Resources (/resources/senior-resources)
Technology (/resources/technology)
rnational Advocacy (/resources/international-advocacy)
Early Intervention for Infants and Toddlers (/resources/early-intervention-for-infants-and-toddlers)
Transportation and Travel (/resources/transportation-and-travel)
Our Position Statements (/resources/our-position-statements)

EVENTS

Biennial Conference (http://2018conn.nad.org)
Leadership Training Conference (https://www.nad.org/events/2017-leadership-training-conference/)
Invite the NAD (/events/invite-the-nad)

COMMUNICATION OPTIONS FOR A CHILD WHO IS DEAF OR HARD OF HEARING

There are a variety of communication options available for a child who is deaf or hard of hearing, since every child is unique and different in their response to these techniques. Below is a brief description of these various communication modalities, as well as some resource listings.

Oral Method

The Oral Method of communication utilizes speechreading (lipreading) and the maximal use of a child's residual hearing for the development and production of speech. The premise behind this method is that a child who is deaf or hard of hearing will then be able to communicate more effectively with hearing individuals.

Cued Speech Method

Cued Speech facilitates lipreading by having the speaker simultaneously use hand gestures while speaking to help the listener visually distinguish between similar looking sounds on the speaker's lips.

Manual Communication Methods

Manual methods of communication utilize a child's ability to communicate through visual stimuli such as fingerspelling and sign languages.

- ***American Sign Language (ASL)*** is composed of positions and gestures made with the hands, body and facial expressions to convey abstract concepts as with any spoken language. Being its own language, ASL has a distinct grammatical structure which is quite dissimilar to English.

- ***Manual English*** uses many of the traditional ASL signs, while maintaining the English word order and grammar so as to develop a child's ability to read and write English. Examples of this system are: Seeing Essential English (SEE I), Signing Exact English (SEE II) and Signed English.

- ***Fingerspelling*** augments most sign language systems by using handshapes to code the letters of the alphabet as well as numbers. Words (i.e., proper names, places, etc.) are then spelled out by using these individual letter codes.

Total Communication (TC) Method

The philosophical basis for Total Communication (TC) is for a child who is deaf or hard of hearing to use any and all communication methods necessary to facilitate language acquisition. This system, which typically uses signs in English word order, may include: speech, fingerspelling, manual signs, gestures, speechreading, cued speech and augmentation of residual hearing. Basically,

- **San Francisco Public Library**
  Books and tapes available. Also extensive resource list of S.E.E. books and tapes.
  Website: http://sfpl.org/index.php?pg=0200002001

- **S.E.E. Center of the Advancement of Deaf Children**
  Central resource center for S.E.E. sign information
  Website: www.seecenter.org

FINGERSPELLING

All sign language books, whether ASL or manual English, will have a section showing the symbols for the letters. Fingerspelling is the same regardless of which manual communication method used.

- **Fingerspelling (website practice)**
  Website: asl.ms

TOTAL COMMUNICATION METHOD

- **Center for Early Intervention on Deafness (C.E.I.D.)**
  Website: www.ceid.org

- **Beginnings, For Parents of Children Who are Deaf and Hard of Hearing, Inc.**
  Website: www.ncbegin.org

- **Educating Children Who Are Deaf or Hard of Hearing: Total Communication**
  Website: www.ericdigests.org/1998-2/total.htm

AMERICAN SIGN LANGUAGE (ASL)

American Sign Language (ASL) is a manual language capable of conveying abstract concepts as with any spoken language. The grammatical structure of ASL is distinct and very different from that of English. Since some hearing parents of deaf or hard or hearing children decide to introduce sign language to their children, these parents may choose to learn sign language along with their children. As with any language, repetition and practice is essential for mastery of that language. Listed below are a number of free websites which include ASL dictionaries and fingerspelling practice.

- **Buy ASL.com**
  Website: www.buyasl.com

- **Dawn Sign Press**
  Website: www.dawnsign.com

- **Harris Communications-Sign Language Books, Tapes, and Dictionaries**
  Website: www.harriscomm.com/catalog/default.php?cPath=35_105

- **Learn American Sign Language (ASL) and Signed English (SE)**
  Website: www.lessontutor.com/ASLgenhome.html

- **San Francisco Public Library**
  Books and tapes available. Also, extensive resource list of ASL books and tapes.
  Website: http://sfpl.org/index.php?pg=0200002001

- **Sign Language – CAL Resources Guides Online**
  Website: www.cal.org/resources/archive/rgos/asl.html

- **Sign Media, Inc.**
  Website: www.signmedia.com

NCHAM

National Center for Hearing Assessment and Management

www.Infanthearing.org

(((**NCHAM** serves as the **National Technical Resource Center** for the implementation and improvement of comprehensive and effective Early Hearing Detection and Intervention (EHDI) systems. As a multidisciplinary Center, our goal is to ensure that all infants and toddlers with hearing loss are identified as early as possible and provided with timely and appropriate audiological, educational, and medical intervention. Materials and activities described on this website were funded in part by a cooperative agreement (U52MC04391) from the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA) at the United States Department of Health and Human Services. NCHAM staff are responsible for the views and content of material on this website and no endorsement by MCHB/HRSA is implied or expressed.

NCHAM
National Center for Hearing
Assessment and Management
Utah State University™

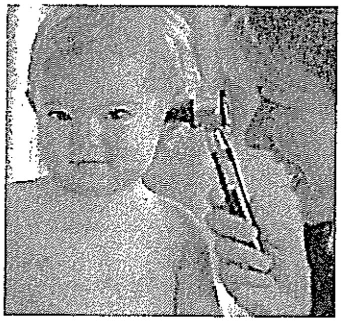
Search infanthearing.org
Search

Home Components Resources States Legislation About Us

EHDI Components

- Newborn Hearing Screening
- Early Childhood Hearing Screening
- Diagnostic Audiology
- Early Intervention
- Family Support and Partnership
- Medical Home
- Data Management
- Financing & Reimbursements
- Program Evaluation

(((Early Hearing Detection and Intervention Components



Over the past decade, tremendous progress has been made in ensuring that families have access to hearing screening when a baby is born. Approximately 95% of babies now receive a hearing screen shortly after birth and most states now have statutes in place related to universal newborn hearing screening. Much work remains to be done, however, because some infants who do not pass the hearing screening become lost to follow-up or documentation before an audiological evaluation can be completed or critical educational and medical intervention can be provided.

With the goal of ensuring that every child with a hearing loss is identified before 3 months of age and provided with appropriate intervention by 6 months of age, there are a number of EHDI program components that continue to be improved and expanded to better serve children and families. Greater emphasis is being placed on training early childhood education and health care providers to use up-to-date screening methods to identify children with post neonatal hearing loss and to find infants who became lost to follow-up after their newborn hearing screen. Likewise, enhancing the skills and knowledge of audiologists, early intervention specialists and health care providers to work together in a medical home model, providing culturally-competent support to families, is having a positive impact on service quality. Children with hearing loss who receive these services in a timely way are often able to develop language skills on par with their hearing peers. Data management, legislation, financing, and program evaluation are also important elements in creating a sustainable, high-quality EHDI service system that will ultimately make a dramatic difference in the lives of all children with hearing loss.

(((infanthearing.org
National Resource Center for EHDI

National Center for Hearing Assessment
and Management
Utah State University, 2615 Old Main
Hill, Logan, Utah 84322
Tel: 435.797.3584 || Questions and
Comments

UtahState
UNIVERSITY

the most critical procedure in the initial test battery because it is an accurate and reliable predictor of hearing loss in infants who are too young to respond to behavioral testing. ABR should include Clicks, Tone bursts, and Bone Conduction testing. The ABR measurement provides information on the degree, type, and configuration of a hearing loss and allows the audiologist to fit an infant with a hearing aid when needed.

Generally, infants less than 6 months of age do not need sedation for this test. When sedation is needed, the ABR is conducted in a special clinic room or hospital operating room. In either case, a physician must be on site and a medical professional must monitor the infant's vital signs while the audiologist is performing the ABR. There are helpful techniques for preparing an infant for an ABR (with and without sedation). Read more about ABR Techniques.

Auditory Steady State Responses (ASSR)

ASSR testing is another electrophysiologic measurement of a baby's hearing. The benefit of the ASSR is that the results may provide more frequency-specific threshold information for infants who have severe to profound hearing losses. This enables the audiologist to have more precise data to proceed with hearing aid fittings or determining cochlear implant candidacy. At the present time, ASSR is not available in all audiological clinics. The Joint Committee on Infant Hearing (JCIH) 2007 Position Statement does not recommend this procedure as the sole measure of auditory status in newborn and infant populations. Like ABR assessment, infants over 6 months of age may need to be sedated for ASSR testing. See appendix B for sedation info.

Otoacoustic Emissions (OAE)

A cochlea that is functioning normally not only receives sound, it also produces low-intensity, measurable sounds called OAEs. OAEs are absent when an infant/child has a sensorineural hearing loss of 30dBHL or greater. It is important to note that middle ear fluid, or negative middle ear pressure associated with otitis media, can interfere with OAE measurement. The middle ear must be clear for OAE equipment to accurately assess cochlear functioning. The condition known as "auditory neuropathy/dys-synchrony" is diagnosed by comparing OAE results (typically normal) with ABR results (typically abnormal). Additional information regarding OAE screening.

Tympanometry

Tympanometry tests the condition of the middle ear, the mobility of the eardrum (tympanic membrane) and the conduction of the middle ear bones, by creating variations of air pressure in the ear canal. When tympanometry is used with very young infants their small, soft ear canals may affect the test and give inaccurate results. Therefore, specialized equipment generating a high frequency probe tone is routinely used to increase the reliability and accuracy of tympanometry for children 0-6 months of age. Additional information regarding tympanometry.

Behavioral Audiometry

As a child matures and is able to provide hearing results behaviorally, hearing information can be plotted with even greater specificity. During audiometric testing, the audiologist finds the lowest intensity level (threshold) at which a child can detect sound at different frequencies. From this information, a graphic representation of the hearing loss, called an audiogram, is created. The hearing loss will typically be classified as mild, moderate, moderately severe, severe, or profound.

NCHAM
National Center for Hearing
Assessment and Management
Utah State University™

Search infanthearing.org

Search

Home Components Resources States Legislation About Us

Last Modified: 08/22/2017

Early Intervention

The information in this section is intended for parents of children with hearing loss and professionals working with families. When a child is identified with a hearing loss, parents and family members often seek new knowledge and resources to help them understand issues related to hearing loss and to make decisions for their families and children. Early intervention professionals may also need additional resources to help them assist families.

Early intervention is a broad area and can be challenging to navigate. In fact, in a letter [PDF] sent in July 2006 to all state early intervention coordinators, officials in the federal government noted that "many young children with hearing loss may not be receiving the early intervention or other services they need in a timely manner that will enable them to enter preschool and school ready to succeed."

The information included in this section is designed to provide both basic information and resources to assist in finding additional information so that parents and other concerned individuals can advocate for improved early intervention services for infants and young children with hearing loss. Additional resources for achieving this goal include your State Department of Health and/or the agency in your state responsible for early intervention services. Many states have also developed parent resource manuals and have staff available to assist parents.

As with any new area of learning, understanding all the vocabulary associated with early intervention can often be a challenge. An explanation of the terms associated with hearing, communication, and early intervention, is available on the Texas Connect website at UT Dallas/Callier Center for Communication Disorders. (*Español: Términos & Definiciones)

Basic information on hearing loss including how the ear works, types of hearing loss, audiograms, and simulations of varying levels of hearing loss is available through Boys Town National Research Hospital website, My Baby's Hearing: All About Hearing Loss (*Español: Todo Sobre La Perdida Auditiva)

Early Intervention Resource Pages

- Early Intervention System Information

EI Snapshot

EHDI Components

- Newborn Hearing Screening
- Early Childhood Hearing Screening
- Diagnostic Audiology
- Early Intervention
- Family Support and Partnership
- Medical Home
- Data Management
- Financing & Reimbursements
- Program Evaluation

Early Intervention

- Early Intervention System Information
- Early Intervention Guidelines and Requirements
- Importance of Early Communication and Communication Options
- Hearing, Amplification, and Cochlear Implants
- Assessment Tools for Communication/Language and Auditory Development
- Early Intervention Curriculum and Training Materials
- Additional Early Intervention Materials, Web Sites, and Presentations

NCHAM Materials

- EI Snapshot
- Aspects of Eligibility for Children who are Deaf or Hard of Hearing under IDEA Part B Section 619 Preschool: A Survey Report [PDF]
- Eligibility and Service Delivery Policies:

- Use of Diagnosed Conditions for IDEA Part C Early Intervention Program Eligibility [PPTX]
  - This session describes how current diagnosed conditions eligibility criteria policies and practices create variable access to early intervention (EI) across states. This has the potential for delays in access to EI within state. The presenters proposes action steps to remedy policy deficiencies. The presentation is intended to facilitate discussion among the audience and presenters focusing on balancing the need to increase early identification and continue providing effective EI services to children and families.

Other Early Intervention Resources and Websites

- Early Intervention Network provides professionals with five evidence-based practices to support linguistic competence in children who are deaf or hard of hearing
- Cochlear Implants – Navigating a Forest of Information, One Tree at a Time
- Early Childhood Techinical Assistance Center (ECTA Center)
- Office of Special Education and Rehabilitative Services (OSERS)
- The Center for Childhood Deafness at Boys Town National Research Hospital
  - This internationally recognized center of excellence for applied research provides clinical services as well as distance training opportunities in early intervention strategies and rehabilitative services for children with hearing loss, visual impairment and related communication disorders and their families.

» Next Page: System Information

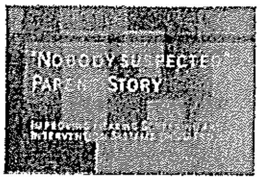
needed services.

- **Financing and Reimbursements**
    - **Learn about funding and insurance issues to help cover your child's hearing needs.**
- **Early Intervention**
    - **Understand what early intervention is and how it helps infants and toddlers with hearing loss.**
- **NCHAM Meetings and Conferences**

Other Websites

- **AMCHP: Family Engagement in Title V Programs: How states sustain and diversify engagement to improve quality**
- **CDC: A Parent's guide to Hearing Loss**
- **Hands & Voices**
- **My Baby's Hearing**
- **National Center for Cultural Competence**
- **National Cued Speech Association**

Family support and partnership videos



NICHQ: Nobody Suspected

Jeanne Hollabaugh
Parent Communication

Rachel Coleman:
One Deaf Child

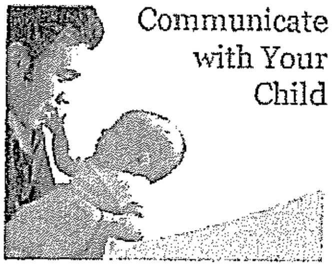
- Send it electronically to your local and state partners so they also can use it.
- Have it available as a hard-copy handout to share with families who prefer that format.
- Note the emphasis on resources with information available in other languages.
- Download the "Just in Time" tool (en español) [PDF]

"Just in Time" Hearing-Related Resources for Families

Where do you get information for families when they have a concern about their child's hearing or are in need of resources? Here are essential sources of information that you can provide to meet families' needs – just in time!

First Responders: The Essential Resources

communicatewithyourchild.org



- Family-friendly information about what to do when their baby fails the hearing test, what to do if they're worried about their child's hearing
- ***Print materials available:*** *Downloadable brochures and state-specific inserts*
- ***State-specific Contact Information Available***
- ***Multiple Languages:*** *Available in English, Spanish, Chinese, Tagalog, Korean, and Vietnamese.*

handsandvoices.org

HANDS & VOICES™

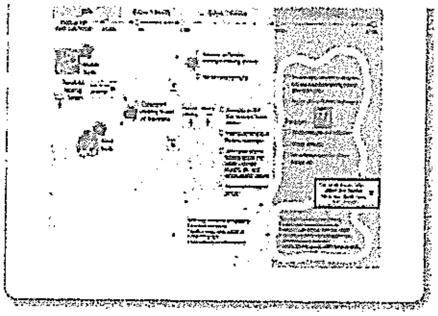
- A nation-wide parent-driven, parent/professional collaborative group
- Provides unbiased information about communication modes and methods
- ***Print Materials available:*** *Resources for communication, assistive devices, early intervention and special education rights*
- ***State-specific Chapter Information available***
- ***Multiple languages:*** *Some state pages are in Spanish and English*

babyhearing.org

My Baby's Hearing
Version en español

- Developed by Boys Town National Research Hospital
- Answers questions about infant hearing screening and follow up testing, steps to take after diagnosis of hearing loss, hearing devices, language & speech, and parenting issues
- This site is currently being updated and expanded, so you will find a new look and new content in the near future
- ***Multiple languages:*** *Available in Spanish and English*

More Helpful Resources....



- Links to Family Support Resources on the Web (other professional and family-led organizations)
- The Hands & Voices Communicator: The News Source for Family Support (featured articles)
- Wisconsin's Interactive Notebook
- Scripts for Communicating with Parents [PDF]
- EHDI E-Book Chapter 14: Family Support and Cultural Competence [PDF]
- 2015 EHDI E-Book Chapter 21: Deaf Community Support for Families: The Best of Partnerships [PDF]
- Universal Newborn Hearing Screening, Diagnosis, and Intervention - Guidelines for Pediatric Medical Home Providers: AAP Flowchart (AAP/ NCHAM Collaboration) [PDF]

Other Materials and Websites

- National Cued Speech Association
- Association of Maternal & Child Health Programs: Family Engagement in Title V Programs: How states sustain and diversify engagement to improve quality
- Catalyst Center Family Resources: a directory of organizations and resources to help families of children and youth with special health care needs, listed by state. Also available in Spanish.
- Catalyst Center Affordable Care Act Fact Sheets for Families
- Alaska's EHDI Parent Resource Manual
- Department of Education - Opening Doors [PDF]
- Department of Education - Opening Doors (Spanish) [PDF]
- Understanding the Genetics of Deafness (Harvard University) [PDF]
- Beginnings of North Carolina
- Mom Chats and Letters from Kids: Wyoming Team Provides Support to Families with Hearing Loss
- Loss to Follow up resources for families Loss & Found Video
- Parent Information Package from NSF Science of Learning Center, Visual Language and Visual Learning (VL2)
  - The VL2 Parent Information Package, "Growing Together," is a collection of research-based resources for hearing parents of deaf and hard of hearing children. It is intended to share the science of learning on visual language and visual learning and research-based information related to ASL/English bilingualism. The VL2 Parent Information Package comes in two forms: 1) files which can be downloaded, printed, and mailed (see the "Parent Package" tab on the top of the screen), and 2), additional resources and information in this website. Available on a limited basis, a mailer with the package contents can be requested and sent to your home address.
- Laurent Clerc National Deaf Education Center: Info to Go

(((infanthearing.org
National Resource Center for EHDI

National Center for Hearing Assessment and Management
Utah State University, 2615 Old Main Hill, Logan, Utah 84322

UtahState
UNIVERSITY

- **Differences Between IDEA Part C and IDEA Part B [PDF]**
- **Part C Eligibility Considerations For Infants and Toddlers Who Are Deaf or Hard of Hearing [PDF]**
- **Understanding the IDEA Part C Regulations: the Role of EHDI [PDF]**
- **EHDI E-Book Chapter 8: Amplification & Hearing Assistive Devices (HAT) [PDF]**
- **EHDI E-Book Chapter 17: Early Intervention for Children Birth to 3: Families, Communities, & Communication [PDF]**
- **EHDI E-Book Chapter 21: The Role of Educational Audiologists in the EHDI Process [PDF]**

More Early Intervention Information

Related Pages on infanthearing.org

- **Addressing Privacy Regulations**
- **Tele-Intervention Resource Guide**

Other Materials

- **2014 ITCA Finance Survey [PDF]**
- **IDEA and FERPA Confidentiality Provisions [PDF]**
- **Use of Diagnosed Conditions for IDEA Part C Early Intervention Program Eligibility [PPTX]**

Other Websites

- **Cochlear Implants – Navigating a Forest of Information, One Tree at a Time**
- **Early Childhood Technical Assistance Center (ECTA Center)**
- **Office of Special Education and Rehabilitative Services (OSERS)**
- **The Center for Childhood Deafness at Boys Town National Research Hospital**

Web Sites

- Center for Disease Control and Prevention EHDI Program Educational Materials
- *Español: Programa de Detección Auditiva e Intervención Temprana
- Habilitation Outreach for Professionals Education (HOPE)
- My Baby's Hearing
- *Espanol: My Baby's Hearing
- Zero to Three—Key Topics, including: Brain Development, Child Care, Child Development, Early Language and Literacy, Play, Social and Emotional Development and more

Presentations: EHDI 2006 National Conference - Selected Early Intervention Presentations List

Streaming Videos

The Listening Brain: Research to Practice
Flexer, Carol

The Genetics of Hearing Loss
Rehm, H.

The Legal Right to Communication and Language for Deaf Children
Siegel, Lawrence and Katherine Jankowski

PowerPoint Presentations

Results of the National Consensus Conference on Intervention (3 presentations)
Alberg, J. [PPT]
Geers, A. [PPT]
Marge, D. [PPT]

Creating Partnership from Apples and Oranges [PPT]
Benedict, B., B. Raimondo, M. Sass-Lehr

The Role of Early Intervention Programs in Providing Family Support [PPT]
Clark, K. and P. Pittman

Bilingual-Bicultural Education – Success for Deaf Children? [PPT]
Commerson, R. and U. Bouraoui

Viewing Early Intervention from Both Sides of the Looking Glass: The Value of Involving D/HH and Hearing Professionals [PPT]
Crace, J. and P. Pittman

Building Language Foundations in American Sign Language and English [PPT]
Cushner, D., J. Mitchner and D. Nussbaum

Can You Explain My Child's Audiological Report? [PPT]
Ditty, K. and K. Clark

Should EDHI Programs Be Concerned About Cytomegalovirus (CMV)? [PPT]
Fowler, K.

The Importance of Interagency Collaboration by Early Intervention Programs [PPT]
Howell, R.

Western States' Early Intervention Outcomes Project [PPT]
Kreimeyer, K., S. Anita, A. Stredler-Brown, and A. Sedey

NCHAM
National Center for Hearing
Assessment and Management
Utah State University™

Search infanthearing.org

☐ Search

Home Components Resources States Legislation About Us

Last Modified: 01/18/2018

EHDI Components

- Newborn Hearing Screening
- Early Childhood Hearing Screening
- Diagnostic Audiology
- Early Intervention
- Family Support and Partnership
- Medical Home
- Data Management
- Financing & Reimbursements
- Program Evaluation

More Medical Home Information

NCHAM Pages and Materials

- Meeting the Needs of Physicians in Support of EHDI Webinar
- Chapter 7: Medical Home & EHDI: The Importance of Appropriate & Timely Screening, Diagnosis, Management, & Follow-Up [PDF]

Related Pages on infanthearing.org

- Examples of State EHDI Physician Guidelines

Other Websites and Materials

- UNHSI Guidelines for Pediatric Medical Home Providers [PDF]
- National Center for Medical Home Implementation
- Maternal and Child Health Bureau
- American Academy of Pediatrics

Medical Home

Several years ago, the American Academy of Pediatrics (AAP) and the Maternal and Child Health Bureau of the U.S. Department of Health and Human Resources began promoting the concept that every child in America should have a **medical home.** The AAP defines a medical home as the following [PDF]:

> *A medical home is an approach to providing comprehensive primary care that facilitates partnership between patients, physicians, and families. The American Academy of Pediatrics (AAP) believes that every child deserves a medical home, where care is accessible, continuous, comprehensive, patient- and family-centered, coordinated, compassionate, and culturally effective. Over the past year the AAP has been at the forefront of numerous initiatives to promote the adoption and spread of the patient- and family-centered medical home.*

In the pediatric population, a medical home should include:

- **Patient- and family-centered partnership:** A medical home provides patient- and family-centered care through a trusting, collaborative, working partnership with families, respecting their diversity, and recognizing that they are the constant in a child's life.
- **Community-based system:** The medical home is an integral part of the community-based system, a patient- and family-centered coordinated network of community-based services designed to promote the healthy development and well being of children and their families. As such, the medical home works with a coordinated team, provides ongoing primary care, and facilitates access to and coordinates with, a broad range of specialty, ancillary, and related community services.
- **Transitions:** The goal of transitions is to optimize life-long health and well-being and potential through the provision of high-quality, developmentally appropriate, health care services that continue uninterrupted as the individual moves along and within systems of services and from adolescence to adulthood.

- Learn more about Chapter Champions and to access a list containing the names of Chapter Champions by state.

AAP Fact Sheets and Other Resources from the *AAP Task Force on Improving Newborn Hearing Screening, Diagnosis, and Intervention*

The following resources and more information can be found at the AAP website (posted here with permission).

Early Hearing Detection & Intervention Program

- Webinar Recording: Early Hearing Detection & Intervention: AAP Tools for Medical Home Providers to Address Lost to Follow-Up/Documentation (LTF/D)
- Guidelines for Rescreening in the Medical Home Following a 'Do Notpass' Newborn Hearing Screening [PDF]
  - Guidance for infants who do not pass their initial hospital-based screening and for whom rescreening of hearing is being performed in the medical office rather than rescreening by the hospital-based or audiology outpatient programs is delineated.
- Newborn Hearing Screening: Lost to Documented Follow-Up Considerations for the Medical Home [PDF]
  - Primary care medical home providers play an important role in ensuring that timely follow-up and the appropriate documentation ofthat follow-up occur. Considerations in implementing this responsibility are provided.
- Reducing Loss to Follow-Up/Documentation in Newborn Hearing Screening: Guidelines for Medical Home Providers [PDF]
  - This Algorithm provides a visual decision making platform for primary care providers.
- The 1-3-6 Hearing Screening Checklist [PDF]
  - This handy tool for monitoring patient status in the hearing screening, rescreening, diagnostic, and early intervention process can be integrated into patient charts to facilitate monitoring and needed follow up.
- Common EHDI Definitions [PDF]
  - A reference for understanding key terminology pertaining to EHDI, along with risk factors pertaining to hearing loss is provided.
- How Medical and Other Health Professionals Can Help Increase the Number of Infants Who Return for a Follow-up Evaluation [PDF]
- AAP Periodicity Schedule [PDF]
- Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents, Third Edition

Family Voices (FV)

- Family to Family Health Information Centers (F2F HICs)
- Family-Centered Care Self-Assessment: Provider Tool

Institute for Patient- and Family-Centered Care

- Patient- and Family-Centered Ambulatory Care: A Checklist [PDF]
- Advancing the Practice of Patient- and Family-Centered Care in Primary Care and Other Ambulatory Settings: How to Get Started... [PDF]

- Positioning the Family and Patient at the Center: A Guide to Family and Patient Partnership in the Medical Home [PDF]
- For additional information on medical home, please visit the National Center for Medical Home Implementation.

(((infanthearing.org
National Resource Center for EHDI

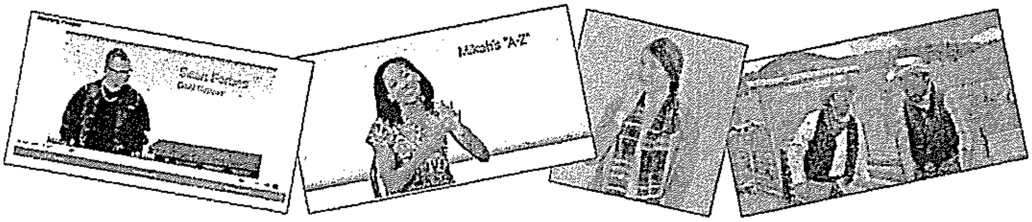
National Center for Hearing Assessment and Management
Utah State University, 2615 Old Main Hill, Logan, Utah 84322
Tel: 435.797.3584 || Questions and Comments

UtahState
UNIVERSITY

Approximate age of your child in months: [redacted]

State where you live: -select state- ▼

If you don't receive an email with your code within 4 hours, contact the NCHAM Helpdesk via email or phone (435) 797-3584 between 8 AM and 5 PM Mountain Time



SIGN IT! is a collaborative project of The *Signing Time Foundation,* and the *National Center for Hearing Assessment and Management (NCHAM)* at Utah State University. Free access to SignIt ASL is made possible through generous support from various private foundations and the *federal Maternal and Child Health Bureau (MCHB)* (cooperative agreement #U52MC04391). The design and content of SignIt ASL is solely the responsibility of the Signing Time Foundation and NCHAM.

(((infanthearing.org
National Resource Center for EHDI

National Center for Hearing Assessment and Management
Utah State University, 2615 Old Main Hill,
Logan, Utah 84322
Tel: 435.797.3584 || Questions and Comments

Some pages on this site link to PDFs. You can download a free version of Adobe Acrobat to view them.

UtahState UNIVERSITY

Eligibility and Service Delivery Policies: Differences Between IDEA Part C and IDEA Part B

This document provides a snapshot overview of IDEA Part C and IDEA Part B policies in the following areas: Eligibility Criteria, Eligibility Determination, Types of Services, Service Settings, Service Recipients, Parental Rights, and System of Payments. It is intended as a resource to support transition between these programs for children who are deaf or hard of hearing.

Topic	Part C	Part B
Eligibility Criteria	Each state must establish the criteria for eligibility. All states must include the following two categories in their eligibility criteria: 1. Is experiencing a developmental delay, as measured by appropriate diagnostic instruments and procedures, in one or more of the following areas: a. Cognitive development; b. Physical development, including vision and hearing; c. Communication development; d. Social or emotional development; e. Adaptive development; or 2. Has a diagnosed physical or mental condition that has a high probability of resulting in developmental delay. Each state must determine the percentage of delay that will be used to establish eligibility for Category 1. The state also can establish the list of physical or mental conditions that may result in developmental delay. States have the option of adding an additional eligibility category for infants and toddlers "at risk" for developmental delay because of biological or environmental factors such as including low birth weight, respiratory distress as a newborn, lack of oxygen, brain hemorrhage, infection,	A child with a disability, under Part B of IDEA, means a child evaluated as having: 1. Mental retardation, 2. A hearing impairment (including deafness), 3. A speech or language impairment, 4. A visual impairment (including blindness), 5. A serious emotional disturbance, 6. An orthopedic impairment, 7. Autism, 8. Traumatic brain injury, 9. An other health impairment, 10. A specific learning disability, 11. Deaf-blindness, or 12. Multiple disabilities, 13. Optional: Developmental delay (States may adopt developmental delay as a disability category for children aged three through nine or for a subset of that age range. Consult state specific regulations). Part B definitions related to children who are deaf or hard-of-hearing include: 1. Deaf-blindness means concomitant hearing and visual impairments, the combination of which causes such severe communication and other development and educational needs that they cannot be accommodated in special education programs solely for children with deafness or children with blindness.

Eligibility Determination	Evaluation in Part C is defined as the process used by qualified personnel to determine a child's initial and continuing eligibility. The process must include: 1. Administration of an evaluation instrument; 2. Taking the child's history which includes an interview with the child's family; 3. Identifying the child's level of function in the following five areas: a. Cognitive development; b. Physical development including vision and hearing; c. Communication development; d. Social/emotional development; and e. Adaptive development. 4. Gathering other relevant information to fully understand the child's strengths and needs; and 5. Reviewing medical, educational and other records. It is important to note that a child's medical and other records may be used to establish eligibility (without conducting an evaluation of the child) under this part if those records indicate that the child's level of functioning in one or more of the developmental areas constitutes a developmental delay that meets the state's eligibility criteria. Assessment is defined as the ongoing procedures used by qualified personnel to identify the strengths and needs of the child and the family's priorities and concerns for the purpose of establishing the initial Individualized Family Service Plan and on an ongoing basis to monitor the services and supports provided.	Evaluation in Part B is defined as the procedures used to determine whether a child has a disability and the nature and extent of the special education and related services that the child needs. The evaluation procedures must include: 1. The use of a variety of technically sound assessment tools and strategies to gather relevant functional, developmental, and academic information about the child, including information provided by the parent that may assist in determining: a. Whether the child has a disability, and b. The content of the child's Individualized Education Program (IEP), including information related to enabling the child to participate in appropriate activities. 2. Any single measure or assessment as the sole criterion for determining whether a child has a disability and for determining an appropriate educational program for the child may not be used (i.e., you must use a variety of assessment tools and strategies). 3. Use technically sound instruments that may assess the relative contribution of cognitive and behavioral factors, in addition to physical or developmental factors. It is important to note that the child should be assessed in all areas related to the suspected disability, including, if appropriate: 1. Health, 2. Vision, 3. Hearing, 4. Social and emotional status, 5. Intelligence, 6. Academic performance, 7. Communicative status, and 8. Motor abilities.

Service Recipients	In Part C, services are provided to each eligible child within the context of their family and caregivers. Services and supports that are identified in the family's Individualized Family Service Plan are based on the family's identified priorities and concerns for their child and must address the child's developmental needs.	In Part B, special education and related services are provided to each eligible student between the ages of 3 and 21. Special education and related services are determined by the child's IEP. Special education, related services, and supplementary aids and services are determined based on a child's functional and academic needs and should enable the child to be involved in and make progress in the general education curriculum or to participate in appropriate activities.
Parental Rights	Families in Part C have the same parental rights as families in Part B. In many states, Part C adopts the Part B safeguards. In all cases, families have the right of consent from referral through transition. Part C is a totally voluntary program on the part of parents.	Families in Part B have the same parental rights as families in Part C. In all cases, similar to Part C, families have the right of consent from initial evaluation to placement and provision of special education and related services to post-school transition or exit from special education.
System of Payments	Part C statute and regulations provide for a system of payment for Part C services. States must develop written policy that must be provided to all families that explains what, if any, responsibility the family has for supporting the costs of services through the use of public or private insurance or family fees.	Free appropriate public education, a provision in Part B, means that special education and related services: 1. Are provided at public expense under public supervision and direction, and without charge, 2. Meet the standards of the State Educational Agency (SEA), 3. Include an appropriate preschool, elementary school, or secondary school education in the State, and 4. Are provided in conformity with an IEP.

Reference:

Individuals With Disabilities Education Act, 20 U.S.C. § 1400 (2004).

Document Citation

National Center for Hearing Assessment and Management. Eligibility and Service Delivery Policies: Differences Between IDEA Part C and IDEA Part B: A Comparison Chart, 2016.

This document can be found on www.infanthearing.org/earlyintervention

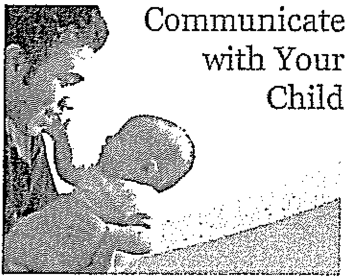
This document was produced by a committee convened by NCHAM and has been funded in part by a cooperative agreement (U52MC04391) from the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA) at the United States Department of Health of Human Services.

"Just in Time" Hearing-Related Resources for Families

Brought to you by the National Center for Hearing Assessment and Management

Where do you get information for families when they have a concern about their child's hearing or are in need of resources? Here are essential sources of information that you can provide to meet families' needs – just in time!

First Responders : The Essential Resources



Communicate
with Your
Child

communicatewithyourchild.org

- Family-friendly information about what to do when their baby fails the hearing test, what to do if they're worried about their child's hearing
- **Print materials available:** Downloadable brochures and state-specific inserts
- **State-specific Contact Information Available**
- **Multiple Languages:** Available in English, Spanish, Chinese, Tagalog, Korean, and Vietnamese.

HANDS & VOICES™

handsandvoices.org

- A nation-wide parent-driven, parent/professional collaborative group
- Provides unbiased information about communication modes and methods
- **Print Materials available:** Resources for communication, assistive devices, early intervention and special education rights
- **State-specific Chapter Information available**
- **Multiple languages:** Some state pages are in Spanish and English

My Baby's Hearing
Version en español

babyhearing.org

- Developed by Boys Town National Research Hospital
- Answers questions about infant hearing screening and follow up testing, steps to take after diagnosis of hearing loss, hearing devices, language & speech, and parenting issues
- This site is currently being updated and expanded, so you will find a new look and new content in the near future
- **Multiple languages:** Available in Spanish and English

This has been funded in part by a cooperative agreement (U52MC04391) from the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA) at the United States Department of Health and Human Services.

SIGN IT!

AMERICAN SIGN LANGUAGE MADE EASY

Communicate and Connect With Your Child

FREE
online class

If you have a deaf or hard of hearing child, ages 0-36 months, you can get free access to an online
American Sign Language Class!
This online class was created for *YOU* by the makers of Signing Time and it features a star-studded cast of well known ASL Professionals! Get started today!

www.InfantHearing.org/SignIt/

NIDCD

www.nidcd.nih.gov

The National Institute on Deafness and Other Communication Disorders (NIDCD) conducts and supports research and research training on normal and disordered communication processes, including diseases affecting hearing, balance, taste, smell, voice, speech, and language

NIDCD National Institute on Deafness and Other Communication Disorders
Improving the lives of people who have communication disorders
ONE OF THE NATIONAL INSTITUTES OF HEALTH

Cochlear Implant Fact Sheet

What is a cochlear implant?

A cochlear implant is a small, complex electronic device that can help to provide a sense of sound to a person who is profoundly deaf or severely hard-of-hearing. The implant consists of an external portion that sits behind the ear and a second portion that is surgically placed under the skin. An implant has the following parts:

- A microphone, which picks up sound from the environment;
- A speech processor, which selects and arranges sounds picked up by the microphone;
- A transmitter and receiver/stimulator, which receive signals from the speech processor and converts them into electric impulses;
- And, an electrode array, which is a group of electrodes that collects the impulses from the stimulator and sends them to different regions of the auditory nerve.

An implant does not restore normal hearing. Instead, it can give a deaf person a useful representation of sounds in the environment and help him or her to understand speech.

How does a cochlear implant work?

A cochlear implant is very different from a hearing aid. Hearing aids amplify sounds so they may be detected by damaged ears. Cochlear implants bypass damaged portions of the ear and directly stimulate the auditory nerve. Signals generated by the implant are sent by way of the auditory nerve to the brain, which recognizes the signals as sound. Hearing through a cochlear implant is different from normal hearing and takes time to learn or relearn. However, it allows many people to recognize warning signals, understand other sounds in the environment, and enjoy a conversation in person or by telephone.

Who gets cochlear implants?

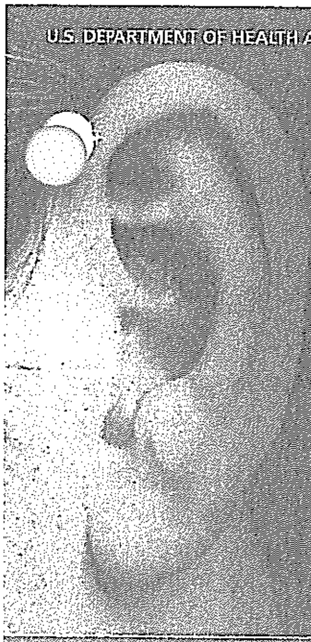
Children and adults who are deaf or severely hard-of-hearing can be fitted for cochlear implants. According to the Food and Drug Administration, (FDA), at the end of 2006, more than 112,000 people worldwide had received implants. In the United States, roughly 23,000 adults and 15,500 children have received them.

Adults who have lost all or most of their hearing later in life often can benefit from cochlear implants. They learn to associate the signal provided by an implant with sounds they remember. This often provides recipients with the ability to understand speech solely by listening through the implant, without requiring any visual cues such as those provided by lipreading or sign language.

Cochlear implants, coupled with intensive post implantation therapy, can help young children to acquire speech, language, and social skills. Most children who receive implants are between two and six years old. Early implantation provides exposure to sounds that can be helpful during the critical period when children learn speech and language skills. In 2000, the FDA lowered the age of eligibility to 12 months for one type of cochlear implant.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES · National Institutes of Health

NIH National Institute on Deafness and Other Communication Disorders



NIDCD Fact Sheet | **Hearing and Balance**

American Sign Language

What is American Sign Language?

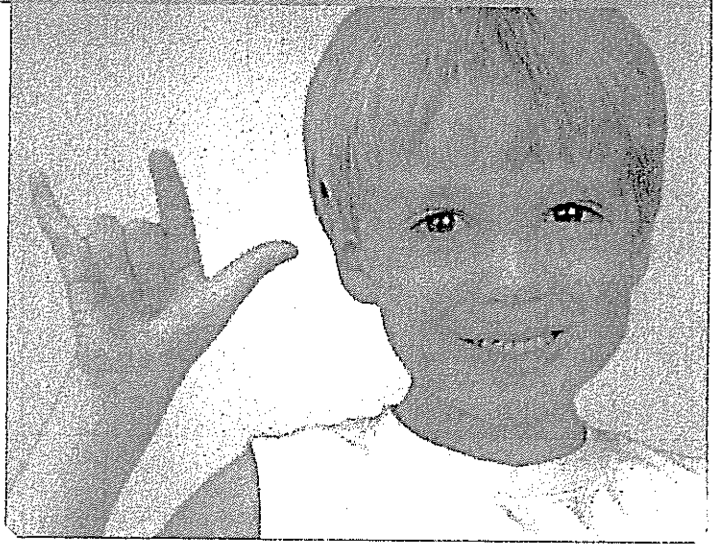
American Sign Language (ASL) is a complete, complex language that employs signs made by moving the hands combined with facial expressions and postures of the body. It is the primary language of many North Americans who are deaf and is one of several communication options used by people who are deaf or hard-of-hearing.

Is sign language the same in other countries?

No one form of sign language is universal. Different sign languages are used in different countries or regions. For example, British Sign Language (BSL) is a different language from ASL, and Americans who know ASL may not understand BSL.

Where did ASL originate?

The exact beginnings of ASL are not clear, but some suggest that it arose more than 200 years ago from the intermixing of local sign languages and French Sign Language (LSF, or Langue des Signes Française). Today's ASL includes some elements of LSF plus the original local sign languages, which over the years have melded and changed into a rich, complex, and mature language. Modern ASL and modern LSF are distinct languages and, while they still contain some similar signs, can no longer be understood by each other's users.

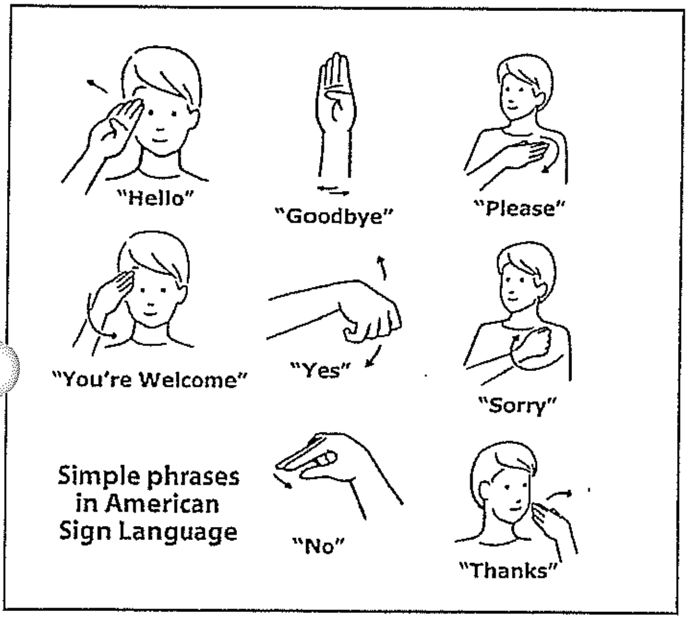


A young boy signs "I love you."

How does ASL compare with spoken language?

In spoken language, words are produced by using the mouth and voice to make sounds. But for people who are deaf (particularly those who are profoundly deaf), the sounds of speech are often not heard, and only a fraction of speech sounds can be seen on the lips. Sign languages are based on the idea that vision is the most useful tool a deaf person has to communicate and receive information.

If a baby has hearing loss, this screening gives parents an opportunity to learn about communication options. Parents can then start their child's language learning process during this important early stage of development. For more information, see National Institute on Deafness and Other Communication Disorders (NIDCD) fact sheet "Communication Considerations for Parents of Deaf and Hard-of-Hearing Children" at *http://www.nidcd.nih.gov/health/hearing/pages/commopt.aspx.*



Simple phrases in American Sign Language

What research is being done on ASL and other sign languages?

The NIDCD supports research looking at whether children with cochlear implants become bilingual in spoken language and sign language in the same way that (or in different ways from how) hearing children become bilingual in both languages. This research will tell us more about how language development in children with cochlear implants might differ between hearing and nonhearing families and could offer important insights to help guide educational decisions and parent counseling.

An NIDCD-funded researcher is studying Al-Sayyid Bedouin Sign Language (ABSL), a sign language used over the past 75 years by both hearing and nonhearing people in an isolated Bedouin village in Israel. Because it was developed among a small group of people with little to no outside influence and no direct linguistic input, ABSL offers researchers the opportunity to document a new language as it develops and evolves. It can also be used to model the essential elements and organization of natural language.

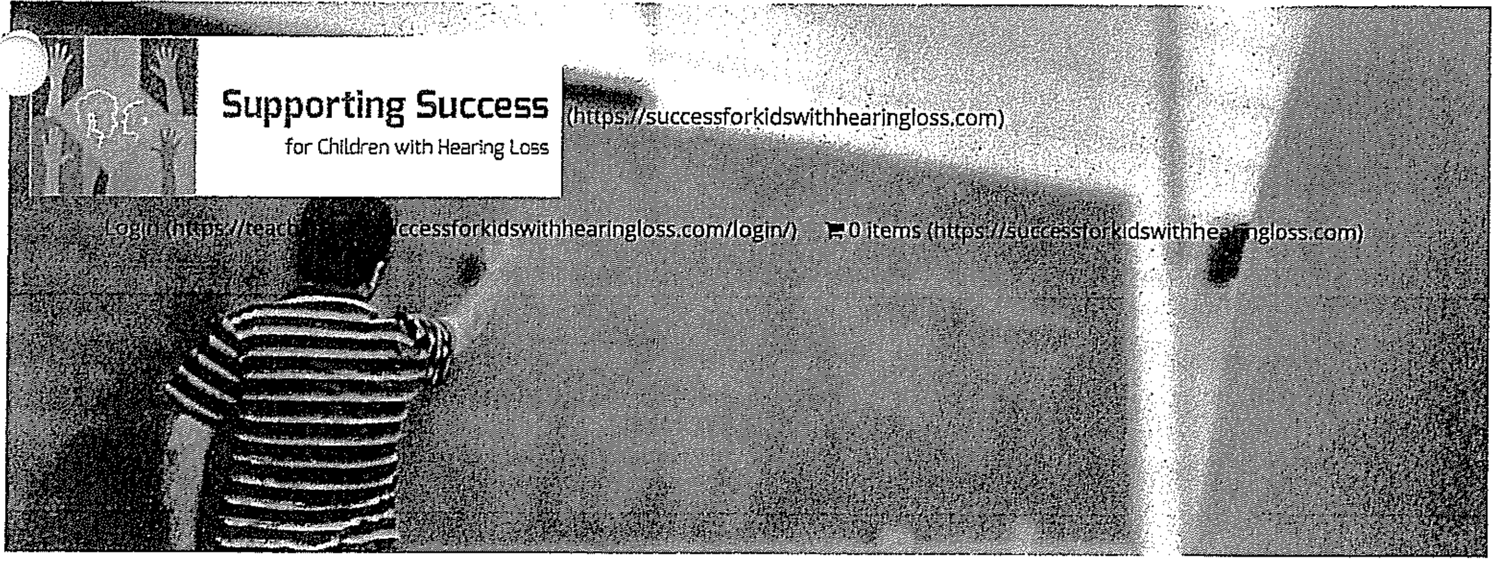
Another NIDCD-funded research team is also looking at sign language systems that develop in isolation. The research team is learning more about how grammar is built and expanded in situations where there is little linguistic input. In one setting, they are observing "home sign" systems used by deaf children who live in isolation. In another, they are studying a family sign language that has been used and handed down over several generations on a remote fishing island.

SUCCESS FOR KIDS WITH HEARING LOSS

www.successforkidswithhearingloss.com

Supporting Success for Children with Hearing Loss began in 2011 and was created by Karen Anderson, PhD, with the goal of creating an 'umbrella website' for teachers of the deaf/hard of hearing. Karen had many practical materials that were frequently requested and had developed a personal website of these tools. Supporting Success built on the concept of making practical information readily available, resulting in the current resource-packed website.

- Subscribe to our Bi-Monthly Newsletter (https://successforkidswithhearingloss.com/subscribe-for-email-alerts/)
- Teacher Tools Membership (https://teachertools.successforkidswithhearingloss.com/)



Supporting Success (https://successforkidswithhearingloss.com)
for Children with Hearing Loss

Login (https://teach[illegible]ccessforkidswithhearingloss.com/login/) 0 items (https://successforkidswithhea[illegible]ngloss.com)

Communication Choices

Communication Choices for Children with Hearing Loss

Characteristics of Children as Communicators (http://teachertools.successforkidswithhearingloss.com/oops-wrong-membership-level) Although 19 out of every 20 infants diagnosed with permanent hearing loss are born to families of hearing parents, learning to listen and speak can be very challenging for some children, especially those with multiple learning issues. This resource can help families and early intervention teams identify developmental issues that can impact the method or communication choice that may be most effective to use with a child.

Communication Building Blocks (https://successforkidswithhearingloss.com/uploads/Communication_Building_Blocks.doc) There are a multitude of resources available that describe the different communication choices or continuum of communication modalities that may be used by children and their communication partners to develop language. This resource presents different aspects of communication as building blocks that can be combined and recombined based on the child's learning style, desired mode of the family and changing communication situations. It is meant to introduce the concept of communication choices in an unbiased manner and emphasizes that any choice of communication modality can change as the child develops.

Communication – whatever fits the child and family

Early Childhood: Infants, Toddlers, Preschool (https://successforkidswithhearingloss.com/for-professionals/early-childhood-infants-toddlers-preschool/)

Early Intervention Resources (https://successforkidswithhearingloss.com/for-professionals/early-intervention-resources/)

Brain Development & Hearing Loss (https://successforkidswithhearingloss.com/for-professionals/brain-development-hearing-loss/)

Communication Choices (https://successforkidswithhearingloss.com/for-professionals/communication-choices/)

Communication Development Monitoring – Infants and Toddlers (https://successforkidswithhearingloss.com/for-professionals/communication-development-monitoring-infants-and-toddlers/)

Strategies for Keeping Hearing Aids on Young Children (https://successforkidswithhearingloss.com/for-professionals/hearing-aids-on-2/)

Getting Ready to Read (https://successforkidswithhearingloss.com/for-professionals/getting-ready-read/)

Emailable Tips for Preschool and Kindergarten Teachers (https://successforkidswithhearingloss.com/for-professionals/emailable-tips-for-preschool-and-kindergarten-teachers/)

Hearing Loss – Identification, Impact and Next Steps (https://successforkidswithhearingloss.com/for-professionals/hearing-loss-identification-impact-and-next-steps/)

Hearing Loss PLUS Additional Disability(ies) (https://successforkidswithhearingloss.com/for-professionals/hearing-loss-plus-additional-disabilityies/)

Language and Speech Development Issues (https://successforkidswithhearingloss.com/for-professionals/language-and-speech-development-issues/)

Legal Issues in Serving Children with Hearing Loss (https://successforkidswithhearingloss.com/for-professionals/legal-issues-in-serving-children-with-hearing-loss/)

- Subscribe to our Bi-Monthly Newsletter (https://successforkidswithhearingloss.com/subscribe-for-email-alerts/)
- Teacher Tools Membership (https://teachertools.successforkidswithhearingloss.com/)

Supporting Success
for Children with Hearing Loss (https://successforkidswithhearingloss.com)

Login (https://teachertools.successforkidswithhearingloss.com/login/) 🛒 0 items (https://successforkidswithhearingloss.com)

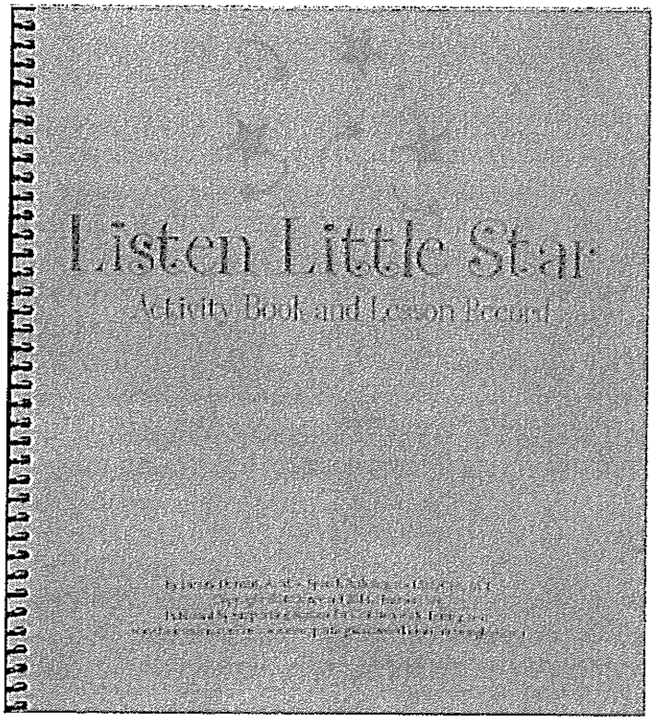
Home (https://successforkidswithhearingloss.com) / Infants/Toddlers Products (https://successforkidswithhearingloss.com/product-category/infantstoddlers-products/) / Listen Little Star – A Guide for Families of Infants with Hearing Loss

Listen Little Star – A Guide for Families of Infants with Hearing Loss

$44.50

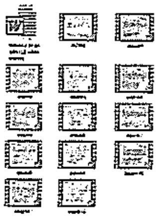
In stock

SKU: SSP0031 Category: Infants/Toddlers Products (https://successforkidswithhearingloss.com/product-category/infantstoddlers-products/)



Listen Little Star
Activity Book and Lesson Record

(https://successforkidswithhearingloss.com/wp-content/uploads/2017/06/Listen-Little-Star.jpg)



Listen Little Star

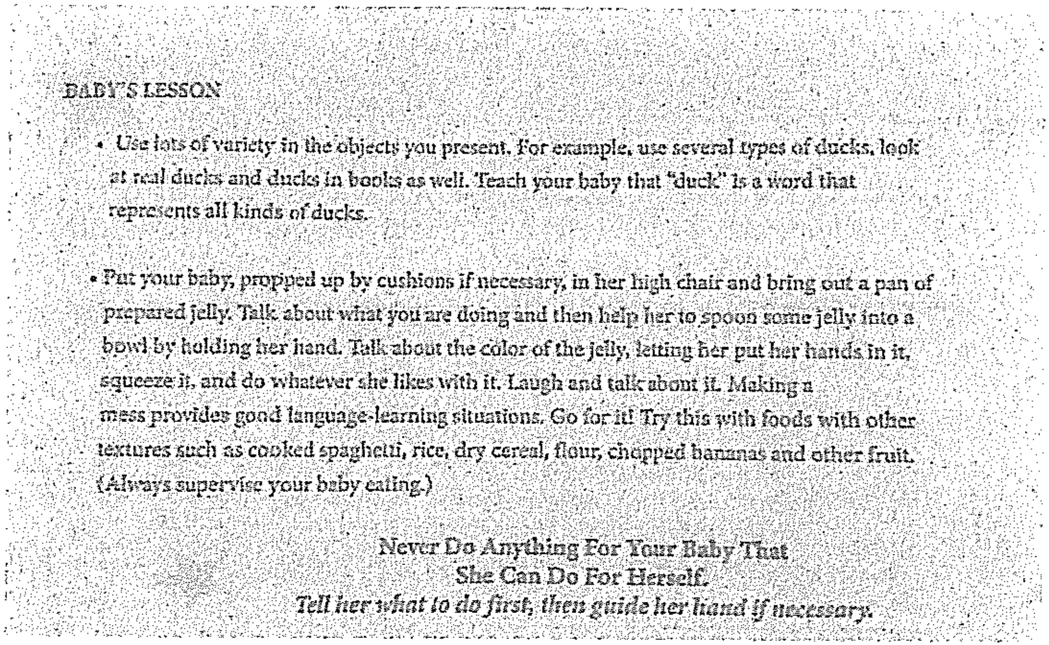
(https://successforkidswithhearingloss.com/wp-content/uploads/2017/06/Listen-Little-Star-logo-300x180.jpg)

(https://successforkidswithhearingloss.com/wp-content/uploads/2017/06/LLSp-220-Video-content-217x300.jpg)

Description Additional information Reviews (0)

(https://successforkidswithhearingloss.com/wp-content/uploads/2014/09/video.jpg)This colorful 160+ page printed guide is divided into 12 lessons and also includes an extensive Baby Response Checklist data gathering tool and other resource materials at the end. The video lessons and all of the PDFs from the printed guide materials are included on the DVD. The professionally recorded video lessons provide a description and video showing the lesson being done by a parent and child. It is an excellent way to teach the skills in the printed guide.

Note: In the DVD portion of this product you are agreeing to abide by the terms of a limited use license, meaning it is only for use by you with your caseload. It is not legal to share for others to use.



BABY'S LESSON

- Use lots of variety in the objects you present. For example, use several types of ducks, look at real ducks and ducks in books as well. Teach your baby that "duck" is a word that represents all kinds of ducks.
- Put your baby, propped up by cushions if necessary, in her high chair and bring out a pan of prepared jelly. Talk about what you are doing and then help her to spoon some jelly into a bowl by holding her hand. Talk about the color of the jelly, letting her put her hands in it, squeeze it, and do whatever she likes with it. Laugh and talk about it. Making a mess provides good language-learning situations. Go for it! Try this with foods with other textures such as cooked spaghetti, rice, dry cereal, flour, chopped bananas and other fruit. (Always supervise your baby eating.)

Never Do Anything For Your Baby That
She Can Do For Herself.
Tell her what to do first, then guide her hand if necessary.

(https://successforkidswithhearingloss.com/wp-content/uploads/2014/09/Listen-Little-Star-example-baby-lesson.jpg)

Each of the 12 Lessons is comprised of:

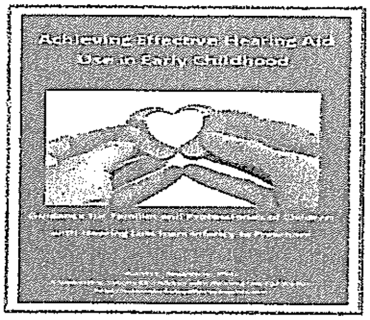
Baby's Lesson
Your Lesson
Your Support Team
Your Lesson Record

Lesson Topics

1. The most important lesson you will learn is how to talk to and interact with your baby!

2. Mouth close to baby's ear – talk and sing.

Related products

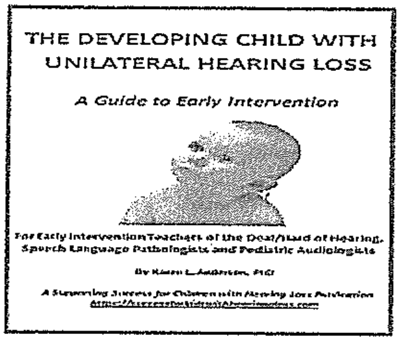


Achieving Effective Hearing Aid Use in Early Childhood-Printed Guide

$35.00

ithhearingloss.com/ Add to cart (/product/listen-little-star-a e-in-early-

childhood/)

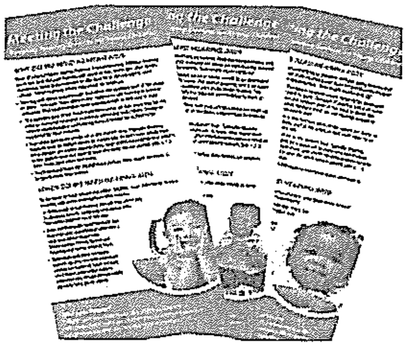


The Developing Child With Unilateral Hearing Loss – Digital Version

$35.00

ithhearingloss.com/ Add to cart (/product/listen-little-star-a nilateral-

hearing-loss-digital-version/)

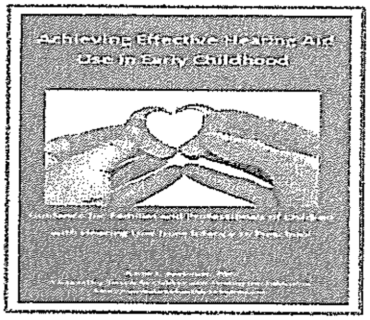


3 brochures – Keeping Hearing Devices on Young Children

$5.00

ithhearingloss.com/produc Add to cart (/product/listen-little-star-a ing-devices-on-

young-children/)



Achieving Effective Hearing Aid Use in Early Childhood-digital version for professionals

$100.00

Add to cart (/product/listen-little-star-a-guide-for-families-of-infants-with-hearing-loss/?add-to-cart=2817) ithhearingloss.com/product/achieving-

effective-hearing-aid-use-in-early-

childhood-3/)

CONTACT US

Success for Children with Hearing Loss
15619 Premiere Drive/Suite 101
Tampa, FL 33624
Contact Us (https://successforkidswithhearingloss.com/contact-us-questions/)

Questions?

Contact: teachertools@successforkidswithhearingloss.com (mailto:teachertools@successforkidswithhearingloss.com)

IKS

Sitemap (https://successforkidswithhearingloss.com/Sitemap/)
Terms of Service (https://successforkidswithhearingloss.com/terms-of-service/)

THE MOOG CENTER

(My Baby & Me)

www.moogcenter.org

The Moog Center for Deaf Education is an independent, not-for-profit school that provides educational services to children with hearing loss birth to early elementary years and their families. Our goal at the Moog Center is to make it possible for children with hearing loss to talk, well enough to compete academically and socially with their hearing peers. When children leave the Moog Center, they are prepared to transition to their local schools and enjoy their education alongside their hearing classmates. We lay the ground work for children to achieve successful and fulfilling lives. Ninety-five percent of our alumni have chosen to receive post high school education. *At the Moog Center for Deaf Education we teach deaf children to talk. And we teach others how to do it, too.*

The Moog Center consists of the following programs:

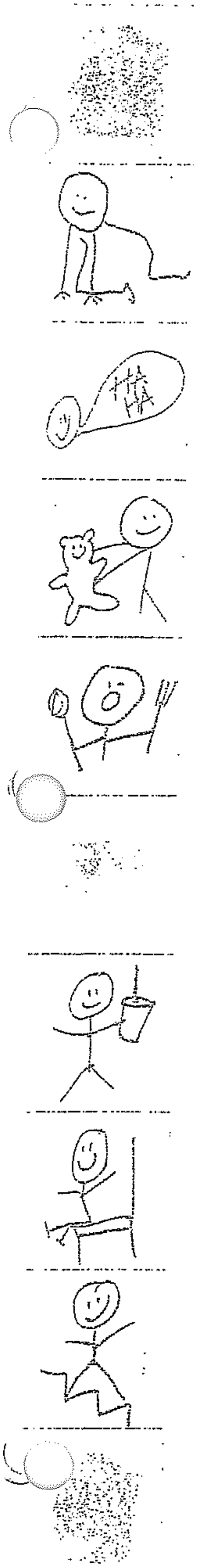
- *The Family School*
- *The Moog School*
- *Teleschool*
- *Audiology*
- *Professional Consulting*
- *Educational Consulting*

At the Moog Center we:

- *create curricula*
- *present nationally and internationally*
- *have top-notch audiology*
- *are outcome based*
- *provide results*

We have a strong commitment to early intervention and working in partnership with families. The focus of the curriculum is accelerating development of spoken language so the children can develop sufficient language skills to be full participants in the general education setting. Our focused, consistent instruction, combined with our high expectations and high standards, results in high achievement for our students.

Language Development: What to Expect



Language development in typically developing children who do not have a hearing loss is described in terms of developmental milestones. There is a range in terms of age at which children understand and talk. In general, children are able to understand more than they can say. The milestones listed are considered a guideline to typical language development.

6 months old

babbles (baba, lala, dada)

9 months old

uses some gestures (shakes head "no," points)
begins to demonstrate understanding of some words (Where are the lights? How big is the baby?)
may "sing along" with some familiar songs without using true words

12 months old

understands "no, no"
knows own name
says at least three words
listens intently to words
understands simple instructions
likes singing, repetitive sounds
"talks" to toys, objects and people throughout the day
occasionally tries to imitate new words heard
appears to understand some new words each week

15 months old

says, "Dada," "Mama," "no"
says at least 10 words
tells you what he wants by using some words and pointing
can identify many pictures and objects by pointing
understands simple commands
recognizes names of various large body parts (hair, mouth, hands, ears, etc.)

18 months old

says at least 20 words
understands much more than can say
enjoys nursery rhymes and books
begins using words rather than gestures
begins repeating words overheard in conversation
learns and uses 3-4 new words each month
can listen and understand two key words in a sentence

2 years old

understands several hundred words
combines two words such as "daddy bye-bye"
says at least 100 recognizable words (up to more than 400)
names familiar objects
delivers a simple message
makes sounds of familiar animals
asks questions
brings object from another room when asked
tries to repeat or imitate speech of others
occasionally uses 3-word sentences
refers to self by using own name
begins using some pronouns
speaks more and more, using 1-2 new words each week

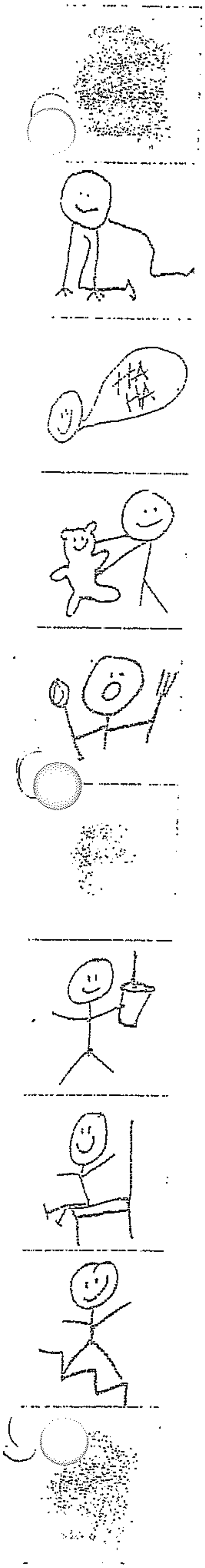
3 years old

has a vocabulary of approximately 1000 words
speaks in short, simple sentences of 2-3 words
relates experiences in detail
gives first name
holds up fingers to tell age
can identify some colors
begins to ask questions
talks to other children as well as adults
forms some plurals by adding "s"
talks about immediate experiences
carries on meaningful conversation
talks when playing alone and carries on a conversation with self
likes rhymes and can recite some
refers to self by using "me" or "I" instead of name
relates simple imaginative stories
solves problems by talking instead of hitting or crying
likes to hear a story repeated
answers "where" questions
can count or repeat two or more numbers correctly in sequence

+ More resources about language developmental milestones:

The First Twelve Months of Life, by Frank Caplan. The Putman Publishing Group, New York. 1973.
What to Expect: The Toddler Years, by Arlene Eisenberg, Heidi Murkoff and Sandee Hathaway. Workman Publishing, New York. 1996.

www.ldonline.org/ld_indepth/speech-language/lda_milestones
http://www.childdevelopmentinfo.com/development/language_development.shtml



Speech Development: What to Expect

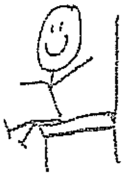
A toddler's mother often is the only person who understands much of what the toddler says. The ability to articulate speech sounds, also known as phonemes, correctly in the English language develops at a varying rate in typical children.

There has been much research undertaken to determine the age of acquisition of consonants for typically developing children. In order to interpret this information correctly it is critical to consider a variety of factors. When considering the findings, it is important to think about the differences in the collection of this information. Some studies have looked only at one production position (at the beginning of the word, the middle of the word, or the end of a word) in the context of single words while others have looked at multiple production positions. Some have taken into account phonological development (learning the rules about how speech sounds relate to each other and the patterns of speech sound use) and others have not. While some research has presented the information along a continuum, some has presented it as a definite age. When these findings are compared, it is not surprising that they are not in exact agreement. Included are two tables representing some of this acquisition information. The first (Table 1) is the norms from Sander (1972) which shows an age range from when at least 50% of the children in the sample set produced a given phoneme correctly to when at least 90% of the children in the sample set produced the phoneme correctly. Each phoneme has been placed at the age level where the combined average production age of all possible word positions (at the beginning of the word, the middle of the word, or at the end of a word) meets the percentage criteria. This is not suggesting a developmental sequence, but rather the first age listed for each sound on the Sander's table represents the age at which at least 50% of the children in the sample set were able to correctly produce a given sound. This suggests that it may be appropriate to target these sounds for children who are at least that same age. The second (Table 2) is from Schriberg (1993) and suggests a developmental sequence of the sounds which tend to develop first, the *Early 8*, those which tend to develop next, the *Middle 8*, and finally, those which tend to develop last, the *Late 8*. Even though it is good to keep in mind age of acquisition, it is important to remember that age is just one piece of the puzzle.

Hints & Tips

- ✕ *Sounds for which the child is stimulable will be the easiest to develop.*
- ✕ *Sounds that the child can hear will be easier to develop than sounds which the child cannot hear.*
- ✕ *Production of the Ling 6 Sounds - "ah"(hot), "oo" (boot), "ee" (feet), "s", "sh", and "m" is helpful for providing information related to how the child is perceiving sound (see How My Ears Work, Assistive Technology, Performing the Ling Sound Check).*
- ✕ *Sounds which provide visual information (that the child can lipread) may be easier to learn how to produce than others.*
- ✕ *Improving the production of sounds that are used in words which occur frequently in the context of the child's daily routines will aid the child in expressing himself.*
- ✕ *Improving the production of sounds that are used in words in the child's current vocabulary will improve the child's intelligibility.*

Early Amplification: What to Expect



Children who have received a cochlear implant under 2 years of age have been able to develop speech and language skills sufficient to be successfully mainstreamed by second grade. The benchmarks listed below are a guide to that achievement. Children who are implanted at one year old may be expected to reach the same benchmarks, except at 4-6 months post-activation (18 months old), they may produce fewer words. Hearing aid users are expected to perform equally as well.

Almost immediately after activation

Demonstrates detection of sounds across all frequencies

Demonstrates detection of the Ling 6 sounds

Demonstrates detection of a variety of environmental sounds

Ling 6 Sounds	
ee (feet)	s
-o- (hot)	sh
00 (shoe)	m

0-4 months post activation

This seems to be a "listening" time. Since the children are very young, it is difficult to assess what they are truly understanding.

4-6 months post activation

Identifies at least 35 to 50 words, in closed sets in lessons. These words include mostly nouns and verbs

Names about 75% of the items or actions they understand

Produces recognizable approximations of at least 85% of the words learned, in imitation of the teacher's model, matching duration and a vowel or consonant

Uses some single words to express their wants and needs

1 year post activation

Identifies 75 to 100 words, consisting of nouns, verbs, some early developing adjectives and early developing prepositions, when pictures or objects representing those words are presented in sets of at least four words

Produces at least 90% of the words they can identify in closed sets

Develops understanding of some early developing two-word combinations (noun-noun, noun-verb, verb-noun)

Produces some early developing two-word combinations (noun-noun "boy ball", noun-verb "boy throw", verb-noun "throw ball") in a lesson setting

Uses single words and some common phrases and expressions to express their thoughts and ideas

15 months to 18 months post activation: A language explosion seems to occur

Learns vocabulary outside of the classroom or therapy environment

Has more than 250 vocabulary words

Comprehends simple three- and four- word sentences

Uses a variety of two-word combinations spontaneously

2 years post activation

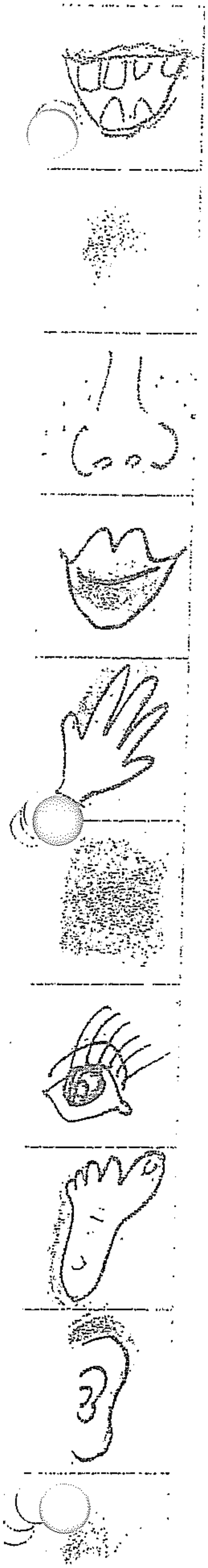
Has more than 500 words - too many to count

Comprehends a variety of simple sentences and questions

Uses simple sentences of 4-6 words when speaking spontaneously

Factors which may affect the child's potential to reach such high goals:

- Normal intelligence
- Be a consistent wearer of her implant
- No concerns in relation to speech or oral motor skills
- Appropriate amplification, specifically well-fitted hearing aids and/or an appropriate MAP if a cochlear implant user



How We Hear:

Sound travels through the air as vibrations. When these vibrations reach our ear this is the beginning of hearing. In order to hear, a complex chain of events must occur. When a sound occurs, a disturbance is caused in the air and sound waves are created. For example, when a rock is thrown into a lake, ripples radiate away from where the rock landed. Sound waves travel in a similar way through the air away from whatever caused the disturbance. The shape of the pinna (the part of the ear which is visible) is perfectly designed to funnel these sound waves into the ear canal. The ear canal is a little tunnel filled with air. At the end of the ear canal is a thin, tightly stretched membrane that looks like the top of a drum. This is the eardrum, or tympanic membrane. The sound waves travel down the ear canal and bounce off the eardrum. Attached to the other side of the eardrum is a series of three very tiny bones (ossicular chain) that vibrate as the eardrum moves. When these bones vibrate, the sound waves are amplified. The last bone in the series, the stirrup (stapes), is attached to another thin membrane (the oval window), which covers the entrance to the cochlea (inner ear). The cochlea is a fluid-filled, snail-like organ that contains tens of thousands of tiny hair cells. As the footplate of the stapes pivots in the oval window, the fluid inside the cochlea moves and causes the hair cells to vibrate. Whenever the hair cells move, an electrical signal is sent along the auditory nerve, which is attached to the base of the hair cells. The auditory nerve carries this "electrical message" to the brain, where it is recognized as sound. If any piece of this complicated system does not function perfectly, then hearing is affected.

Tidbits

The bones in the middle ear are the tiniest bones in your body!

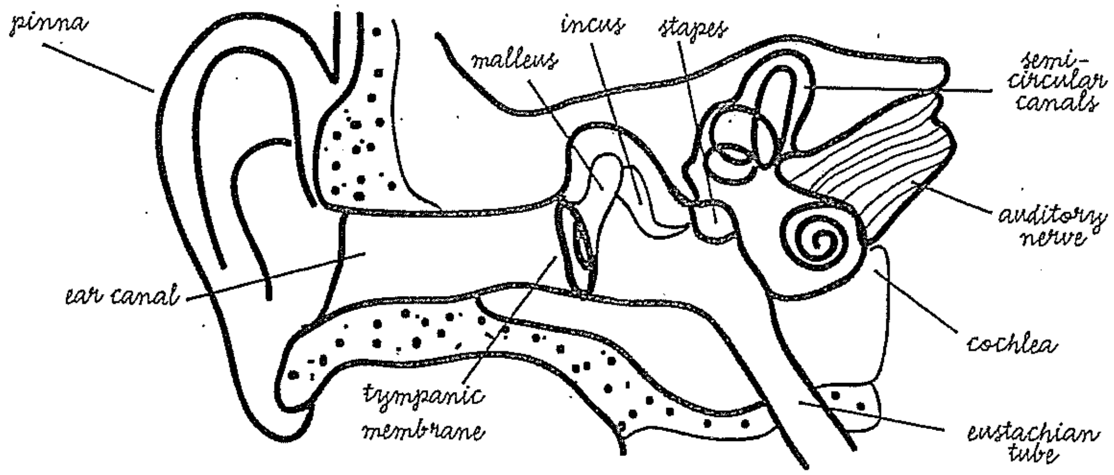
Together they are smaller than an orange seed.

Don't ever put anything smaller than your elbow in your ear.

The semicircular canals are filled with fluid and help us maintain our balance.

The Eustachian tube is also a part of the middle ear. It provides fresh air to the middle ear space.

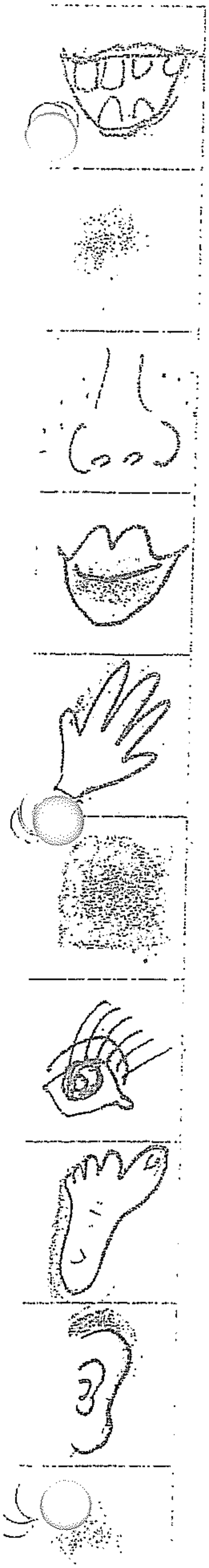
When the Eustachian tube becomes infected, the middle ear can fill with fluid, causing an ear infection.



Reprint with permission of The EAR Foundation: www.earfoundation.org

web resources for learning about the ear:

http://www.nidcd.nih.gov/health/education/video/travel_vid.asp
http://www.audiologyawareness.com/hhelp/howhr.htm
http://www.hei.org/hearhealth/healthyear/howhear.htm



Understanding Hearing Loss

Hearing loss may be classified into three types: conductive, sensorineural or mixed.

A conductive hearing loss occurs whenever something is not working properly in the outer or middle ear.

Common causes of conductive hearing loss are:

- ✕ An ear canal plugged with wax or foreign body
- ✕ An external ear infection that causes swelling
- ✕ Obstruction from growths, tumors, cancer
- ✕ A middle ear infection that causes fluid to collect behind the eardrum
- ✕ A break in the ossicular chain, or immobility of the ossicular chain

A conductive hearing loss is often improved or corrected through medical procedures.

A sensorineural hearing loss exists when nerve damage occurs, causing something to not work properly in the inner ear or along the pathway from the inner ear to the brain. Problems in the inner ear usually cannot be fixed by medication or surgery.

Some potential causes of sensorineural hearing loss are listed below according to age at onset:

Congenital (at birth):
trauma
ototoxic drugs
high bilirubin
Rubella
hereditary (connexin 26)
low birth weight/prematurity
lack of oxygen

Childhood:
severe infections
illness
birth trauma
drugs
head trauma
high fevers
kidney infection
noise

Adulthood
all of childhood causes plus...
Meniere's disease
otoscelrosis
labyrinthitis
aging

A mixed hearing loss occurs when conductive and sensorineral problems are present. If a child who has a permanent sensorineural hearing loss gets a middle ear infection, the effects of the conductive loss coupled with the sensorineural loss create a greater hearing loss.

FACTORS THAT MAY AFFECT PROGRESS AND SUCCESS:

- ✕ *appropriateness of amplification*
- ✕ *quality and focus of educational program*
- ✕ *the child's ability to process the information he is receiving*
- ✕ *oral-motor concerns*
- ✕ *cognitive delay*
- ✕ *additional learning problems*

FACTORS WHICH AFFECT A CHILD'S ABILITY TO HEAR:

✕ Appropriate amplification

Appropriate amplification is one factor that strongly affects a child's ability to hear. Hearing aids and cochlear implants can be adjusted for optimal use. The amount of gain, the frequencies they amplify, and the maximum loudness of the sound that they bring to the ear are all adjusted by the audiologist to provide each child the maximum benefit.

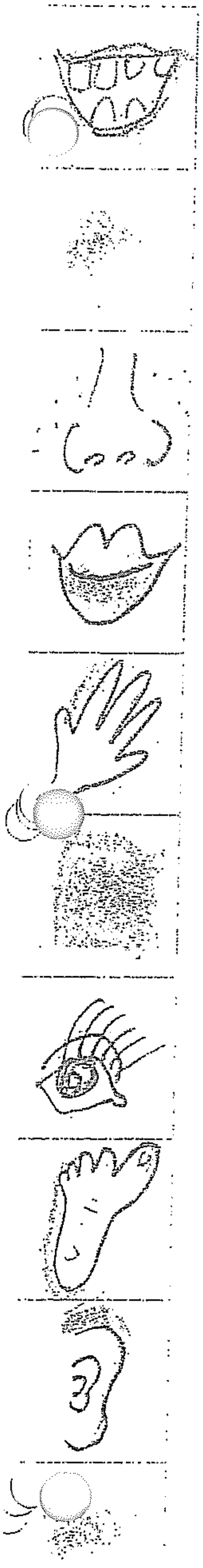
✕ Distance and loudness

Distance has a tremendous effect on the loudness of a sound. The closer the deaf or hard of hearing child is to the sound source, the better he can hear it. It is best to be within three feet of the child.

✕ Competing noise

Competing noise is any sound other than the primary signal you want the child to hear. When possible, you should eliminate the competing noise. For example, turn down the volume on the TV or close the car windows when talking. If it's not possible to reduce the competing noise, it is helpful to increase the volume of the primary sound source or move the sound source closer to the child.

web resources for learning more about hearing loss:
www.utdallas.edu/~thib/rehabinfo/tohl.htm
www.asha.org
www.audiology.org



Speech

The sounds of speech all fall within a small loudness range (normal conversation: 55-75 dB) but spread out among frequencies, from 250 to 6000 Hz. Note on the *Audiogram of Familiar Sounds* the frequencies and pitches of some important speech sounds. Audiologists and other professionals often refer to the way in which the speech sounds lie on the chart as the *speech banana.* If hearing thresholds lie beyond, or below, the speech banana, then a person with this level of hearing will not be able to hear speech at all without a hearing device.

When looking at the speech banana, it is also helpful to understand that although sounds in isolation are listed at certain decibel levels, the loudness of a sound may change when it is combined with other sounds to make words. For example, when a sound is produced in isolation (just by itself), it may be considered a low frequency sound. However, when used in a word, the properties of the surrounding vowels or consonants may change the original sound enough for its energy to be primarily in the middle frequencies. Therefore, depending on the context of a sound, its frequency may change. This helps explain why different sources may vary in reporting the frequency and decibel level of a particular sound since so many variables must be taken into consideration, espcially when sound is presented in a word.

Soft Things

breathing (10 dB)
rustling leaves (20 dB)
a whisper (25 dB)
a watch ticking (30 dB)

Loud Things

rush hour traffic (80 dB)
a noisy restaurant (80 dB)
a blender (90 dB)
a screaming child (90 dB)
a chain saw (110 dB)
a car horn (120 dB)
a shotgun blast (140 dB)

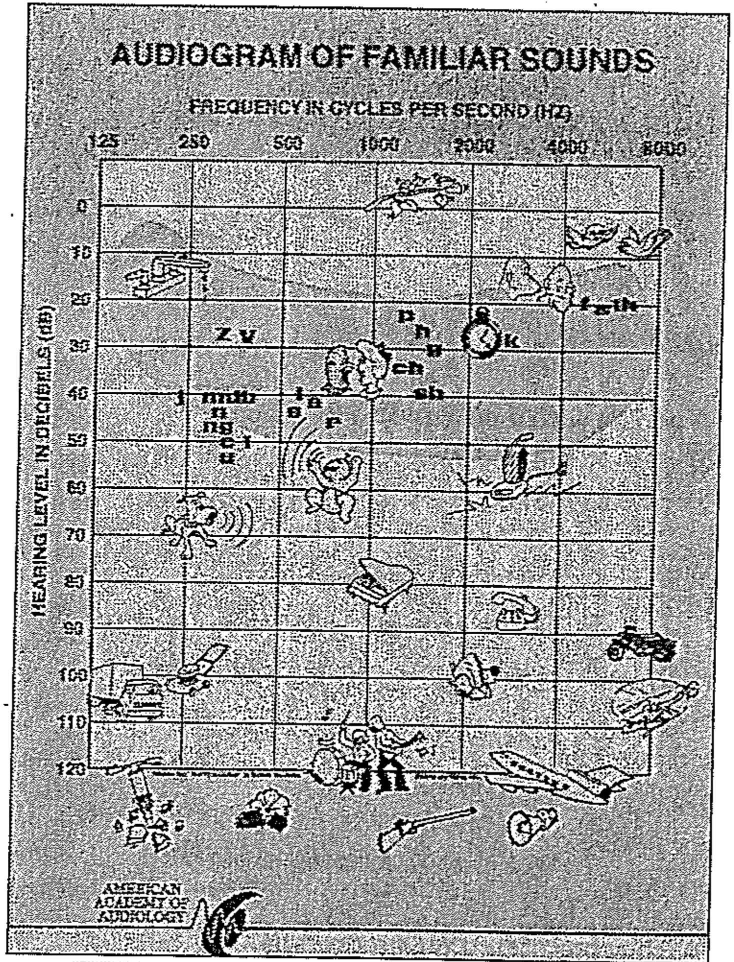
Low Pitched Things

a truck's engine (125 Hz)
a lawn mower (250 Hz)
a dog barking (250 Hz)

High Pitched Things

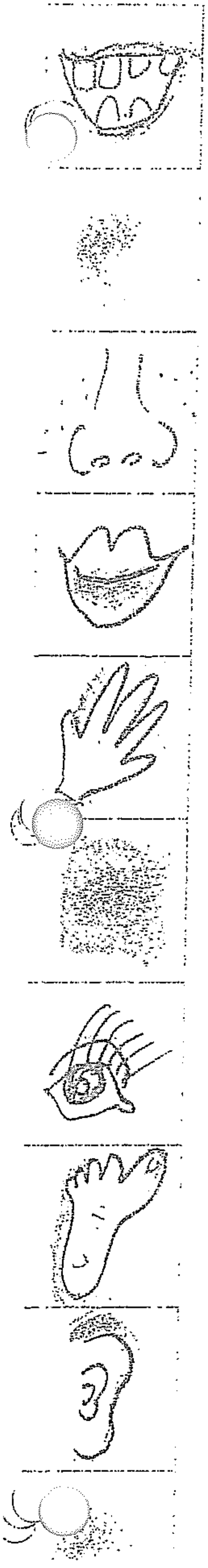
a jet engine (4000 Hz)
the highest note on a piano (4186 Hz)
a bird chirping
(4000-8000 Hz)

It is important to remember that if your child's audiogram shows that he can detect sounds within the speech banana while wearing his hearing device, the audiogram shows only what your child can detect, not how he perceives and understands sound.



Reprinted with permission of the American Academy of Audiology

websites for more information about audiograms:
http://www.audiology.org/consumer/guides/uya.php



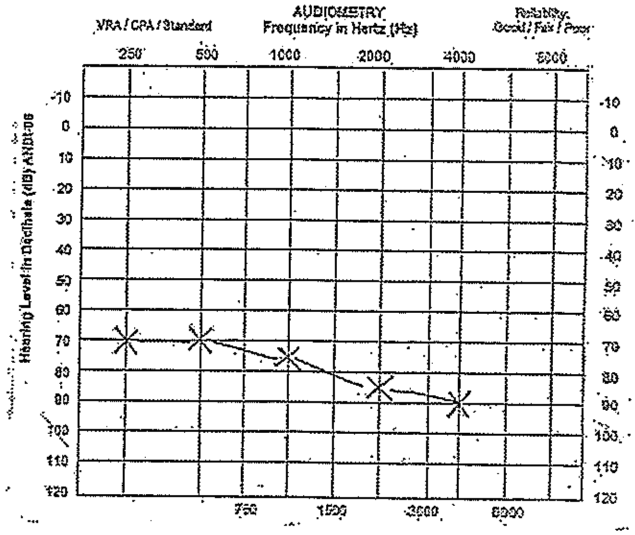
Severe hearing loss (60-90 dB)

A person with a severe hearing loss...

- ✕ can hear only very loud sounds.
- ✕ cannot hear others talk.
- ✕ hears vowels better than consonants.
- ✕ has impaired articulation and impaired voice quality.
- ✕ may have deficient language and vocabulary.
- ✕ will need to be taught speech and language with extensive special training.
- ✕ is usually helped by hearing devices such as hearing aids, cochlear implants and FM systems.
- ✕ usually is affected academically.
- ✕ benefits from support services.

With appropriate amplification and intervention, this person...

- ✕ may need ongoing speech and language instruction
- ✕ may be successfully mainstreamed between kindergarten and second grade



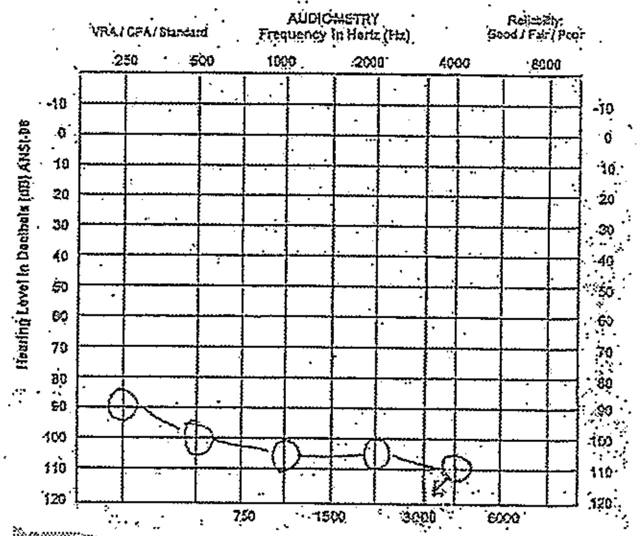
Profound hearing loss (90 dB and above)

A person with a profound hearing loss...

- ✕ often does not hear even very loud sounds.
- ✕ does not hear most speech sounds.
- ✕ may hear only some vowel sounds.
- ✕ has impaired articulation and voice quality.
- ✕ is very delayed in learning to talk.
- ✕ will need to be taught speech and language with extensive special training.
- ✕ may be helped by hearing devices such as hearing aids, cochlear implants and FM systems.
- ✕ is academically affected.
- ✕ will require support services.

With appropriate amplification and intervention, this person...

- ✕ may need ongoing speech and language instruction
- ✕ may be successfully mainstreamed between kindergarten and second grade

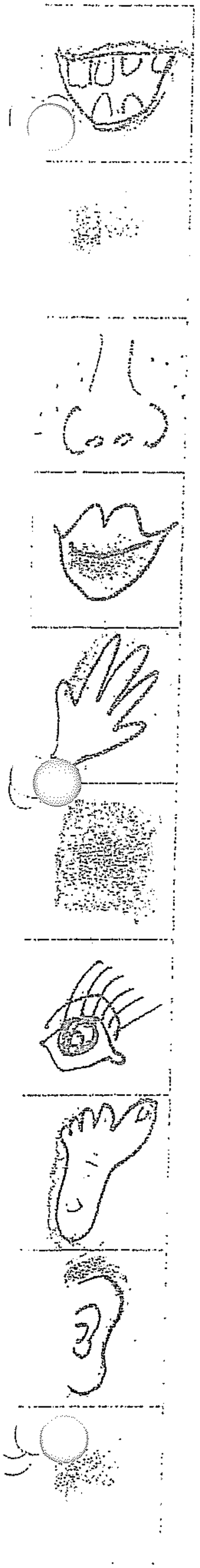


websites for hearing loss simulations:
http://facstaff.uww.edu/bradleys/radio/hlsimulation/

http://www.phonak.com/consumer/hearing/hearinglossdemo.htm

http://www.betterhearing.org/sound/

http://www.hearingcenteronline.com/sound.shtml

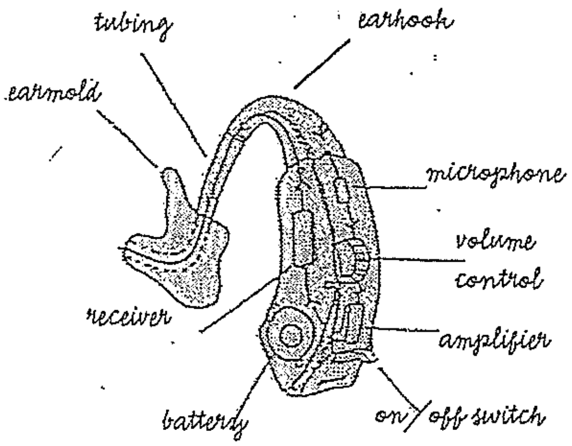


Hearing Aids, continued...

Parts of a Hearing Aid

The battery provides electrical energy that operates the hearing aid. The small microphone picks up sound waves. The amplifier makes all the sounds that enter the microphone louder. The sound travels through the earhook, the tubing, the custom-fitted earmold, and then into the ear canal. The volume control switch regulates the volume of the sound entering the ear. An audiologist recommends the optimum setting when the hearing aid is fitted. Various on/off switches are found on different makes of hearing aids. Sometimes the volume control switch is also the on/off switch. On other hearing aids, initials such as "O," "T," "M," or "B" may be found on the off/on switch. These intials stand for:

"O" = off
"M" = microphone
"T" = telecoil (for FM systems) or telephone
"B" = both microphone and telecoil or FM



BAHA® - Bone Anchored Implant
(may be worn on a Baha® Softband in young children)

The Baha® system utilizes Direct Bone Conduction, which allows the bone to transfer sound to a functioning cochlea. In cases where the middle ear function is blocked, damaged or occluded, the Baha® system is a hearing aid option that bypasses the outer and middle ear altogether. Instead, sound is sent around the damaged or problematic area, naturally stimulating the cochlea through bone conduction. When the cochlea receives these sound vibrations, the organ 'hears' in the same manner as through air conduction; the sound is converted into neural signals and is transferred to the brain, allowing a Baha® recipient to perceive sound.

Keeping the Earmolds Clean

Your child's earmold(s) should be washed at least once a week. Following is a recommended procedure for weekly earmold cleaning:

X Decide on one day of the week when you can regularly wash your child's earmold(s). Some parents find Sunday evenings are convenient for this so the child begins the school week with a clean start.

X When you remove your child's hearing aid(s) for the night, gather the following materials:

The earmold(s)
Warm water and mild soap, such as Ivory
Toothpicks
A clean washcloth or small towel
Bulb syringe

X Detach the earmold from the hearing aid. *Gently* separate the clear tubing of the earmold from the earhook attached to the hearing aid. To do this, hold on to the hook with one hand *(not the hearing aid)* and the tube with the other hand and tug gently. **Leave the earmold attached to the tube!**

X Use a toothpick to remove any wax or dirt near the tip of the earmold canal. Be careful not to poke a hole in the earmold with the toothpick!

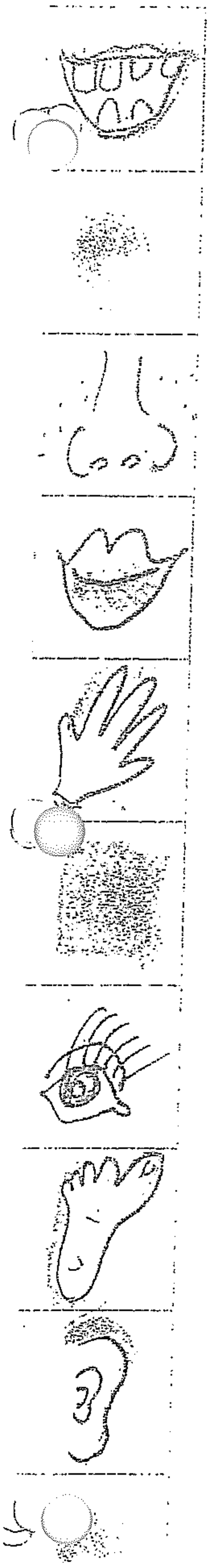
X Rub each earmold with mild soap to help remove the wax and dirt.

X Rinse the earmold thoroughly with warm water. **Do not soak the earmold in water.**

X Shake the earmold to remove most of the water from inside. Blow any remaining water out of the tubing using the bulb syringe. Set the earmold on a clean, dry washcloth or towel and let it air dry overnight. **Do not set the earmold(s) near a heat source** (oven or radiator).

X In the morning, re-attach the dry earmold to the hearing aid.

X If for some reason the earmold has not yet had sufficient time to dry completely, you may need to blow the remaining moisture out with the bulb syringe again. This may be done anytime moisture accumulates in the clear tubing.



Cochlear Implants

A cochlear implant is a device designed to help deaf individuals with severe or profound hearing loss who receive little or no benefit from hearing aids.

There are currently three companies manufacturing cochlear implants.

Cochlear Corporation
Address: 400 Inverness Drive South, Suite 400
Englewood, CO 80112
Telephone:1-800-523-5798
Website: www.cochlear.com

Advanced Bionics
Address: 12740 San Fernando Road
Sylmar, CA 91342
Telephone:1-800-678-2575
Website: www.cochlearimplant.com

Med-El
Address: 2222 East NC Hwy 54, Suite B-180
Durham, NC 27713
Telephone:1-919-572-2222
Website: www.medel.com

How does the implant work?

Each implant system takes the place of the damaged inner ear structures that cause hearing loss. An implant system consists of an internal device that is surgically implanted in the cochlea and some external components: a microphone, a transmitter and a processor. The microphone picks up sound from the air and transmits the sound to the processor (via a cord if the processor is body worn). The processor is a mini-computer that changes the speech sound waves into an electrically coded message. The coded message is then sent up through another cord to the transmitter, which is a magnetized external piece worn on the head. The transmitter sends the information through the skin to the internal device where the message is decoded and sent via electrodes to the cochlea. The nerve endings in the cochlea are stimulated and the message is then sent up the auditory nerve to the brain, where the information is interpreted.

Some Facts About Cochlear Implants

✕ There are both body worn and behind-the-ear cochlear implants.

✕ Cochlear implants are recommended for children (over the age of twelve months) or adults who receive little or no benefit from hearing aids and are determined to be good candidates medically.

✕ Although a cochlear implant helps a person hear, it does not make it possible for them to hear as well as a hearing person. Therefore, a child with a cochlear implant usually will still need special educational training in order to learn speech, language and other academic subjects, especially a child who was deafened before learning to talk.

✕ Intensive instruction in auditory skills helps children learn to listen and interpret what is heard through their implants.

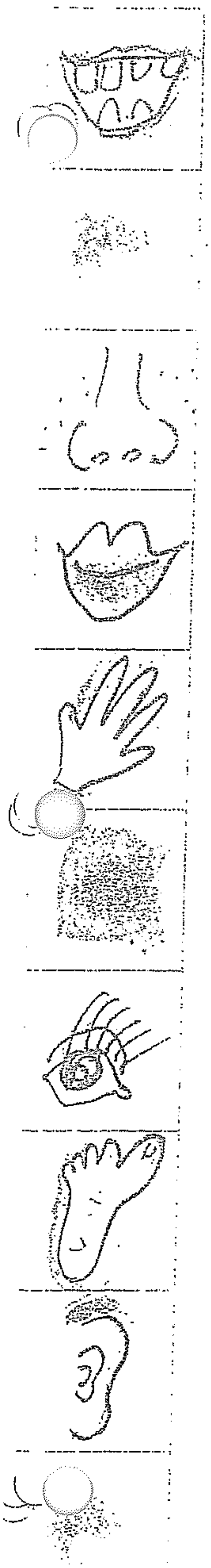
✕ The sounds that are heard through a cochlear implant do not sound the same as normal hearing.

✕ A child will benefit most from the implant if there is a quiet listening environment and the speaker is sitting close to him.

websites for cochlear implant simulations:
http://www.utdallas.edu/~loizou/cimplants/cdemos.htm

http://www.ucihs.uci.edu/hesp/Simulations/simulationsmain.htm

http://www.hei.org/research/aip/audiodemos.htm



FM Systems

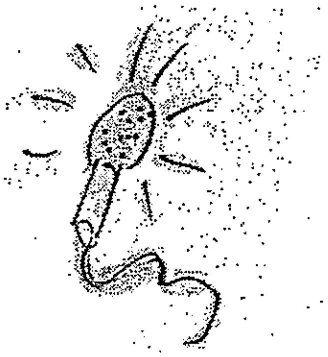
What is an FM System?

An FM system is a listening device that is helpful to deaf and hard of hearing children in noisy situations or when they are some distance from the speaker. The system consists of a lightweight microphone (clipped to the shirt of the speaker, usually the adult), a small transmitter pack worn on the speaker's belt, and a special receiver worn by the child. The microphone amplifies the adult's voice and sends it directly to the child's hearing aid through the receiver. This is similar to a deaf or hard of hearing child having a personal radio station with the adult as the announcer.

The biggest advantage of the FM system over a hearing aid is that hearing aids amplify all sounds, while the FM amplifies only the signal going into the microphone (the adult's voice). This cuts out the interference of other noises such as fans, heaters, banging desks, rustling papers and the chatter of other students. The FM system helps the deaf or hard of hearing child hear the adult better, which improves the child's chances to understand what is being said in noisy environments.

Facts about FM Systems

- The ideal placement for the microphone is 4-6 inches below the mouth. If the microphone is placed too close to the speaker's mouth, the sound will be distorted to the student. If too far away, the signal may not be strong enough for the child to receive benefit.
- Each FM system comes with instructions on its use. The instructions should be read and discussed with the educational consultant or audiologist. The child may be able to tell you if the FM system is not working correctly. If there is a problem that is not easily corrected, then the FM system should be checked by an audiologist.
- The child may wear "boots" on his hearing aids which, with the flip of a switch, act as the receiver for the FM system.
- An FM system will make the adult's voice louder, but not clearer. It does not guarantee that the child will hear and/or understand all that is said – and, in fact, most children won't. The child may will still need to be able to see the speaker so that lipreading can be used to supplement the information that is heard.
- Parents and primary caregivers should remember to turn off the FM system when their conversation is not directed to the child. Children have very funny stories to tell about parents who have forgotten.
- Most FM systems will transmit as far as 100 feet away.
- The FM system needs to be recharged every night.



audiologyonline

Auditory-Oral Education: Teaching Deaf Children To Talk

Jean S. Moog

May 17, 2000

Introduction:

It is my belief that an auditory-oral approach to education teaches deaf children to use their residual hearing in combination with speech reading and contextual cues to better comprehend and use spoken language. Sign language is not used in this approach. The benefits of auditory-oral education are great, but success in this approach requires hard work from the teachers, parents and the children. I will outline my thoughts on this topic below.

Expected outcomes for Auditory-Oral education include:

1- Mainstreaming:

The goal of mainstreaming is to give the deaf individual the necessary spoken language skills to be mainstreamed educationally and to function independently in the hearing world without a sign language interpreter. Mainstreaming is implemented as early as possible, first through interaction in the family and neighborhood and later in schools with normal hearing children with full inclusion being the ultimate goal. Graduates of auditory-oral schools are typically capable of being mainstreamed academically, socially and professionally to a large degree and being able to talk gives them "mainstream life" as an option if they so choose.

2- Improved Reading Levels:

The auditory-oral approach facilitates development of reading and writing skills because proficiency in the English language is critical to developing good reading ability. Studies support the notion that an emphasis on spoken English results in higher reading levels for deaf children than that which is achieved for children using signing approaches (Moog and Geers, Volta Review, 1989)

3- More Opportunities in the World:

designed to improve their listening and talking skills.

5- Classroom teachers who are knowledgeable about, and experienced in, teaching speech and spoken language. Although speech is given its own "dedicated" instructional period during the day, spoken language work is incorporated into all classroom activities. As children communicate throughout these daily activities, they practice using their spoken language skills.

6- Children must become dependent on spoken language for communicating. Talking is the means of communicating all day long. Children must express themselves using speech before children and teachers respond to them. When speech is used for communication throughout the day, the goal is reinforced. Talking is not just a lesson to be conducted at school.

7- Direct teaching accelerates the acquisition of spoken language in deaf children.

8- A family with a true commitment to helping their child learn to talk. This includes getting the child started early in developing spoken language, ensuring the child has appropriate amplification and helping the child talk at home.

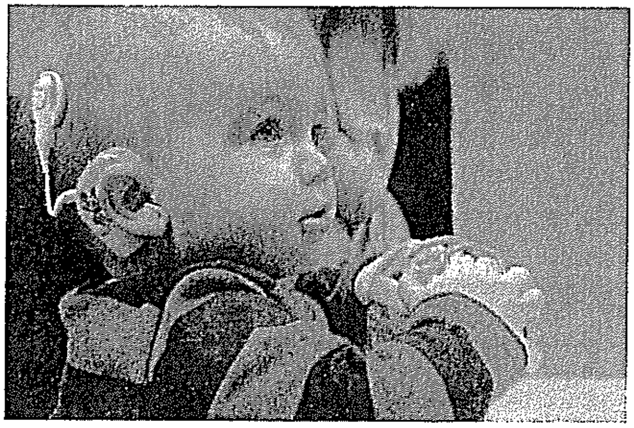
For more information about auditory-oral education, please visit the Oral Deaf Education website at www.oraldeafed.org or contact Jean Sachar Moog at jsmmos@aol.com or moogoral@aol.com

ARTICLES

Should All Deaf Children Learn Sign Language?

By Joanna Smith, MS, & Jace Wolfe, PhD

The July 2015 issue of *Pediatrics* featured nine experts from varied backgrounds within the areas of otolaryngology and language development who tackled the hot-button question of whether children who are born with hearing loss and receive a cochlear implant at an early age should also need and learn to use sign language (Mellon. 136[1]:170-176). The authors who contributed to the manuscript included proponents of both a listening and spoken language approach (LSL) and Deaf culture, as well as parents of children with bilateral cochlear implants, professors of education and linguistics, and a biomedical ethicist. Each of these professionals specifically weighed in on whether an infant born to normal-hearing parents with no knowledge of sign language should be exposed to sign language prior to receiving a cochlear implant within a few months. Additionally, they also discussed whether the child should continue to use sign language after receiving the cochlear implant. This month's installment addresses some of the most provocative arguments the group of experts made for and against the use of sign language as well as the clinical implications of these arguments for infants and young children using cochlear implants.



1. "Ninety-five percent of children with hearing loss are born to normal-hearing parents" who "desire to share their own language and culture with their child." – Nancy Mellon, MS, and John K. Niparko, MD

Most people would likely agree that hearing health care professionals should support families of children with hearing loss in making decisions that facilitate the attainment of the goals, desires, and wishes they have for their children. A family's desired outcome for their child must guide the discussion, and professionals should refrain from making assumptions about families' preferences and goals for their children. Instead, as mentioned in a previous Tot Ten installment, our first job is not to give information, but to get information (Smith, Michael A. *The Hearing Journal* 2015;68[6]:32-36).

We must know what the family wants to know and how to best support a family of a child with hearing loss (e.g., should we recommend the use of sign language?). We should present all modes of communication in an unbiased manner, including the advantages and limitations of each, and applying evidence-based knowledge whenever possible. We should encourage the family to consider all of the information and articulate goals for their child. Some families may want to optimize the bilingual proficiencies of their children, while others may wish to focus on spoken language. Ideally, the family should express their long-term goals for their child not only in the speech, language, and auditory domains, but also in the areas of educational, social, and career development. The job of hearing health care professionals is to listen well in order to understand the hopes and desires of each family and to equip families with the resources and support needed to achieve their desired goals. This may seem like an obvious statement, but it lays the foundation for the remainder of the discussion at hand.

Dr. Wolfe, left, is the director of audiology at Hearts for Hearing and an adjunct assistant professor at the University of Oklahoma Health Sciences Center and Salus University. Ms. Smith, right, is a founder and the executive director of Hearts for Hearing in Oklahoma City.

2. Sign language, when used for a short time pre-implant, cannot hurt language development and may be beneficial. – Nancy Mellon, MS, and John Niparko, MD

Indeed, there are no peer-reviewed studies that have explored whether the use of sign language prior to early implantation benefits or limits spoken language development. There are several important considerations to keep in mind regarding this specific topic.

First, a mounting body of evidence is suggesting that outcomes are better when children receive a cochlear implant before their first birthday. Teresa Y.C. Ching, PSM, and Harvey Dillon, PhD, found that language outcomes decrease by one-half standard deviation for every six-month delay in implantation from 6 months of age (Ching. *Int J Audiol* 2013;52[Suppl 2]:S65-8). With findings like this in mind, astute cochlear implant teams are recommending cochlear implantation at 6-9 months of age for children who receive limited to no benefit from hearing aids. As a result, the window of time between diagnosis and implantation is quite short, and the decision of whether to supplement communication with sign language is likely of little consequence.

Implants Int 2014;15 [Suppl 1]:S27-9). Likewise, Ann E. Geers, PhD, and colleagues evaluated 112 children with cochlear implants and also found that children who used LSL exclusively during early childhood years achieved better language outcomes when compared to children who used spoken and sign language (*J Speech Lang Hear Res* 2013;56[2]:643-55). Further, the effect of better outcomes associated with a LSL approach persisted into the participants' teenage years. Without a doubt, recent peer-reviewed research shows an overwhelming trend toward better speech and language outcomes for children who primarily used LSL during early childhood relative to those who used Total Communication. Of note, the better outcomes associated with a LSL approach are often particularly evident for speech production, spoken language, and speech recognition.

7. "Sign language development correlates positively with written and spoken language." – Christian Rathmann, PhD, and Gaurav Mathur, PhD

This statement may mislead professionals, as it may seem to suggest that children who are deaf and communicate via sign language are more apt to develop better written, literacy, and spoken language skills. As mentioned, the majority of recent peer-reviewed studies unequivocally associate better spoken language outcomes with a listening and spoken language approach during early childhood. Historically, research has suggested that children who are born deaf and do not have access to cochlear implantation typically develop a third-grade literacy aptitude at the time of high school graduation. The challenge is eloquently described by Dana Suskind, MD, in her book *Thirty Million Words*:

> *"Imagine, if you read only English, having to learn words you don't know, written in Chinese characters. In the same way, deaf children are being asked to recognize letters on a page, combine them for words, and understand the meanings of those words without ever having heard them. The word "cat," for example; easy, right? You know the "ka" sound of C, the "a" sound of A, and the "t" sound of the T. And you immediately equate the combination of those sounds to a little furry animal that says "meow." But what if you'd never heard the sounds of the letters C, A, T, either individually or strung together? What would those symbols mean to you? Even though you can sign for the animal "cat," seeing C-A-T means nothing. That is the arduous road that a deaf child has to go through to learn to read."*

For all infants diagnosed with hearing loss, hearing health care professionals should strive to maximize the use of any residual hearing the child possesses.

It should be noted that the same areas in the brain that are active when we read and spell words are the same areas that are active when we listen to intelligible speech. As a result, a focus on the consistent audibility of intelligible speech serves as the underpinning for the development of spoken language and literacy skills. Finally, it is well known that the grammar, morphology, and syntax of American Sign Language differ substantially from that of spoken language, a fact that complicates the process of developing conventional written and literacy skills. In truth, the physiologic bases underlying literacy and spoken language development as well as the results of recent studies overwhelmingly indicate better written and spoken language outcomes for children who receive a cochlear implant and use LSL relative to those who use sign language.

8. "All deaf children should be taught a sign language as soon as their hearing status is determined, in conjunction with training in spoken language." – Donna Jo Napoli, PhD, and Theresa Handley

At the risk of sounding like a broken record, if a family's goal is optimizing their child's spoken language abilities, then the primary focus of early intervention should be the provision of a lifestyle rich in complex, intelligible speech. Dr. Suskind's *Thirty Million Words* highlights the landmark Betty Hart, PhD, and Todd Risley, PhD study, which has significant implications for language development of children with hearing loss (*Meaningful Differences in Everyday Experience of Young American Children*. Baltimore, MD: Brookes Publishing, 1996). Drs. Hart and Risley were two sociologists who conducted a study aimed to identify the reasons for why the vocabulary levels of school-aged children from affluent families have far exceeded that of children from impoverished homes, and found that children from homes with caregivers who had professional occupations were exposed on average to approximately 45 million words by their fourth birthday, while children living in homes whose caregivers qualified for welfare assistance were exposed to approximately 13 million words during the same time period.

These findings confirm that language development is predicated upon exposure to complex, intelligible speech. Congenital hearing loss places a child at risk for not being exposed to 45 million words during the first three years of life. To counter this risk, children who are born deaf must receive cochlear implants as early as possible. Their cochlear implants must be programmed appropriately, and we as hearing health care professionals must do everything in our power to inform families of the importance of creating an auditory lifestyle that will

ERRATA

Mellon et al. Should All Deaf Children Learn Sign Language? Pediatrics. 2015;136(1):170–176

Errors occurred in the article by Nancy K. Mellon et al, titled "Should All Deaf Children Learn Sign Language?" published in the July 2015 issue of *Pediatrics* (2015;136[1]):170–176; doi:10.1542/2014-1632).

On page 170, in the list of authors, the first author should have been Donna Jo Napoli. The corrected list of authors should have read: Donna Jo Napoli, PhD[a], Nancy K. Mellon, MS[b], John K. Niparko, MD[c], Christian Rathmann, PhD[d], Gaurav Mathur, PhD[e], Tom Humphries, PhD[f], Theresa Handley, BA[a], Sasha Scambler, PhD[g], and John D. Lantos, MD[h]

The updated list of author affiliations should have read: [a]Swarthmore College; [b]The River School, Washington, District of Columbia; [c]Department of Otolaryngology, University of Southern California; [d]Institute for German Sign Language and Communication of the Deaf, University of Hamburg; [e]Graduate School, Gallaudet University; [f]Department of Education Studies, University of California at San Diego; [g]King's College London; and [h]Children's Mercy Hospital

Also on page 170, the abstract appeared as follows: "Every year, 10 000 infants are born in the United States with sensorineural deafness. Deaf children of hearing (and nonsigning) parents are unique among all children in the world in that they cannot easily or naturally learn the language that their parents speak. These parents face tough choices. Should they seek a cochlear implant for their child? If so, should they also learn to sign? As pediatricians, we need to help parents understand the risks and benefits of different approaches to parent–child communication when the child is deaf. The benefits of learning sign language clearly outweigh the risks. For parents and families who are willing and able, this approach seems clearly preferable to an approach that focuses solely on oral communication."

This should have read: "Every year, 10 000 infants are born in the United States with sensorineural deafness. Deaf children of hearing (and nonsigning) parents are unique among all children in the world in that they cannot easily or naturally learn the language that their parents speak. These parents face tough choices. Should they seek a cochlear implant for their child? If so, should they also learn to sign? As pediatricians, we need to help parents understand the risks and benefits of different approaches to parent–child communication when the child is deaf."

doi:10.1542/peds.2015-2443

Devore CD, Schutze GE; AAP, Council on School Health, Committee on Infectious Dises. Head Lice. *Pediatrics.* 2015;135(5):e1355–e1365

Three clarifications are issued for the following American Academy of Pediatrics clinical report, titled "Head Lice" published in the May 2015 issue of *Pediatrics.* 2015;135(5):e1355–e1365.

1. On page e1358, in the section on Malathion (0.5%), the second-to-last sentence should have read: "Safety and effectiveness of malathion lotion have not been established in children younger than 6 years, and the product is not recommended." (instead of "…the product is contraindicated").

Should All Deaf Children Learn Sign Language?

Nancy K. Mellon, MS[a], John K. Niparko, MD[b], Christian Rathmann, PhD[c], Gaurav Mathur, PhD[d], Tom Humphries, PhD[e], Donna Jo Napoli, PhD[f], Theresa Handley, BA[f], Sasha Scambler, PhD[g], John D. Lantos, MD[h]

Every year, 10 000 infants are born in the United States with sensorineural deafness. Deaf children of hearing (and nonsigning) parents are unique among all children in the world in that they cannot easily or naturally learn the language that their parents speak. These parents face tough choices. Should they seek a cochlear implant for their child? If so, should they also learn to sign? As pediatricians, we need to help parents understand the risks and benefits of different approaches to parent–child communication when the child is deaf. The benefits of learning sign language clearly outweigh the risks. For parents and families who are willing and able, this approach seems clearly preferable to an approach that focuses solely on oral communication.

[a]The River School, Washington, District of Columbia; [b]Department of Otolaryngology, University of Southern California; [c]Institute for German Sign Language and Communication of the Deaf, University of Hamburg; raduate School, Gallaudet University; [e]Department of cation Studies, University of California at San Diego; Swarthmore College; [g]King's College London; and [h]Children's Mercy Hospital

Ms Mellon conceptualized the study and drafted the initial manuscript; Dr Niparko drafted the initial manuscript; Drs Scambler, Rathmann, Mathur, Humphries, and Lantos and Ms Handley helped design the study and drafted the initial manuscript; and Dr Napoli conceptualized the study, helped design the study, and drafted the initial manuscript. All authors approved the final manuscript as submitted.

www.pediatrics.org/cgi/doi/10.1542/peds.2014-1632

DOI: 10.1542/peds.2014-1632

Accepted for publication Aug 27, 2014

Address correspondence to John D. Lantos, MD, Children's Mercy Hospital, 2401 Gillham Rd, Kansas City, MO 64108. E-mail: jlantos@cmh.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

NTIAL CONFLICT OF INTEREST: The authors have cated they have no potential conflicts of interest to disclose.

Every year, 10 000 infants are born in the United States with sensorineural deafness. The incidence of sensorineural deafness is similar in most high-income countries and is higher in some low-income countries.[1] Many more infants become deaf before 2 years of age. In such situations, parents face difficult choices. Should they seek a cochlear implant (CI)? If so, should they also learn to sign and teach their child to do so? What about speech reading? There is no time to wait: Experts agree that a child must be exposed to an accessible language on a regular and frequent basis before 5 years of age to develop full language competence.

Prosthetic approaches to hearing restoration are being applied to younger children at increasing rates; some estimates indicate that more than one-half of US children with early-onset deafness have received a CI.[2,3] Children with CIs require intensive rehabilitation throughout childhood to learn to communicate orally. Even with this training, some children become better oral communicators than others. Some experts suggest that all deaf children, with or without a CI, should be taught a sign language. Others worry that learning a sign language will interfere with the extensive and intensive rehabilitation that is necessary to reap the most benefit from a CI or that asking parents to learn a new language to communicate with their child is too onerous.

To address these dilemmas, we asked experts in otolaryngology and language development to discuss the pros and cons of teaching sign language in addition to teaching oral language. Our experts included Nancy K. Mellon, founder and head of school at The River School in Washington, DC; John K. Niparko, MD, chair of the Department of Otolaryngology at the University of Southern California; Sascha Scambler, PhD, senior lecturer in Sociology, King's College London; Christian Rathmann, PhD, professor of sign languages and sign interpretation at the University of Hamburg; Gaurav Mathur, PhD, associate professor of linguistics at Gallaudet University; Tom Humphries, PhD, associate professor in the Department of Education Studies at the University of California at San diagnosed within the first few weeks of their lives, and they can receive a CI well before their first birthday. If parents decide a CI is the option to pursue, the first few months of the child's life are then occupied with tests, suitability assessments (for both the parents and children), and medical examinations. If the child is found to be a suitable recipient, the parents then face the phenomenally difficult decision about whether to have their child undergo implantation with the knowledge that there is no guarantee that the implant will work or that it will result in clear, intelligible speech. Parents are asked to decide whether to subject their child to a long operation with all of the associated risks and with no guarantee of success.

Parents are also often told that it would be best for their child if they, the parents, would learn a completely new, alien language. Sign language is clearly beneficial for deaf children, but families need time and space to adjust and come to terms with everything that is happening to them and to the reality of being the parents of a deaf child.

As the hearing parent of a profoundly deaf son with bilateral CIs, this issue is close to my heart.[12] My son has had his CIs for 5 years. He has age-appropriate oral/aural language skills and attends a mainstream primary school with support from a specialist teacher for the deaf. Despite his CIs and spoken language skills, he remains deaf and always will be. There are times when my son is unable to wear his implants or is unable to hear because of excessive background noise. CIs have the same limitations as other artificial hearing devices; they work best in close range with little background noise. Given these limitations, it is essential that we have a means of communicating with him, and he with us, when hearing is not an option. Research suggests that speech reading (lip reading plus facial expression) can be a useful additional tool but will only result, at best, in 60% accuracy with English language.[13] An alternative form of communication is therefore needed.

Sign language is a useful tool for the family of a deaf child regardless of whether the child is able to make full use of CIs. Learning sign language as a hearing family is not without problems, however. Once the child has had his or her CI activated, the family will be surrounded by professionals giving advice on language development, listening skills, ways to provide a language-rich environment, and methods of maximizing the potential of the technology the child has been provided with. Fitting signing into an already full schedule is difficult. This additional responsibility is before meeting the needs of other children within the family as well as one's own professional and career obligations.

Another important factor is that the level of signing support available to families depends on the area in which they live. Sign language lessons can be expensive if no subsidies are available. Signing clubs can also be intimidating places for hearing families. Some people in the deaf community are overtly hostile to CI users.

We, as a family, are in the process of learning sign language. We use it in conjunction with spoken English. We chose this approach because we need it when our son is not wearing his implants or is unable to hear sufficiently because of background noise. We also believe that it is important that he has access to sign language as a deaf person.

We have adopted the approach advocated by Perier who suggested that deaf children be given access to both oral/aural and signed language to enable them to make their own choice when old enough to do so.[14] This stance seems entirely reasonable, maximizing the opportunities available. It would, therefore, seem reasonable to encourage the family of a deaf child to sign with their child. It is essential that these families are given the support they need to do so, however. This support includes time and space to psychologically adjust to the new world in which they find themselves as well as practical and/or financial assistance.

We are well aware that CIs do not give our son normal hearing. We are also aware that he works considerably harder that his hearing peers to access sound and communicate by using oral/aural language. Ultimately, he will have to choose whether to continue with oral/aural language, to use sign language, or to use a combination of the 2 approaches. We have tried to give him the best foundations with which to make that decision.

CHRISTIAN RATHMANN, PHD, AND GAURAV MATHUR, PHD, COMMENTS:

There are 3 strong reasons to learn both signed and written/spoken language. First, a speech-only approach risks linguistic deprivation at a crucial period of development. The risk arises because of the variability in the spoken language development of deaf children who have CIs.[15] In contrast, both sign language and early reading are visually accessible to the deaf child. This bilingual approach virtually guarantees that the child will develop linguistic competence.

Second, bilingualism is beneficial. Bilingual children display better mental flexibility and cognitive control as well as more creative thinking, especially in problem solving.[16,17] These benefits extend to social and academic settings.

Third, sign language development correlates positively with written[18–21] and spoken[22] language development. No evidence has been found that the use of a visual deaf advocacy groups, local deaf and hard-of-hearing community centers, and local and/or state deaf services bureaus.

The family can begin sign language classes as soon as the diagnosis of deafness is confirmed. Some family members may become fluent signers, while others may always feel awkward at signing; the quality of the family's signing is far less important, however, than the fact that the family communicates with the child. Deaf children who sign with their hearing mothers exhibit early language expressiveness similar to hearing children of the same age[43] despite variability in the mothers' signing abilities.

Even families who become expert signers need to bring their deaf children to events where they can interact with a signing community because the proper development of language in all its complexity involves its use within a community. Furthermore, there are many things that deaf adults who sign tend to do with deaf children that hearing parents are unlikely to do without specific training. Deaf adults often use "child-directed signing,"[44–46] in which their eye gaze, methods of attention getting, rate and size of signing, and ways of making both signs and objects more visually accessible support the child's language development. Deaf adults often sign on objects, or on the child's body, or move objects into the child's line of vision, all spontaneously and with benefit to the child language learner.[47–49] This behavior allows the adult and child to interact in a more sophisticated way; deaf children of deaf parents quickly learn to alternate their gaze between a parent and a book or object, thus enhancing comprehension.[50] All deaf children could benefit from learning this technique because sign language skills are essential in successful use of interpreters in school. Furthermore, although there are many "ways" of being deaf, the deaf person who gains a positive attitude toward being deaf is on the road to establishing a healthy identity; interacting comfortably with other deaf people via a sign language may be a strong aid.[51]

JOHN D. LANTOS, MD, COMMENTS:

For more than a century, physicians, parents, educators, and others have debated how best to raise children who are deaf. Newborn screening for hearing loss and the development of CIs are the latest technological twists in this debate. However, they do not alter the fundamental ethical issue: Children need to learn language. They must learn it from parents, teachers, and their community. The more languages they learn, the better these children will be able to communicate. All children would be better off if their parents all spoke 5 languages and taught all 5 to their children; unfortunately, many parents do not speak 5 languages. Deaf children of hearing (and nonsigning) parents are unique among all children in the world in that they cannot easily or naturally learn the language that their parents speak. Hearing (and nonsigning) parents of deaf children are unique in that they are asked to learn, at least in a rudimentary way, a new and foreign language to communicate with their children. Some parents eagerly and willingly take on this challenge; others do not or cannot. As pediatricians, we need to keep up-to-date on the latest research, translate that research into language that parents can understand, and help them make choices that are best for their child, their family, and themselves. There are no risks to learning sign language along with spoken language, but there are well-defined benefits. For parents and families who are willing and able, this approach seems to be clearly preferable to an approach that focuses solely on oral communication.

ACKNOWLEDGEMENTS

We thank Poorna Kushalnager, PhD, of the Rochester Institute of Technology, and Scott Smith, MD, MPH, of the University of Rochester Medical Center for consulting on this research and reviewing drafts.

ABBREVIATION

CI: cochlear implant

REFERENCES

1. Olusanya BO, Wirz SL, Luxon LM. Community-based infant hearing screening for early detection of permanent hearing loss in Lagos, Nigeria: a cross-sectional study. *Bull World Health Organ.* 2008;86(12):956–963
2. Bradham T, Jones J. Cochlear implant candidacy in the United States: prevalence in children 12 months to 6 years of age. *Int J Pediatr Otorhinolaryngol.* 2008;72(7):1023–1028
3. Christiansen JB. Fifteen cochlear implant stories. *J Deaf Stud Deaf Educ.* 2014; 19(4):560–574
4. Mitchell R, Karchmer M. Chasing the mythical ten percent: Parental hearing status of deaf and hard of hearing students in the United States. *Sign Lang Stud.* 2004;4(2):138–163
5. Brusky AE. Making decisions for deaf children regarding cochlear implants: the legal ramifications of recognizing deafness as a culture rather than a disability. *Wis L Rev.* 1995:237–270
6. Mellon NK, Ouellette M, Greer T, Gates-Ulanet P. Achieving developmental synchrony in young children with hearing loss. *Trends Amplif.* 2009;13(4): 223–240
7. Tomblin JB, Barker BA, Hubbs S. Developmental constraints on language development in children with cochlear implants. *Int J Audiol.* 2007;46(9):512–523
8. Geers AE, Nicholas JG, Sedey AL. Language skills of children with early cochlear implantation. *Ear Hear.* 2003;24 (suppl 1):46S–58S
9. Tomasello M. *Constructing a Language: A Usage-Based Theory of Language Acquisition.* Cambridge, MA: Harvard University Press; 2003:21–31

in Hearing and Deaf Children. Berlin, Germany: Springer-Verlag; 1990:97–106

45. Holzrichter AS, Meier RP. Child-directed signing in American sign language. In: Chamberlain C, Morford JP, Mayberry RI, eds. *Language Acquisition By Eye*. Mahwah, NJ: Lawrence Erlbaum Associates; 2000:25–40
46. Masataka N. Motherese in a signed language. *Infant Behav Dev*. 1992;15: 453–460
47. Spencer PE, Bodner-Johnson BA, Gutfreund MK. Interacting with infants with a hearing loss: what can we learn from mothers who are deaf? *J Early Interv*. 1992;16:64–78
48. Harris M, Clibbens J, Chasin J, Tibbitts R. The social context of early sign language development. *First Lang*. 1989;9:81–97
49. Masataka N. The role of modality and input in the earliest stages of language acquisition: studies of Japanese sign language. In: Chamberlain C, Morford JP, Mayberry RI, eds. *Language Acquisition by Eye*. Mahwah, NJ: Lawrence Erlbaum Associates; 2000:3–24
50. Lieberman AM, Hatrak M, Mayberry RI. Learning to look for language: Development of joint attention in young deaf children. *Lang Learn Dev*. 2014;10(1)
51. Leigh I. *A Lens on Deaf Identities*. Oxford: Oxford University Press; 2009

HOW LONG DOES TWO MINUTES LAST?: The NCAA Men's Basketball tournament, otherwise known as "March Madness", recently concluded. Many of my friends commented on what an exciting tournament it had been and how much they enjoyed watching the games. While I enjoy college athletics, I do not enjoy watching basketball as much as other sports. One reason is that the games seem to stretch on for such a long time. Perhaps I feel this way because I like to watch soccer. Each half lasts 45 minutes, and I have a pretty good idea when the game will end. That is not the case with college basketball.

As reported in The Wall Street Journal *(Life: March 24, 2015), the last two minutes of a basketball game usually last much longer than that. In the first 52 games of the 2015 tournament, on average the last two minutes of the games took just over nine minutes to complete. In games in which the teams were separated by less than 10 points with two minutes to play, the last two minutes took on average 10.5 minutes to complete. Amazingly, in one game the last two minutes lasted 18.5 minutes. The games stretch on for several reasons, but chiefly because of intentional fouling and timeouts. A foul results in a stoppage of play of approximately 50 seconds. If a player fouls out, coaches are given an additional 20 seconds to make a substitution. Coaches can reserve timeouts. As there are many television timeouts during a tournament game, coaches may have several 30 second and even a 60 second timeout at their disposal late in the game. In one game, five timeouts were called in the last two minutes. Three were called with only two seconds remaining in the game.*

So, while March Madness can be a lot of fun, the way the last two minutes of the game can stretch on for such a long time seems not much fun at all.

Noted by WVR, MD

Compelling Evidence Supports Early Implantation

By Joanna Smith, MS; Jace Wolfe, PhD; and Shani Dettman, PhD

In the June 2016 installment of Tot 10, we reviewed the Longitudinal Outcomes of Children with Hearing Impairment (LOCHI) study and highlighted several lessons that pediatric hearing health care clinicians should glean from the important research taking place in Australia. This month, we are headed back to the land down under to explore the latest research in the outcomes of children with hearing loss. Over the past few years, researchers from the University of Melbourne have enlightened the global pediatric hearing health care community with groundbreaking findings in early hearing detection and intervention (EHDI). These studies are made possible by the HEARing Cooperative Research Centre (CRC), which facilitates research collaborations between universities, early intervention providers, and cochlear implant programs. Here's a look at the recent updates on pediatric hearing health care by experts in Melbourne.

10. THE ALL-TIME MOST COMPELLING EVIDENCE SUPPORTING THE BENEFITS OF EARLY IMPLANTATION

In a typical top 10 list, the most relevant item is found in the no. 1 spot. In this list, however, we have elected to lead off with the most impressive and far-reaching finding from Melbourne. The use of all caps in the heading above is not hyperbolic. Researchers from Melbourne have quite possibly provided the most convincing and powerful data supporting the provision of a cochlear implant (CI) to children as early as possible. In a multi-center study, Dettman, et al., described the outcomes of 403 children who had been diagnosed with congenital severe-to-profound hearing loss and normal-to-borderline-normal cognitive skills and who had received a CI(s) at age 6 or below (*Otol Neurotol.* 2016 Feb;37(2):e82). The children were divided into five groups based on age at implantation:

Group 1: 151 children implanted at 12 months of age or earlier
Group 2: 61 children implanted between 13 to 18 months of age
Group 3: 66 children implanted between 19 to 24 months of age
Group 4: 82 children implanted between 25 to 42 months of age
Group 5: 43 children implanted between 43 to 72 months of age

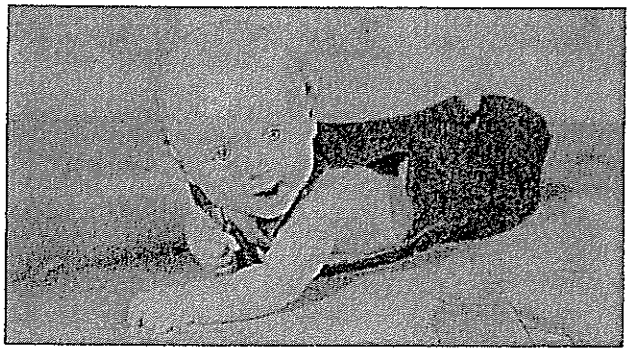
A variety of speech, language, and auditory skills were evaluated at the age when the children entered elementary school (i.e., 5 to 6 years old). For every speech, language, and auditory outcome measure, those who received their CI before turning 1 year old performed much better than the children who received their CI at 13 months of age or later. For instance, the mean standard score for a standardized assessment of vocabulary (Peabody Picture Vocabulary Test or PPVT) was 100 for children implanted before 1 year of age, whereas the mean standard score for children implanted between 13 to 18 months of age was 83. For all measures of language, children implanted before they turned 1 year old achieved a mean score within the normal range for children with normal hearing, whereas almost half or more of the children implanted between 13 to 18 months did not develop age-appropriate language abilities at school-entry age. Additionally, open-set speech recognition was generally excellent for the children who received their CI before turning 1 year old, whereas those who received their CI after 1 year of age generally achieved poorer open-set speech recognition. Across each of the five groups in the study, a stepwise reduction in post-implant outcomes occurred for each interval of delay in implantation.

From left, Dr. Wolfe, is the director of audiology at Hearts for Hearing and an adjunct assistant professor at the University of Oklahoma Health Sciences Center and Salus University. Ms. Smith is a founder and the executive director of Hearts for Hearing in Oklahoma City. Dr. Dettman is a senior lecturer at the University of Melbourne and a lead researcher at HEARing CRC.

Credit/Hearts for Hearing

9. Don't Get Left Behind!

In another article reviewing outcomes after cochlear implantation, Leigh, Dettman, and Dowell sought to identify the ideal age of implantation for children with congenital hearing loss (*Int J Audiol.* 2016;55 Suppl 2:S9). They looked at the rate of language



intensive therapy to mitigate their language delays. Once again, the vital importance of early implantation is apparent.

5. Dosage and Dollars

For children who were implanted at later ages, Chu and colleagues noted that families with greater socio-economic (SES) advantage had greater access to early intervention services (Audiology Australia, 2016). Presumably, families with greater financial resources were more likely to be able to take off from work to attend therapy appointments or arrange for another caregiver to take the child to therapy. Additionally, families with greater financial resources are likely to have access to transportation needed to get to therapy appointments. Given the importance of therapy in facilitating language outcomes, particularly for children who receive CIs at later ages, our EHDI programs must identify solutions to ensure that all children have access to early intervention services, regardless of their financial resources.

4. Does type of therapy make a difference?

Dettman and colleagues also examined vocabulary development and speech perception of eight children in auditory-verbal therapy programs, 23 children in auditory-oral programs, and eight children in bilingual-bicultural (sign language, total communication) programs (*Otol Neurotol.* 2013 Apr;34(3): 451). Children enrolled in auditory-verbal programs achieved better vocabulary development and speech perception than those enrolled in auditory-oral programs, whereas children enrolled in auditory-oral programs achieved better vocabulary development and speech perception than children in bilingual-bicultural programs. In short, the findings of Dettman and colleagues suggest that vocabulary development and speech perception are greater when early intervention services are focused on the development of listening and spoken language abilities (*Otol Neurotol.* 2013).

3. It's All in the Family

Creating a language-rich listening environment is key to optimizing listening and spoken language abilities, and the findings of Chu and colleagues suggest that the child's family is vital to creating a good model for listening and spoken language development (Audiology Australia, 2016). Chu, et al., measured family involvement in the child's life and reported a significant positive relationship between language outcomes and family involvement (Audiology Australia, 2016). In most cases, a child's family is likely to be his/her most consistent model of spoken language. As such, early interventionists must coach families to be superstar therapists.

2. Talking to Toddlers

Listening and spoken language specialists (LSLS) are uniquely equipped to coach parents on how to help their child develop optimal spoken language abilities. Ideally, every family should have access to an LSL specialist. Additionally, Choo and colleagues have explored the use of technology to enhance the support that a family provides for a child with hearing loss (*Stud Health Technol Inform* 2017;239:21). In their study, Choo, et al., provided families with Language Environment Analysis (LENA) language-tracking wearable devices so that they could track the quantity of spoken language to which the child was exposed at home (*Stud Health Technol Inform.* 2017). They also provided a mobile phone application (app) that had prompts, suggestions, and reminders of strategies that parents could use to facilitate the child's language development. The families in the study generally found the LENA and smartphone app to be useful in supporting the development of a language-rich listening environment. Although there will likely never be a great substitute for a good LSL specialist, professionals should embrace the use of modern technologies as supplemental tools.

1. Barriers to Earlier Implantation

Noting the critical importance of early implantation for infants with congenital severe-to-profound hearing loss, Dettman, Choo, and Dowell sought to identify the barriers that prevent early implantation for that population (*Int J Audiol.* 2016;55 Suppl 2:S64). Their study highlighted the importance of universal newborn hearing screening (UNHS) in lowering the age of implantation. Specifically, prior to the implementation of UNHS in Victoria, Australia, the mean age of implantation exceeded 3 years old, whereas after the implementation of UNHS, the mean age of implantation dropped to 0.95 years. In 2015, over 98 percent of children in the United States received a hearing screening at birth. Unfortunately, almost 40 percent of these children did not have documented results for diagnostic assessment, and almost 35 percent of children diagnosed with hearing loss did not have documented affirmation of having received early intervention services (CDC, 2015). EHDI programs must ensure that children who are at risk for hearing loss get the follow-up services they need.

Dettman, et al., also found that children whose families had greater SES advantage were more likely to receive a CI at an early age (*Int J Audiol.* 2016;55 Suppl 2:S64). Once again, our EHDI programs must ensure that expeditious diagnostic and intervention services are available to all children with hearing loss, regardless of their families' financial resources. Finally, Dettman and colleagues noted that relatively long delays existed between birth and diagnosis of hearing loss and between MRI assessment and cochlear implant surgery. System changes are necessary to optimize the efficiency of clinical pathways.

The message from Melbourne is loud and clear: Early implantation is a must for children with congenital severe-to-profound hearing loss. Pediatric hearing health professionals should take heed of these important studies and their findings when serving infants and children with hearing loss. ▣

Journal of Deaf Studies and Deaf Education

Theory/Review

Best Practices in Family-Centered Early Intervention for Children Who Are Deaf or Hard of Hearing: An International Consensus Statement

Mary Pat Moeller*[,1], Gwen Carr[2], Leeanne Seaver[3], Arlene Stredler-Brown[4], Daniel Holzinger[5,6]
[1]Center for Childhood Deafness
[2]U.K. Newborn Hearing Screening Programme
[3]Hands and Voices
[4]University of Colorado
[5]Konventhospital Barmherzige Brueder Linz
[6]Karl Franzens Universitaet Graz

Received June 4, 2013; revisions received June 4, 2013; accepted June 6, 2013

A diverse panel of experts convened in Bad Ischl, Austria, in June of 2012 for the purpose of coming to consensus on essential principles that guide family-centered early intervention with children who are deaf or hard of hearing (D/HH). The consensus panel included parents, deaf professionals, early intervention program leaders, early intervention specialists, and researchers from 10 nations. All participants had expertise in working with families of children who are D/HH, and focus was placed on identifying family-centered practice principles that are specific to partnering with these families. Panel members reported that the implementation of family-centered principles was uneven or inconsistent in their respective nations. During the consensus meeting, they identified 10 agreed-upon foundational principles. Following the conference, they worked to refine the principles and to develop a document that described the principles themselves, related program and provider behaviors, and evidence supporting their use (drawing upon studies from multiple disciplines and nations). The goal of this effort was to promote widespread implementation of validated, evidence-based principles for family-centered early intervention with children who are deaf and hard of hearing and their families.

Background and Purpose

In June 2012, an international panel of experts in early intervention convened in Bad Ischl, Austria, to come to consensus on best practice principles guiding the implementation of family-centered early interventions (FCEIs). The conference organizers were unified in the belief that family-centered practices optimize outcomes for children and families and that there was a need to clearly articulate agreed-upon tenets of this philosophy. Panel members were invited by Drs. Daniel Holzinger and Johannes Fellinger, and the consensus discussion was facilitated by Dr. Mary Pat Moeller. The panel included parents, deaf professionals, early intervention program leaders, early intervention specialists, and researchers from across the world. All participants had expertise in working with families of children who are deaf or hard of hearing (D/HH), and focus was placed on identifying family-centered practice principles that are specific to partnering with these families. Panel members observed that the majority of professionals in their respective countries agree on the major concepts that are foundational to FCEI.

---

*Correspondence should be sent to Mary Pat Moeller, Boys Town National Research Hospital, 555 N. 30th Street, Omaha, NE 68131 (e-mail: marypat.moeller@boystown.org).

doi:10.1093/deafed/ent034

Continued

Related Resources and Evidence Citations

1. Holte, L., Walker, E., Oleson, J., Spratford, M., Moeller, M. P., Roush, P., . . . Tomblin, J. B. (2012). Factors influencing follow-up to newborn hearing screening for infants who are hard-of-hearing. *American Journal of Audiology, 21*, 163–174.
2. Holzinger, D., Fellinger, J., & Beitel, C. (2011). Early onset of family centred intervention predicts language outcomes in children with hearing loss. *International Journal of Pediatric Otorhinolaryngology*, *75*, 256–260.
3. Kennedy, C. R., McCann, D. C., Campbell, M. J., Kimm, L., & Thornton, R. (2005). Universal newborn screening for permanent childhood hearing impairment: An 8-year follow-up of a controlled trial. *Lancet, 366*, 660–662.
4. Kennedy, C. R., McCann, D. C., Campbell, M. J., Law, C. M., Mullee, M., Petrou, S., . . . Stevenson, J. (2006). Language ability after early detection of permanent childhood hearing impairment. *New England Journal of Medicine, 354*, 2131–2141.
5. Moeller, M. P. (2000). Early intervention and language development in children who are deaf and hard of hearing. *Pediatrics, 106*, e43.
6. Russ, S. A., Dougherty, D., & Jagadish, P. (2010). Accelerating evidence into practice for the benefit of children with early hearing loss, *Pediatrics, 126*(Suppl. 1), S7–S18.
7. Semenov, Y. R., Yeh, S. T., Seshamani, M., Wang, N. Y., Tobey, E. A., Eisenberg, L. S., . . . CDaCI Investigative Team. (2013). Age-dependent cost-utility of pediatric cochlear implantation. *Ear and Hearing*, 35, 402–412. doi:10.1097/AUD.0b013e3182772c66
8. Spivak, L., Sokol, H., Auerbach, C., & Gershkovich, S. (2009). Newborn hearing screening follow-up: Factors affecting hearing aid fitting by 6 months of age. *American Journal of Audiology, 18*, 24–33.
9. Yoshinaga-Itano, C., & Apuzzo, M. L. (1998). Identification of hearing loss after age 18 months is not early enough. *American Annals of the Deaf, 143*, 380–387.
10. Yoshinaga-Itano, C., Baca, R., & Sedey, A. L. (2010). Describing the trajectory of language development in the presence of severe-to-profound hearing loss: A closer look at children with cochlear implants versus hearing aids. *Otology and Neurootology, 31*, 1268–1274.
11. Yoshinaga-Itano, C., Coulter, D., & Thomson, V. (2000). The Colorado Newborn Hearing Screening Project: Effects on speech and language development for children with hearing loss. *Journal of Perinatology*, *20*(Suppl. 1), S132–S137.
12. Yoshinaga-Itano, C., Coulter, D., & Thomson, V. (2001). Developmental outcomes of children with hearing loss born in Colorado hospitals with and without universal newborn hearing screening programs. *Seminars in Neonatology*, *6*, 521–529.
13. Yoshinaga-Itano, C., Sedey, A. L., Coulter, D. K., & Mehl, A. L. (1998). The language of early- and later-identified children with hearing loss. *Pediatrics, 102*, 1161–1171.

Evidence Reviews and Position Statements

1. Center for Allied Health Evidence Review Team. (2007). *A systematic review of the literature on EI for children with a permanent hearing loss*. Retrieved July 16, 2013, from http://www.health.qld.gov.au/healthyhearing/docs/background.pdf
2. Joint Committee on Infant Hearing. (2007). Year 2007 position statement: Principles and guidelines for early hearing detection and intervention programs. *Pediatrics, 120*, 898–921.
3. NHSP Programme Centre. (2010). Quality standards in the NHS newborn hearing screening programme. Retrieved July 16, 2013, from http://hearing.screening.nhs.uk/standardsandprotocols/
4. Joint Committee on Infant Hearing. (2013). Supplement to the JCIH 2007 position statement: Principles and guidelines for early intervention after confirmation that a child is deaf of hard of hearing. *Pediatrics*, 131, e1324–e1349. Retrieved July 16, 2013, from http://pediatrics.aappublications.org/content/early/2013/03/18/peds.2013-0008.full.pdf+html & http://www.asha.org/policy/PS2013-00339/
5. Schachter, H. M., Clifford, T. J., Fitzpatrick, E., Eatmon, S., MacKay, M., Showler, A., . . . Moher, D. (2002). *A systematic review of interventions for hearing loss in children*. Unpublished document, Health Canada, Ottawa, Ontario, Canada.
6. UK Government Department of Education and Skills. (2003). *Developing early intervention/support services for deaf children and their families: Executive summary* (LEA/0068/2003). Retrieved July 16, 2013, from www.ndcs.org.uk/document.rm?id=3746

Continued

Best Practice Principle	Provider and/or Program Behaviors
	13. Be a knowledgeable and credible early intervention partner with the family.
	14. Listen actively to family members and understand the relationship between their expressed concerns and the real needs that the family is identifying.
	15. Support families to feel optimistic about the child's future and to establish and maintain high expectations for the child's development.
	16. Support families in ways that match their distinctive nature (e.g., configuration, culture, beliefs, values, emotions, coping skills, and family dynamics).

Related Resources and Evidence Citations

1. American Speech-Language-Hearing Association. (2004). *Knowledge and skills needed by speech-language pathologists and audiologists to provide culturally and linguistically appropriate services* [Knowledge and skills]. Retrieved July 16, 2013, from http://www.asha.org/docs/html/KS2004-00215.html
2. American Speech-Language-Hearing Association. (2005). *Cultural competence* [Issues in ethics]. Retrieved July 16, 2013, from http://www.asha.org/docs/html/PI2011-00326.html
3. Brotherson, M. J., Summers, J. A., Naig, L. A., Kyzar, K., Friend, A., Epley, P., . . . Turnbull, A. P. (2010). Partnership patterns: Addressing emotional needs in early intervention. *Topics in Early Childhood Special Education*, *30*, 32–45.
4. Coker, T. R., Rodriguez, M. A., & Flores, G. (2010). Family-centered care for US children with special health care needs: Who gets it and why? *Pediatrics, 125*, 1159–1167.
5. Department of Education and Skills (UK). (2003). *Developing early intervention/support services for deaf children and their families: Executive summary*. (LEA/0068/2003). Retrieved July 16, 2013, from http://www.ndcs.org.uk/document.rm?id=3746
6. Dromi, E., & Ingber, S. (1999). Israeli mothers' expectations from early intervention with their preschool deaf children. *Journal of Deaf Studies and Deaf Education*, *4*, 50–68.
7. Dunst, C. J. (2006). Parent-mediated everyday child learning opportunities: I. Foundations and operationalization. *CASEinPoint*, *2*, 1–10. Retrieved July 16, 2013, from http://www.fipp.org/case/caseinpoint.html
8. Dunst, C. J., & Dempsey, I. (2007). Family–professional partnerships and parenting competence, confidence, and enjoyment. *International Journal of Disability, Development and Education*, *54*, 305–318.
9. Dunst, C. J., Trivette, C. M., & Deal, A. G. (1988). *Enabling and empowering families: Principles and guidelines for practice*. Cambridge, MA: Brookline Books.
10. Dunst, C. J., Trivette, C. M., Hamby, D. W., & Bruder, M. B. (2006). Influences of contrasting natural learning environment experiences on child, parent and family well-being. *Journal of Developmental and Physical Disabilities*, *18*, 235–250.
11. Dunst, C. J., Trivette, C. M., & Hamby, D. W. (2007). Meta-analysis of family-centered help-giving practices research. *Mental Retardation and Developmental Disabilities Research Reviews*, *13*, 370–378.
12. Guralnick, M. J. (2011). Why early intervention works: A systems perspective. *Infants and Young Children*, *24*, 6–28.
13. Hintermair, M. (2004). Sense of coherence: A relevant resource in the coping process of mothers of deaf and hard-of-hearing children? *Journal of Deaf Studies and Deaf Education*, *9*, 15–26.
14. Hintermair, M. (2006). Parental resources, parental stress, and socioemotional development of deaf and hard of hearing children. *Journal of Deaf Studies and Deaf Education*, *11*, 493–513.
15. Ingber, S., & Dromi, E. (2009). Demographics affecting parental expectations from early deaf intervention. *Deafness & Education International*, *11*, 83–111.
16. Ingber, S., & Dromi, E. (2010). Actual versus desired family-centered practice in early intervention for children with hearing loss. *Journal of Deaf Studies and Deaf Education*, *15*, 59–71.
17. Johnson DeConde, C. (2006). One year's growth in one year, expect no less. *Hands & Voices Communicator*, *9*, 3.
18. Mahoney, G. (2009). Relationship Focused Intervention (RFI): Enhancing the role of parents in children's developmental intervention. *International Journal of Early Childhood Special Education*, *1*, 79–94.
19. McBride, S., Brotherson, M. J., Joanning, H., Whiddon, D., & Demmitt, A. (1993). Implementation of family-centered services: Perceptions of families and professionals. *Journal of Early Intervention*, *7*, 414–430.
20. Mott, D. W., & Dunst, C. J. (2006). Influences of resource-based intervention practices on parent and child outcomes. *CASEinPoint*, 2, 1–8. Retrieved July 16, 2013, from http://www.fipp.org/case/caseinpoint.html

Continued

5. Carr, G., Young, A. M., Hall A. M., Hunt, R., McCracken, W. M., Skipp, A., & Tattersall, H. J. (2006). *Informed choice, families and deaf children: Professional handbook.* Retrieved July 16, 2013, from http://media.education.gov.uk/assets/files/pdf/i/informed%20choice%20families%20and%20deaf%20children%20-%20professional%20handbook.pdf
6. Joint Committee on Infant Hearing. (2013). Supplement to the JCIH 2007 position statement: Principles and guidelines for early intervention after confirmation that a child is deaf or hard of hearing. Pediatrics, 131, e1324–e1349. Retrieved July 16, 2013, from http://pediatrics.aappublications.org/content/early/2013/03/18/peds.2013-0008.full.pdf+html

Evidence Citations

1. Dunst, C. J., Trivette, C. M. & Deal, A. (1988). *Enabling and empowering families: Principles and guidelines for practice.* Cambridge, MA: Brookline Books.
2. Knoors, H. (2007). Educational responses to varying objectives of parents of deaf children: A Dutch perspective. *Journal of Deaf Studies and Deaf Education, 12,* 243–253.
3. Steinberg, A., Bain, L., Li, Y., Delgado, G., & Ruperto, V. (2003). Decisions Hispanic families make after the identification of deafness. *Journal of Deaf Studies and Deaf Education, 8,* 291–314.
4. Storbeck, C., & Calvert-Evans, J. (2008). Towards integrated practices in early detection of and intervention for deaf and hard of hearing children. *American Annals of the Deaf, 153,* 314–321.
5. Young, A. M. (2002). Factors affecting communication choice in the first year of life – assessing and understanding an on-going experience. *Deafness & Education International, 4,* 1–12.
6. Young, A. M., Carr, G., Hunt, R., McCracken, W., Skipp, A., & Tattersall, H. (2006). Informed choice and deaf children—Underpinning concepts and enduring challenges. *Journal of Deaf Studies and Deaf Education, 11,* 322–336.
7. Young, A. M., Jones, D., Starmer, C., & Sutherland, H. (2005). Issues and dilemmas in the production of standard information for parents of young deaf children—Parents' views. *Deafness & Education International, 7,* 63–76.

Best Practice Principle	Provider and/or Program Behaviors
Principle 4: Family Social & Emotional Support	**Service providers**
Families are connected to support systems so they can accrue the necessary knowledge and experiences that can enable them to function effectively on behalf of their D/HH children.	1. Build upon and use both formal (systematic parent–professional partnerships and parent-to-parent support networks) and informal (community organizations, friends, extended family, religious affiliations, play groups) support systems. 2. Understand the ways in which natural networks support the health and well-being of families. 3. Assist families to identify what resources their informal support networks can provide to meet specific needs/concerns. 4. Ensure that families have access to a range of supports so that supports can be individualized to the unique needs of the family. 5. Understand and actively model the practices of reciprocity in order to build networks. 6. Facilitate contacts between families and their communities as a way of strengthening informal capacity. 7. Ensure that all families have access to parent-to-parent support from other families of children who are D/HH. Recognize the key role of parent-to-parent support in promoting social and emotional well-being for families. 8. Support connections between families and adult role models who are D/HH. 9. Provide social and emotional supports to promote the well-being of parents and siblings. Inform parents about and refer them to professional mental health services, if considered appropriate. Recognize the importance of family well-being for child development.

Continued

Best Practice Principle	Provider and/or Program Behaviors
	3. Respond with sensitivity to the child's communicative attempts and consistently implement techniques known to facilitate language and communicative development. 4. Provide the child numerous opportunities to actively participate in a rich variety of communicative interactions. 5. Ensure that family communication is accessible to the child. 6. Adapt the level of their language input to nurture their child's language skills (i.e., sensitivity to the child's zone of proximal development). 7. Learn a sign language, if this is the family's choice. Service providers 1. To the extent possible, have fluency and expertise in the family's languages/culture. 2. Have fluency and expertise using the communication approach selected by the family. 3. Promote linguistic accessibility and home languages. 4. Respect and support families' decisions regarding communication methods. 5. Interact in a manner that is respectful of families' culture, beliefs, and attitudes. 6. Provide functional learning opportunities that are based on child and family routines, interest, and enjoyment. 7. Use adult teaching/mentoring strategies to assist families to learn new strengths and abilities, as well as build upon existing knowledge and skills. 8. Provide a supportive and encouraging context for learning. 9. Credit families for their engagement and provision of positive parent–child interactions. 10. Support families to use language stimulation principles known to promote early development. 11. Adhere to best practice principles in this document and published curricular guides, while flexibly meeting the needs of the child and family.

Related Resources and Evidence Citations

1. Aragon, M., & Yoshinaga-Itano, C. (2012). Using Language ENvironment Analysis to improve outcomes for children who are deaf or hard of hearing. *Seminars in Speech and Language*, *33*, 340–353.
2. Calderon, R. (2000). Parental involvement in deaf children's education programs as a predictor of child's language, early reading, and social-emotional development. *Journal of Deaf Studies and Deaf Education*, *5*, 140–155.
3. Cole, E. B., & Flexer, C. A. (2011). *Children with hearing loss: Developing listening and talking, Birth to six* (2nd ed.). San Diego, CA: Plural Publishing.
4. Cruz, I., Quittner, A. L., Marker, C., DesJardin, J. L., & CDaCI Investigative Team. (2013). Identification of effective strategies to promote language in deaf children with cochlear implants. *Child Development*, 84, 543–559.
5. Desjardin, J. L. (2005). Maternal perceptions of self-efficacy and involvement in the auditory development of young children with prelingual deafness. *Journal of Early Intervention*, *27*, 193–209.
6. DesJardin, J. L., Ambrose, S. E., & Eisenberg, L. S. (2009). Literacy skills in children with cochlear implants: The importance of early oral language and joint storybook reading. *Journal of Deaf Studies and Deaf Education*, *14*, 22–43.
7. Donovan, M. S., Bransford, J. D., & Pellegrino, J. W. (Eds.) (1999). *How people learn: Bridging research and practice.* Washington, DC: National Academy Press.

Continued

Best Practice Principle	Provider and/or Program Behaviors
	Early intervention systems 1. Strive to make all communication approaches accessible to families, which may require engaging in collaborative efforts among programs. 2. Actively support family choices regarding communicative approaches. 3. Use assessments in collaboration with families to determine when there may be a need for a change in or an enhancement to the chosen communication approach(es). 4. Offer communication approaches from providers with the highest level of knowledge and skill. For example: a. Indigenous sign languages are made available from native or fluent signers who are able to promote parental use of visual language to support the child's linguistic input and communicative development. b. Listening and spoken language services are made available from providers with high levels of specialized skills and knowledge, supporting the parents' ability to promote the child's auditory, linguistic, and communicative development.

Related Resources and Evidence Citations

1. AG Bell Academy for Listening and Spoken Language. Retrieved July 16, 2013, from http://www.agbell.org/AGBellAcademy/
2. Marge, D. K., & Marge, M. (2005). *Beyond newborn hearing screening: Meeting the educational and health care needs of infants and young children with hearing loss in America.* Report and recommendations of the 2004 National Consensus Conference on Effective Educational and Health Care Interventions for Infants and Young Children With Hearing Loss. Syracuse, NY: State University of New York, Upstate Medical University. Retrieved July 16, 2013, from http://www.upstate.edu/pmr/research/beyond_newborn.pdf
3. Moeller, M. P., Hoover, B., Peterson, B., & Stelmachowicz, P. G. (2009). Consistency of hearing aid use in infants with early-identified hearing loss. *American Journal of Audiology, 18,* 14–23.
4. Morford, J., & Mayberry, R. (2000). A reexamination of "early exposure" and its implications for language acquisition by eye. In C. Chamberlain, J. Morford, & R. Mayberry (Eds.), *Language acquisition by eye* (pp. 111–127). Mahwah, NJ: Erlbaum.
5. Napier, J., Leigh, G., & Nann, S. (2007). Teaching sign language to hearing parents of deaf children: An action research process. *Deafness & Education International, 9,* 83–100.
6. Schick, B., Williams, K., & Bolster, L. (1999). Skill levels of educational interpreters working in public schools. *Journal of Deaf Studies and Deaf Education, 4,* 144–155.
7. Joint Committee on Infant Hearing. (2013). Supplement to the JCIH 2007 position statement: Principles and guidelines for early intervention after confirmation that a child is deaf or hard of hearing. *Pediatrics, 131,* e1324–e1349. Retrieved July 16, 2013, from http://pediatrics.aappublications.org/content/early/2013/03/18/peds.2013-0008.full.pdf+html
8. Walker, E. A., Spratford, M., Moeller, M. P., Oleson, J., Ou, H., Roush, P., & Jacobs, S. (2013). Predictors of hearing aid use time in children with mild-to-severe hearing loss. *Language, Speech, and Hearing Services in Schools, 44,* 73–88.

Best Practice Principle	Provider and/or Program Behaviors
Principle 7: Qualified Providers Providers are well trained and have specialized knowledge and skills related to working with children who are D/HH and their families. Providers possess the core competencies to support families in optimizing the child's development and child–family well-being.	Early intervention programs 1. Identify the core knowledge and skills that are requisite for working with families whose children are D/HH. 2. Develop standards for what constitutes a quality provider and promote both provider assessment and ongoing training to ensure providers' knowledge and skills meet these standards. 3. Ensure that families have access to early intervention providers who have specialized knowledge and skills for working with families of infants and young children who are D/HH.

Continued

Best Practice Principle	Provider and/or Program Behaviors
	3. May also include, depending on the needs of the child, a physical therapist, occupational therapist, primary care provider (PCP), medical subspecialty providers (e.g., psychiatrist, neurologist, developmental pediatrician), and/or educator with expertise in deaf/blindness. 4. Offer families opportunities for meaningful interactions with adults who are D/HH. a. D/HH adults can serve as role models, consultants, and/or mentors to families, offering information and resources and demonstrate enriching language experiences. b. Involve D/HH community members on the team in culturally and linguistically sensitive ways. Early intervention team members 1. Are skilled at working across agencies and across disciplines. 2. Include and consider families as equal team members. 3. Are comfortable with role release and are able to use a variety of consulting techniques. 4. Work as collaborators and clearly understand each agency's resources. Early intervention programs 1. Implement transdisciplinary team models and practices. 2. Achieve transdisciplinary teamwork either within their own programs or through effective collaborations with other professionals and programs. 3. Promote good collaboration and communication between providers and agencies/organizations, whether or not there are multiple disciplines involved; seek out the expertise of other providers/agencies if a child is not making optimal progress and/or a program is no longer meeting child/family needs. 4. Strive to provide access to international supports and promote international information sharing.

Related Resources and Evidence Citations

1. Department of Education and Skills (UK). (2003). *Developing early intervention/support services for deaf children and their families: Executive summary* (LEA/0068/2003). Retrieved July 16, 2013, from http://www.ndcs.org.uk/document.rm?id=3746
2. Hill, P. (1993). The need for deaf adult role models in early intervention programs for deaf children. *Journal of Canadian Educators of the Hearing Impaired (ACEHI/ACEDA), 19,* 14–20.
3. Hintermair, M. (2000). Hearing impairment, social networks, and coping: The need for families with hearing-impaired children to relate to other parents and to hearing-impaired adults. *American Annals of the Deaf, 145*, 41–53.
4. Rogers, K. D., & Young, A. M. (2011). Being a Deaf role model: Deaf people's experiences of working with families and deaf young people. *Deafness & Education International, 13*, 2–16.
5. Rush, D. D., Shelden, M. L., & Hanft, B. E. (2003). Coaching families and colleagues: A process for collaboration in natural settings. *Infants and Young Children, 16*, 33–47.
6. Sjoblad, S., Harrison, M., Roush, J., & McWilliam, R. A. (2001). Parents' reactions and recommendations after diagnosis and hearing aid fitting. *American Journal of Audiology, 10*, 24–31.
7. Watkins, S., Pittman, P., & Walden, B. (1998). The deaf mentor experimental project for young children who are deaf and their families. *American Annals of the Deaf, 143*, 29–34.

Continued

9. Hermans, D., Knoors, H., & Verhoeven, L. (2010). Assessment of sign language development: The case of deaf children in the Netherlands. *Journal of Deaf Studies and Deaf Education*, *15*, 107–119.
10. Joint Committee on Infant Hearing. (2007). Year 2007 Position Statement: Principles and guidelines for early hearing detection and intervention programs. *Pediatrics*, *120*, 898–921.
11. Keilty, B., LaRocco, D. J., & Casell, F. B. (2009). Early interventionists' reports of authentic assessment methods through focus group research. *Topics in Early Childhood Special Education*, *28*, 244–256.
12. Niparko, J. K., Tobey, E. A., Thal, D. J., Eisenberg, L. S., Wang, N. Y., Quittner, A. L., Fink, N. E., & the CDaCI Investigative Team. (2010). Spoken language development in children following cochlear implantation. *JAMA*, 303, 1498–1506.
13. Raspa, M., Bailey, D. B. Jr., Olmsted, M. G., Nelson, R., Robinson, N., Simpson, M. E., . . . & Houts, R. (2010). Measuring family outcomes in early intervention: Findings from a large-scale assessment. *Exceptional Children*, *76*, 496–510.
14. Rush, D. D., Shelden, M. L., & Raab, M. (2008). A framework for reflective questioning when using a coaching interaction style. *CASEtools*, *4*, 1–7. Retrieved July 16, 2013, from http://www.fipp.org/case/casetools.html
15. Russ, S. A., Dougherty, D., & Jagadish, P. (2010). Accelerating evidence into practice for the benefit of children with early hearing loss. *Pediatrics*, *126(Suppl. 1)*, S7–S18.
16. Stredler-Brown, A., & Yoshinaga-Itano, C. (1994). F.A.M.I.L.Y. assessment: A multidisciplinary evaluation tool. In J. Roush & N. Matkin (Eds.), *Infants and toddlers with hearing loss* (pp. 45–49). Baltimore, MD: York Press.
17. Joint Committee on Infant Hearing. (2013). Supplement to the JCIH 2007 position statement: Principles and guidelines for early intervention after confirmation that a child is deaf or hard of hearing. *Pediatrics*, *131*, e1324–e1349. Retrieved July 16, 2013, from http://pediatrics.aappublications.org/content/early/2013/03/18/peds.2013-0008.full.pdf+html
18. Young, A. (2010). Parental satisfaction, service quality & outcomes. In R. C. Seewald & J. M. Bamford (Eds.), *A sound foundation through early amplification: Proceedings of the 2010 International Conference* (pp. 297–306). Stafa, Switzerland: Phonak AG.

Best Practice Principle	Provider and/or Program Behaviors
Principle 10: Program Monitoring	**Early intervention programs**
FCEI programs evaluate provider adherence to best practices and include quality assurance monitors for all program elements.	1. Use quality assurance measures to monitor program components. 2. Provide a means for ensuring/measuring that service providers, programs, and systems are aligned with the principles listed in this consensus document. 3. Include program-wide quality assurance measures, documenting child and family outcomes, knowledge and skills of the interventionists, and family benefit from services. 4. Include parent feedback mechanisms beyond satisfaction measures (e.g., convening focus groups, documentation of changes in knowledge and skill, and monitoring involvement and program components that foster it). 5. Use continuous assessment data and validate program practices through continual evaluation.

Related Resources and Evidence Citations

1. Bagatto, M. P., Moodie, S. T., Seewald, R. C., Bartlett, D. J., & Scollie, S. D. (2011). A critical review of audiological outcome measures for infants and children. *Trends in Amplification*, *15*, 23–33.
2. Dumas, J. E., Lynch, A. M., Laughlin, J. E., Phillips-Smith, E., & Prinz, R. J. (2001). Promoting intervention fidelity: Conceptual issues, methods, and preliminary results from the early alliance prevention trial. *American Journal of Preventive Medicine*, *20(Suppl. 1)*, 38–47.
3. Kovaleski, J. F., Gickling, E. E., Marrow, H., & Swank, P. R. (1999). High versus low implementation of instructional support teams: A case for maintaining program fidelity. *Remedial and Special Education*, *20*, 170–183.
4. Marge, D. K., & Marge, M. (2005). Beyond newborn hearing screening: Meeting the educational and health care needs of infants and young children with hearing loss in America. Report and recommendations of the 2004 National Consensus Conference on Effective Educational and Health Care Interventions for Infants and Young Children With Hearing Loss. Syracuse, NY: State University of New York, Upstate Medical University. Retrieved July 16, 2013, from http://www.upstate.edu/pmr/research/beyond_newborn.pdf

Consensus Conference Participants/Contributors

Benedict, Beth	United States	Gallaudet University
Binder, Doris	Austria	Institute for Neurology of Senses and Language
Carr, Gwen	United Kingdom	Newborn Hearing Screening Programme
Cutler, Jodi	Italy	Affrontiamo la Sordita' Insieme: Dai Genitori ai Genitori
DesGeorges, Janet	United States	Hands & Voices
Fellinger, Johannes	Austria	Institute for Neurology of Senses and Language, University of Vienna
Hintermair, Manfred	Germany	University of Education, Heidelberg
Holzinger, Daniel	Austria	Institute for Neurology of Senses and Language, Konventhospital Linz; Karl Franzens Universität Graz
Koroleva, Inna	Russia	Saint Petersburg State University
Lane, Susan	Canada	BC Early Hearing Program
McDonnell, Teresa	Ireland	Sharing the Journey
Moeller, Mary Pat	United States	Boys Town National Research Hospital
Müllegger-Trečiokaitė Daiva	Austria	Association of Parents and Friends of the Hearing-Impaired (Gemeinschaft Eltern und Freunde Hörgeschädigter).
Niparko, John	United States	University of Southern California
Pichler, Alexandra	Austria	Institute of Neurology of Senses and Language
Pittman, Paula	United States	Utah State University; Ski*Hi Institute
Porter, Ann	Australia	Aussie Deaf Kids
Seaver, Leeanne	United States	Hands & Voices
Storbeck, Claudine	South Africa	University of the Witwatersrand
Stredler-Brown, Arlene	United States	University of Colorado
Walker, Pauline	United Kingdom	National Deaf Children's Society
Windisch, Sabine	Austria	Institute of Neurology of Senses and Language
Yoshinaga-Itano, Christie	United States	University of Colorado
Young, Alys	United Kingdom	University of Manchester

Conflicts of Interest

No conflicts of interest were reported.

Acknowledgments

The authors thank Dr. Sophie Ambrose for her input on drafts of this manuscript.

VISUAL LANGUAGE & VISUAL LEARNING

OVERVIEW OF RESEARCH BRIEFS

RESEARCH BRIEFS

Learn what the research has to say about topics that are important to you and your deaf or hard of hearing child.

The National Science Foundation's Science of Learning Center, Visual Language and Visual Learning, VL2, publishes research briefs as a resource for parents, educators, and others who work with deaf and hard of hearing children. These briefs review important research findings, summarize relevant scholarship, and present informed, evidence-based suggestions for supporting language and learning from infancy.

This overview summarizes Research Briefs 1 through 11.

Full-length, downloadable versions in English, Spanish, or Mandarin are at vl2.gallaudet.edu/research/research-briefs. E-mail us at vl2@gallaudet.edu to request paper copies.

GALLAUDET
UNIVERSITY
VISUAL LANGUAGE
AND VISUAL LEARNING

NSF
National Science Foundation
Science of Learning Center on
Visual Language and
Visual Learning
Grant No. SBE-1041725

RESEARCH BRIEF 6

The Implications of Bimodal Bilingual Approaches for Children with Cochlear Implants

Julie Mitchiner, Ph.D., Debra Nussbaum, M.A., CCC-A, and Susanne Scott, M.S., CCC-A

Scholarship shows the advantages that a visual language such as American Sign Language provides to deaf children with cochlear implants. These advantages of visual language impact the child's linguistic, communicative, cognitive, academic, and psychosocial development and literacy. Neuroscience studies confirm that the brain has the ability to learn both visual and spoken languages, and that learning both a visual and a spoken language does not harm the development of either language. The early development of competence in a visual language can effectively facilitate a child's spoken language development.

RESEARCH BRIEF 7

The Benefits of Bilingualism: Impacts on Language and Cognitive Development

Sarah Fish, Ph.D. candidate, and Jill Morford, Ph.D.

Research offers more understanding about the linguistic and cognitive development of both deaf and hearing bilingual people. Studies show that bilingualism (regardless of which two languages are learned) promotes cognitive control processes and metalinguistic awareness. Bilinguals achieve language milestones on time, and bilingualism promotes language and literacy development.

RESEARCH BRIEF 8

ASL/English Bilingual Education: Models, Methodologies, and Strategies

Maribel Gárate, Ph.D.

Important models, methodologies, and strategies for an ASL/English bilingual education are provided. Early access and exposure to a natural language, whether signed or spoken, initiates the language acquisition process required for literacy development and bilingual competence. In order for a child to benefit from the cognitive advantages of bilingualism, the development of both languages needs to be fostered in all social and academic interactions. Developing competence in two languages requires deliberate and careful planning for the use of both languages.

RESEARCH BRIEF 9

Family Involvement in ASL Acquisition

Charlotte Enns, Ph.D., and Liana Price, M.Ed. candidate

There is a wealth of information about American Sign Language acquisition and how parents can facilitate ASL in the home. Early language acquisition, whether signed or spoken, contributes to improved social, cognitive, and literacy skills. Parental involvement is a critical factor in deaf children's language acquisition. Signed language development is similar to spoken language development, and there is no evidence to suggest that learning ASL will negatively influence a child's development of speech. Resources for parents are essential to achieve optimal language learning for deaf children, and this brief provides more information about the types of activities parents can use to facilitate their child's acquisition of ASL.

Early Sign Language Exposure and Cochlear Implantation Benefits

Ann E. Geers, PhD,[a] Christine M. Mitchell, ScM,[b] Andrea Warner-Czyz, PhD,[a]
Nae-Yuh Wang, PhD,[b] Laurie S. Eisenberg, PhD,[c] the CDaCI Investigative Team

abstract

BACKGROUND: Most children with hearing loss who receive cochlear implants (CI) learn spoken language, and parents must choose early on whether to use sign language to accompany speech at home. We address whether parents' use of sign language before and after CI positively influences auditory-only speech recognition, speech intelligibility, spoken language, and reading outcomes.

METHODS: Three groups of children with CIs from a nationwide database who differed in the duration of early sign language exposure provided in their homes were compared in their progress through elementary grades. The groups did not differ in demographic, auditory, or linguistic characteristics before implantation.

RESULTS: Children without early sign language exposure achieved better speech recognition skills over the first 3 years postimplant and exhibited a statistically significant advantage in spoken language and reading near the end of elementary grades over children exposed to sign language. Over 70% of children without sign language exposure achieved age-appropriate spoken language compared with only 39% of those exposed for 3 or more years. Early speech perception predicted speech intelligibility in middle elementary grades. Children without sign language exposure produced speech that was more intelligible (mean = 70%) than those exposed to sign language (mean = 51%).

CONCLUSIONS: This study provides the most compelling support yet available in CI literature for the benefits of spoken language input for promoting verbal development in children implanted by 3 years of age. Contrary to earlier published assertions, there was no advantage to parents' use of sign language either before or after CI.

---

[a]*Callier Center for Communication Disorders, University of Texas at Dallas, Dallas, Texas;* [b]*Welch Center for Prevention, Epidemiology and Clinical Research, Johns Hopkins University, Baltimore, Maryland; and* [c]*Tina and Rick Caruso Department of Otolaryngology, Keck School of Medicine of the University of Southern California, Los Angeles, California*

"Deaf" is capitalized here because it is customary when referring to people who culturally identify as deaf and embrace the values of the Deaf Community.

Dr Geers conceptualized and designed the analysis and drafted the initial manuscript; Ms Mitchell operationalized participant selection and definitions of key concepts through systematic retrieval of data from the CDaCI database, conducted all analyses, and reviewed and revised the manuscript; Dr Warner-Czyz provided speech intelligibility estimates, conducted initial comparisons of speech perception and production results, and reviewed and revised the manuscript; Dr Wang, principal investigator for the CDaCI Data Coordinating Center, developed the Speech Recognition Index in Quiet based on the speech perception hierarchy, provided guidance on statistical analytic approach, reviewed all analyses, and reviewed and revised the manuscript; Dr Eisenberg, principal investigator for the CDaCI project, conceived the speech perception hierarchy and reviewed and revised the manuscript; and all authors approved the full manuscript as submitted.

DOI: https://doi.org/10.1542/peds.2016-3489

WHAT'S KNOWN ON THIS SUBJECT: Cochlear implant use, even from a young age, does not insure that spoken language will develop normally. Controversy exists regarding whether sign language in combination with spoken language provides greater benefit from a cochlear implant than spoken language alone.

WHAT THIS STUDY ADDS: Outcomes were compared for early-implanted children from a prospective, national cohort differing in amount and duration of sign language use. Children exposed to sign language performed more poorly on auditory-only speech recognition, speech intelligibility, spoken language, and reading outcomes.

To cite: Geers AE, Mitchell CM, Warner-Czyz A, et al. Early Sign Language Exposure and Cochlear Implantation Benefits. *Pediatrics.* 2017;140(1):e20163489

TABLE 1 Baseline Characteristics of CI Recipients by Sign Language Exposure Group

Characteristic	No Sign ($n = 35$)	Short-term Sign ($n = 26$)	Long-term Sign ($n = 36$)	Total ($n = 97$)
Girl, n (%)	17 (49)	9 (35)	21 (58)	47 (48)
Household income, n (%) < $50 k	11 (32)	11 (44)	15 (42)	37 (39)
Maternal education, n (%) graduated college	24 (69)	13 (50)	18 (50)	55 (57)
Parent-infant program, n (%)**	14 (40)	20 (77)	23 (64)	57 (59)
Aided PTA better ear, dB[a]	75.1 (22.0)	73.1 (23.6)	77.8 (21.8)	75.6 (22.2)
Age at onset of deafness, mo	0.3 (1.2)	1.2 (3.4)	1.3 (3.6)	0.9 (2.9)
Amplification age, mo	9.4 (8.6)	10.8 (8.3)	11.5 (7.5)	10.6 (8.1)
Activation age, mo	19.3 (8.3)	22.1 (7.3)	22.8 (8.3)	21.4 (8.1)
Maternal sensitivity[b]	5.5 (0.7)	5.3 (0.7)	5.4 (0.7)	5.4 (0.7)
Baseline IQ[c]	94.5 (19.3)	97.4 (21.2)	98.5 (14.2)	96.8 (18.1)
Vocabulary[d]	14.7 (41.6)	10.8 (18.4)	16.2 (59.4)	14.2 (44.6)
Auditory perception[e]	9.8 (9.4)	7.0 (6.9)	5.8 (7.3)	7.5 (8.1)

Data are expressed as mean (SD) unless otherwise noted. PTA, pure-tone average.

[a] Average of available thresholds for tested frequencies 500, 1000, 2000, and 4000 Hz, where at least 1 frequency was tested (88/97 of the participants had 4-frequency pure-tone average).

[b] Maternal sensitivity scale from the Eunice Kennedy Shriver National Institute of Child Health and Human Development Early Childcare Study codes.

[c] Bayley Scales of Infant Development (BSID II) (Bayley[9]).

[d] Spoken words both understood and said on the MacArthur-Bates Communicative Development Inventory (MBCDI: Words and Gestures Form; Fenson et al[10]).

[e] Infant-Toddler Meaningful Auditory Integration Scale (IT-MAIS) (Robbins et al[11]).

** χ^2 P value = .01.

40 children who met the implant age criteria but were excluded due to lack of sufficient follow-up data.

Parents were also asked to estimate how much of each day sign language was used in the home, to separate frequent signers (>50% of the day) from infrequent signers (<50%). In families providing long-term sign language exposure, the proportion of frequent signers decreased from 63% at baseline or 12 months postimplant to 29% at 24 or 36 months postimplant.

Preimplant (Baseline) Characteristics

Table 1 summarizes sample characteristics at baseline. No statistically significant group differences emerged for sex, family income, percentage of mothers with college degrees, age at onset of deafness, age first aided, average aided hearing threshold, age at first CI activation, maternal sensitivity to communicative interactions,[7,8] nonverbal cognition,[9] spoken words rated as both understood and produced,[10] or auditory perceptual skills.[11] Families of children who used sign language were statistically significantly more likely to be enrolled in parent–infant intervention preimplant than nonsigning families ($P = .01$).

Postimplant Outcome Measures

Auditory development was tracked over the first 3 years after CI activation. Speech intelligibility was measured near the middle of elementary school (age = 6.0–8.9 years). Spoken language and reading outcomes were examined at a point near early (age = 5.0–7.9) and near late (age = 9.0–11.9) elementary grades. Tests were administered by certified audiologists and speech-language pathologists at each CI Center without previous knowledge of group assignment for this study.

Early Auditory Development

The Speech Recognition Index in Quiet (SRI-Q) combines multiple results from a hierarchical test battery into a single cumulative speech perception index, accounting for both the difficulty level and accuracy on a specific test.[12] SRI-Q values range from 0 to 600, with lower scores (0–100) representing parent report on the Meaningful Auditory Integration Scale.[11,13] Midrange scores (101–300) represent closed-set word recognition: Early Speech Perception Test[14] and Pediatric Speech Intelligibility Test.[15] Highest values (301–600) delineate open-set speech recognition: Lexical Neighborhood Test,[16] Phonetically-Balanced Word Lists-Kindergarten,[17] and Hearing in Noise Test for Children (administered in quiet).[18]

Speech Intelligibility

Audio recordings were made of each child imitating 36 sentences (3, 5, or 7 syllables long).[19] Each sentence contained a key word that was either predicted by context (Read the book) or not (Get the cake). Normal hearing adults with no previous experience listening to the speech of individuals who are deaf were instructed to write down as much of the sentence as they understood. Three judges provided responses to each sentence, and no judge listened to more than 1 sentence from the same child. Each overall intelligibility score represents the percent of 36 key words correctly understood across a total of 108 judgments.

Spoken Language

The Core Composite standardized score (SS) on the Comprehensive Assessment of Spoken Language (CASL)[20] was used to assess language in relation to hearing age-mates in the normative sample. All children without sign language exposure was 96.2, close to the normative mean of 100, whereas mean scores for the groups with sign language exposure remained delayed (83.8 and 76.4 for the short- and long-term exposure groups, respectively).

Reading

All 3 CI groups achieved comprehension scores on par with hearing children in the early elementary years, with no group differences reaching statistical significance. However, children without sign language exposure (mean SS = 94.9) exhibited a statistically significant reading advantage over the long-term sign language group (mean SS = 86.0) in later elementary grades ($P = .02$).

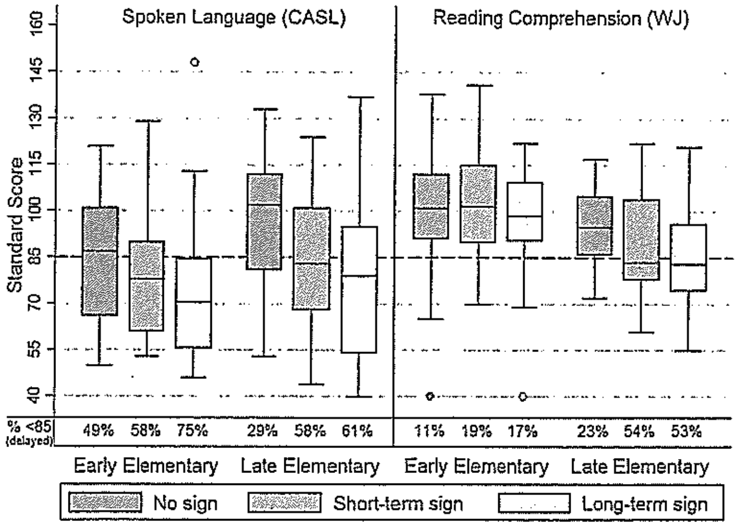


FIGURE 1
Language and reading scores of CI recipients by sign language exposure group near early and/or late elementary grades are depicted with box plots (25th, median, 75th percentiles; whiskers extend to highest and lowest value within ±1.5 × interquartile range). Percentages of children >1 SD less than the normative mean are listed at the bottom.

Is the Quantity of Sign Language Exposure Over the First 3 Years Postimplant Important for Age-Appropriate Language and Reading Development?

Short-term Versus Long-term Exposure

The bottom row of Fig 1 reports the percentage of children in each group scoring more than 1 SD less than their normal hearing age-mates, and the lower section of Table 3 compares the odds of children in the sign language groups exhibiting delays in spoken language or reading relative to the no sign group. Between early and late elementary grades, the percentage of children with delayed language decreased from 49% to 29% in the no sign language exposure group, remained constant at 58% in the short-term group, and decreased from 75% to 61% in the long-term group. The percentage of children with less-than-average reading scores increased from <20% in early elementary grades to over 50% in late elementary grades in the groups exposed to sign language. For children without sign language exposure, only 11% were delayed in early elementary grades, increasing to 23% in late elementary grades. By late elementary school, participants exposed to sign language, regardless of short- or long-term exposure,

TABLE 3 Mean Difference From Unadjusted Linear Regression and Odds Ratio (OR) From Unadjusted Logistic Regression Comparing CI Recipients Exposed to Sign Language to the No Sign (Reference) Group

	No Sign (Ref)	Short-term Sign vs No Sign (Ref)			Long-term Sign vs No Sign (Ref)		
Standard Scores	Mean SS	Mean Difference	95% Confidence Interval	*P*	Mean Difference	95% Confidence Interval	*P*
Spoken language							
Early elementary	85.6	−8.15	−18.65 to 2.35	.13	−12.63	−22.25 to −3.00	.01
Late elementary	96.2	−12.33	−24.20 to −0.45	.04	−19.81	−30.70 to −8.92	<.001
Reading comprehension							
Early elementary	101.1	0.11	−9.11 to 9.33	.98	−3.20	−11.65 to 5.26	.46
Late elementary	94.9	−6.51	−14.18 to 1.16	.10	−8.83	−15.86 to −1.80	.01
Delayed (SS <85)		OR	95% Confidence Interval	*P*	OR	95% Confidence Interval	*P*
Spoken language							
Early elementary		1.44	0.52 to 4.01	.48	3.18	1.16 to 8.67	.02
Late elementary		3.41	1.17 to 9.93	.03	3.93	1.45 to 10.61	.007
Reading comprehension							
Early elementary		1.85	0.44 to 7.69	.40	1.55	0.40 to 6.05	.53
Late elementary		3.94	1.31 to 11.87	.02	3.77	1.35 to 10.51	.01

significant in early elementary grades.[29] However, 8 years later, when 112 of the original 181 participants returned for assessment (ages 15.0–18.5 years),[30] those students who continued to rely on sign language in their teenage years had statistically significantly worse overall English language outcomes[31] as well as overall literacy levels.[32]

The relatively high proportion of children in the no sign language exposure group achieving scores within 1 SD of normal hearing age-mates replicated results observed previously for a nationwide sample of 60 children who had no early sign language exposure, received a CI within the same age range (ie, by 38 months), and were approximately the same age at assessment near early and late elementary grades.[33] The percentage of children exhibiting a language delay that persisted through elementary grades was strikingly similar in these 2 studies (29% and 32%), indicating generalizability of this result.

Parents in the long-term exposure group may have continued signing with their children because of their children's lack of spoken language progress, and sign language skills (not measured here) may have excelled. Measuring only spoken language outcomes may have underestimated total language abilities in spoken and signed language together. However, increasing lags in reading comprehension scores of children exposed to sign language suggest that their overall language skill was not sufficient to compensate for verbal achievement deficits.

Is the Quantity of Sign Language Exposure Over the First 3 Years Post-Implant Important for Age-Appropriate Spoken Language and Reading Development?

To examine this question, we first compared outcomes of children with short-term and long-term exposure to sign language with those from nonsigning families. Children with long-term sign language exposure were at a significant disadvantage compared with those from nonsigning families across all outcomes, whereas short-term exposure was associated with spoken language and reading delays that emerged only in late elementary grades. This result suggests a sensitive period may exist for early sensory experience and a focus on early auditory input capitalizing on phonologically relevant articulatory events plays an important and persisting role in verbal development.[34]

Second, we compared children in families with frequent parental sign language use with those of infrequent signers. Children whose parents reported using sign language more frequently did not achieve better outcomes than those of less frequent signers. It is possible that the sign exposure provided by these hearing parents was not sufficient to promote spoken language development. The diminished performance of children of hearing parents learning sign may not adequately represent the potential benefits of early sign language input from accomplished signers.[26] On the other hand, when this issue was addressed in "Language Choices for Deaf Infants: Advice for Parents Regarding Sign Languages,"[35] parents were encouraged to sign regardless of their skill level:

> *[P]arents do not have to be perfect language models or even very good language models…even if not fluent, the parents' language use is still important to the language development of the child… When a hearing mother signs with her deaf child, the child shows early language expressiveness on a par with hearing peers regardless of her signing abilities (p2).*

Results of the current investigation indicate that hearing parents' attempts to expose their child to sign language more frequently or for longer periods of time did not benefit, and may have detracted from, development of auditory, speech, and spoken language skills. However, the proportion of parents using sign language more than half of the day decreased from 63% at baseline or 12 months post implant to 29% at 24 or 36 months postimplant. We do not know whether more intensive use of sign language would have had different outcomes.

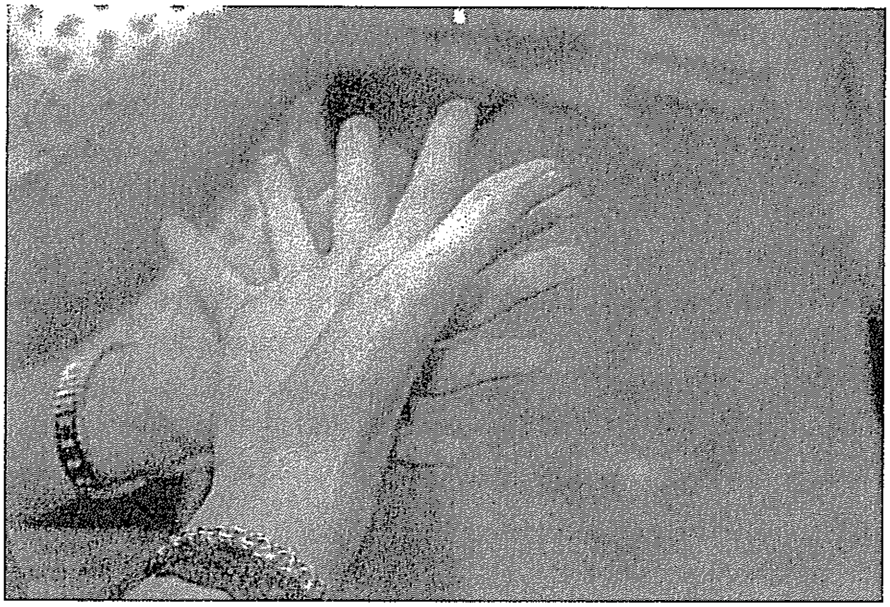
CONCLUSIONS

These results shed new light on a number of assertions regarding the benefits of early sign exposure cited in a review by Napoli et al.[2] (1) "[E]arly sign language, when used for a short time preimplant as a bridge to spoken language, cannot hurt and may be beneficial." Current results indicate no lasting advantage to using sign before and immediately after a CI, and these children were more likely to experience delayed language and reading in late elementary grades than children with no sign exposure. (2) "With sign language, the deaf child is able to travel through various social situations and communities without difficulty and not be confined to communicating only with family and friends, as is often the case for deaf children who have no knowledge of sign language." Children not exposed to sign language developed speech that was, on average, 70% intelligible to hearing listeners, suggesting they can use speech to communicate effectively in the wider hearing world. Children whose families signed for the first 3 years after CI averaged considerably less intelligible speech (50%), which likely affects the ease of spoken communication. (3) "[S]igning deaf children, with or without a CI, perform better on literacy skills." Children without sign language scored significantly better in reading in late elementary grades compared with children whose families provided early exposure to sign language.

4. Spencer L, Tomblin B. Speech production and spoken language development of children using "total communication". In: Spencer P, Marschark M, eds. *Advances in Spoken Language Development of Deaf and Hard-of-Hearing Children.* New York, NY: Oxford University Press; 2006:166–192
5. Fitzpatrick EM, Hamel C, Stevens A, et al. Sign language and spoken language for children with hearing loss: a systematic review. *Pediatrics.* 2016;137(1):e20151974
6. Fink NE, Wang NY, Visaya J, et al; CDACI Investigative Team. Childhood Development after Cochlear Implantation (CDaCI) study: design and baseline characteristics. *Cochlear Implants Int.* 2007;8(2):92–116
7. NICHD Early Child Care Research Network. Chronicity of maternal depressive symptoms, maternal sensitivity, and child functioning at 36 months. *Dev Psychol.* 1999;35(5):1297–1310
8. Quittner AL, Cruz I, Barker DH, Tobey E, Eisenberg LS, Niparko JK; Childhood Development after Cochlear Implantation Investigative Team. Effects of maternal sensitivity and cognitive and linguistic stimulation on cochlear implant users' language development over four years. *J Pediatr.* 2013;162(2):343–348.e3
9. Bayley N. *Bayley Scales of Infant Development.* 2nd ed. San Antonio, TX: The Psychological Corp; 1993
10. Fenson L, Dale P, Reznick J. *The MacArthur Communicative Development Inventories: User's Guide and Technical Manual.* San Diego, CA: Singular Press; 1993
11. Robbins AM, Renshaw JJ, Berry SW. Evaluating meaningful auditory integration in profoundly hearing-impaired children. *Am J Otol.* 1991;12(suppl):144–150
12. Wang NY, Eisenberg LS, Johnson KC, et al; CDaCI Investigative Team. Tracking development of speech recognition: longitudinal data from hierarchical assessments in the Childhood Development after Cochlear Implantation Study. *Otol Neurotol.* 2008;29(2):240–245
13. Zimmerman-Phillips S, Robbins AM, Osberger MJ. Assessing cochlear implant benefit in very young children. *Ann Otol Rhinol Laryngol Suppl.* 2000;185:42–43
14. Moog J, Geers A. *Early Speech Perception Test.* St Louis, MO: Central Institute for the Deaf; 1990
15. Jerger S, Jerger J. *Pediatric Speech Intelligibility Test.* St Louis, MO: Auditec of St Louis; 1984
16. Kirk KI, Pisoni DB, Osberger MJ. Lexical effects on spoken word recognition by pediatric cochlear implant users. *Ear Hear.* 1995;16(5):470–481
17. Haskins H. *A Phonetically Balanced Test of Speech Discrimination for Children.* Evanston, IL: Northwestern University; 1949
18. Gelnett D, Sumida A, Nilsson M, Soli SD. Development of the Hearing in Noise Test for Children (HINT-C). In: Annual meeting of the American Academy of Audiology; April, 1995; Dallas, TX
19. McGarr NS. The effect of context on the intelligibility of hearing and deaf children's speech. *Lang Speech.* 1981;24(pt 3):255–264
20. Carrow-Woodfolk E. *Comprehensive Assessment of Spoken Language.* Circle Pines, MN: American Guidance Service; 1999
21. Woodcock R, McGrew K, Mather N. *Woodcock-Johnson III Tests of Achievement.* Rolling Meadows, IL: Riverside Publishing Co; 2001
22. Mahshie J, Core C, Larsen MD. Auditory perception and production of speech feature contrasts by pediatric implant users. *Ear Hear.* 2015;36(6):653–663
23. Tobey EA, Geers AE, Brenner C, Altuna D, Gabbert G. Factors associated with development of speech production skills in children implanted by age five. *Ear Hear.* 2003;24(suppl 1):36S–45S
24. Tobey EA, Geers AE, Sundarrajan M, Lane J. Factors influencing elementary and high-school aged cochlear implant users. *Ear Hear.* 2011;32(1):27S–38S
25. Montag JL, AuBuchon AM, Pisoni DB, Kronenberger WG. Speech intelligibility in deaf children after long-term cochlear implant use. *J Speech Lang Hear Res.* 2014;57(6):2332–2343
26. Davidson K, Lillo-Martin D, Chen Pichler D. Spoken English language development among native signing children with cochlear implants. *J Deaf Stud Deaf Educ.* 2014;19(2):238–250
27. Geers A, Brenner C. Background and educational characteristics of prelingually deaf children implanted by five years of age. *Ear Hear.* 2003;24(suppl 1):2S–14S
28. Geers AE, Nicholas JG, Sedey AL. Language skills of children with early cochlear implantation. *Ear Hear.* 2003;24(suppl 1):46S–58S
29. Geers AE. Predictors of reading skill development in children with early cochlear implantation. *Ear Hear.* 2003;24(suppl 1):59S–68S
30. Geers AE, Brenner C, Tobey EA. Article 1: long-term outcomes of cochlear implantation in early childhood: sample characteristics and data collection methods. *Ear Hear.* 2011;32(suppl 1):2S–12S
31. Geers AE, Sedey AL. Language and verbal reasoning skills in adolescents with 10 or more years of cochlear implant experience. *Ear Hear.* 2011;32(suppl 1):39S–48S
32. Geers AE, Hayes H. Reading, writing, and phonological processing skills of adolescents with 10 or more years of cochlear implant experience. *Ear Hear.* 2011;32(suppl 1):49S–59S
33. Geers AE, Nicholas J, Tobey E, Davidson L. Persistent language delay versus late language emergence in children with early cochlear implantation. *J Speech Lang Hear Res.* 2016;59(1):155–170
34. Lachs L, Pisoni DB, Kirk KI. Use of audiovisual information in speech perception by prelingually deaf children with cochlear implants: a first report. *Ear Hear.* 2001;22(3):236–251
35. Humphries T, Kushalnagar P, Mathur G, et al. Language choices for deaf infants: advice for parents regarding sign languages. *Clin Pediatr (Phila).* 2016;55(6):513–517

UT Dallas Researchers Study Effectiveness of Sign Language in Deaf Children with Cochlear Implants

hearingreview.com/2017/06/ut-dallas-researchers-study-effectiveness-sign-language-deaf-children-cochlear-implants



In a new, multisite study of deaf children with cochlear implants, University of Texas at Dallas researchers have found that children with either no exposure or limited exposure to sign language end up with better auditory, speaking, and reading skills later. The paper is one of the first nationwide longitudinal studies of how sign language exposure affects young cochlear implant recipients, UT D[illegible] announced in a press release.

The topic of whether children with cochlear implants should begin their communication experience with sign language has been controversial. However, Andrea Warner-Czyz, assistant professor in the School of Behavioral and Brain Sciences (BBS) and co-author of the study, said the research clarifies outcomes for such decisions.

"If you want your deaf child to be an oral communicator and have reading and language measures on par with their normal hearing peers, then signing to them may not provide the easiest route to that outcome," she said.

The study recently was published in the journal *Pediatrics.*

A cochlear implant is a biomedical device surgically implanted in the cochlea to replace the function of the damaged inner ear. The Food and Drug Administration has approved cochlear implantation for children with severe to profound hearing loss as young as 1 year old, according to the UT Dallas release.

Ann Geers, a BBS research scientist who was the lead author of the study, said a major question for normal hearing parents and the professionals who work with pediatric cochlear implant users is w[illegible]r spoken language skills are best developed by focusing on the auditory speech signal or whether early exposure to an unambiguous visual language provides an important foundation for learning a spoken language.

MILESTONES

DEVELOPMENTAL CHECKLISTS

Development Milestones
Birth to Eight Years

Children grow and develop at different rates. However, most pass through an identifiable skill "set" along the way. Called developmental milestones, these are skills that build on each other, from simple to complex, during predictable time periods. For example, a child must babble single syllables (4-6 months) before multiple syllables (7-9 months) before speaking 2-word sentences (18-24 months). Milestone charts represent a "timetable" for mastery of these skills – a guide to "normal" development. Keep in mind, however, that children vary in their development and that an individual child may develop more quickly in one area than in another.

Below are general guidelines for hearing/auditory, cognitive, speech (sound production) and language (listening, understanding and using words) development. Most children will demonstrate these skills within six months of the times listed. In reality, these areas overlap, as development in one area is reinforced and enhanced by growth in others.

Abbreviations Used

dB	decibel
LF	low frequency
HF	high frequency
CV	consonant-vowel
R	receptive
E	expressive
MLU	Mean Length of Utterance

Birth - 3 Months

Hearing

Auditory detection/attention:
- Reacts to loud sounds with startle (Moro reflex)
- Reacts initially to sounds that are close by; between 2-4 months begins to develop distance hearing
- Responds to LF sounds (vowels) better than to HF sounds (consonants)
- By the end of the third month, an infant recognizes his mother's voice; stops crying to listen; listens to his/her own sounds
- Enjoys only a few noisemakers

Speech

- Infants are unable to control motor movements; therefore, most actions are reflexes. The most important reflex for speech development is the rhythmic suckswallow pattern, established three months prior to birth.
- Produces sounds such as fussing, crying, burping and cooing.
- Produces most sounds on exhalation with lengthy vowel-like sounds (back vowels)
- Makes single vowel sounds "ah" "eh" "uh" - one syllable
- Sustains cooing 15-20 seconds
- Different kinds of crying for pain and hunger

Language

- Attends to speaker's mouth or eyes
- Moves in response to voice
- Expresses feelings by cooing (one syllable - "ah"), gurgling (at back of throat) and crying (E)
- Exhibits differentiated crying (E)
- Vocalizes to caregiver's smile and voice and to express pleasure (E)

Cognition

- Responds to and imitates facial expressions of others (Meltzoff & Moore, 1977)
- Recognizes bottle or breast
- Briefly looks at objects

4 - 6 Months

Hearing

- Turns eyes/head to search for sounds
- Enjoys hearing own sounds (gurgling, laughing and babbling), auditory feedback loop develops
- Enjoys sound of musical toys (rattles, bells)
- Responds to voices by babbling
- Begins differentiating between environmental and speech sounds
- After hearing the mother's voice, cries if the face he/she then sees is not the mother's face
- Recognizes familiar sounds for feeding (e.g. a spoon in a dish)

Speech

- Vocalizes in self-initiated sound play
- Coos to music
- Vocalizes "ma" or "mu"
- Tries to repeat heard sound sequences
- Babbling begins
- Experiments and plays with sounds (yells, gurgles, blows raspberries and bubbles)
- Varies volume, pitch and rate (suprasegmentals)

Language

- Smiles at speaker (R)
- Vocalizes to objects (E)
- Laughs
- Says "mama/dada" without meaning (E)
- Babbles to gain attention (E)
- Shows pleasure/displeasure by vocalizing (E)

Cognition

- Explores with hands and mouth
- Smiles/vocalizes to mirror image; reaches out to mirror image
- Experiments with cause-effect: shakes rattle
- Reaches for objects

Development Milestones - Birth to 8 yrs

18 - 24 Months

Hearing

- Understands when called from another room
- Remembers what was heard in the correct order (e.g. "Put the fish in the water and the turtle on the grass.") (auditory sequencing)
- Follows a conversation when the topic is known
- Answers questions about a picture or book

Speech

- Jargon peaks at 18 months
- Correctly pronounces most vowels
- Uses /m/, /p/, /b/, /w/, /n/, /t/,/d/ correctly in the beginning of syllables and short words
- Two years: 25%-50% intelligibility
- Commonly uses 25 different phonemes
- Uses beginning consonants
- Word-final consonants emerge
- Pitch is lower and more stable

Language

- Follows 2-step related commands without visual cues (R)
- Points to 4+ body parts (on self or doll) (R)
- Uses question intonation to ask yes/no questions (E)
- Uses 2-word phrases/sentences frequently by 24 months ("more milk," "a doggie," "read book"); MLU 1.5-2.0 (E)
- Names most common objects (E)
- Understands questions "Where?" and "What's that?" (R)
- Begins using pronouns like "my," "me," "mine,"; refers to self by name (E)
- Uses 200+ words (E)

Cognition

- Finds objects even when hidden under 2-3 covers
- Likes to take things apart
- Stacks rings on peg in order of size; builds higher towers
- Turns one page at a time
- Activates mechanical toy
- Pretends plays about familiar situations

2 - 2½ Years

Hearing

- Answers questions about a story

Speech

- 60% of speech is intelligible by 30 months of age
- Continues to develop front consonants

Language

- Responds appropriately to location phrases ("in," "on") (R)
- Recognizes family member names (R)
- Uses "and" ("mommy and daddy") (E)
- Uses 3-word sentences frequently; MLU 2.0-2.5 (E)
- Begins using verb endings (-ing) ("Mommy pushing") (E)
- Refers to self as "me" rather than by name (E)
- Asks simple questions ("Where ball?" "What Daddy doing?" "What color?") (E)
- Uses number + noun ("two doggie") (E)

Cognition

- Begins to sort by shapes and colors
- Names one color
- Begins make-believe play; dramatizes mother and baby
- Begins to understand functional concepts of familiar objects and part/whole concepts
- Shares toys

2½ - 3 Years

Hearing

- Begins making cognitive judgements about what was heard, e.g. "Tell me about your trip to Disney World." (auditory processing)
- Answers questions about an undisclosed but familiar topic

Speech

- Continues use of echolalia when difficulties in speech are encountered
- Exhibits repetitions, especially starters ("I" and first syllables)
- Speaks with a loud voice
- Increases range of pitch
- Consistently uses initial consonants (some are misarticulated); frequently omits or substitutes final consonants

Language

- Answers questions with "yes" or "no" (E)
- Understands the concepts of "one" and "all" (R)
- Uses subject pronoun: he (E)
- Asks "What happened?" (E)
- Uses "gonna" and "wanna" (E)
- Uses 3-4 word sentences; converses with self; MLU 2.5-3.0 (E)
- Shows interest in "why" and "how" explanations (R)

Cognition

- Matches an object in hand or in the room to a picture in a book
- Completes 5+ piece puzzle
- Counts 2-3 objects; knows more numbers (but not always in the right order)
- Remembers what happened yesterday
- Knows where things usually belong

Development Milestones - Birth to 8 yrs

4 - 5 Years

Hearing

- Recalls 5+ facts from a familiar story
- Identifies word that rhymes or doesn't rhyme in set of 3-4

Speech

- Five years: 98-100% intelligibility
- By age 5, the phonological processes of syllable deletion and fronting are surpressed
- The following consonants emerge: (/d^{3}/)-"j" as in jump, /v/, voiced(/∂/) and voiceless(/θ/) "th"

Language

- Asks what/who/where or why do questions (E)
- Asks whose (E)
- Uses does to ask yes/no questions (E)
- Converses with longer, more complex sentences, but still makes grammatical errors; MLU 4.5+ (E)
- Uses has, does, had (E)
- Uses because, when, if and so in clauses (E)
- Uses these and those (E)
- Uses before and after (E)
- Uses comparative adjectives ("small-smaller") (E)
- Answers "why" and "how" questions; replies to questions like "What is a house made of?" (E)
- By age 5, uses 2500 words (E)
- Ends conversations appropriately

Cognition

- Draws recognizable pictures; copies more complex figures (triangle)
- Likes cutting/pasting
- Knows own street and town
- Begins to relate clock time to daily schedule
- Identifies a problem, lists possible solutions verbally and chooses which one(s) are most appropriate
- Tells color of unseen object ("What color is an apple?")
- Categorizes, naming items without visual clues, e.g. animals, food, toys; decides own criteria for categories
- Predicts story from book cover
- Names penny, nickel and dime
- Knows days of the week

5 - 6 Years

Hearing

- Expansion of auditory understanding
- Can provide a word that rhymes with a given word
- Learns letter-sound associations

Speech

- By 6, 90% of children have mastered the following sounds in conversation: /t/, /r/, /ŋ/(ng), /l/
- Uses a variety of blends
- Self-monitors speech

Language

- Stabilizes correct usage of irregular plurals and past tense/ irregular verbs (E)
- Uses pronouns, propositions and articles correctly, consistently (E)
- Uses superlative -est (E)
- Uses -er to form nouns (teach/ teacher) (E)
- Uses future progressive: will be + verb + ___ing (E)
- Asks wh questions with does (E)
- Uses sentences with 8+ words; uses compound and complex sentences (E)
- Understands time sequences (what happened first, second, etc.) (R)
- Vocabulary: 2800+ words (R); 2500+ (E)

Cognition

- Says letters of alphabet
- Understands that letters written on a page represent spoken words
- Understands number concepts to "10"
- Rote counts to 30+
- Recognizes and can reproduce many shapes, letters and numbers
- Plays games by the rules
- Understands seasons of the year
- Begins to think about their own behavior/actions and to see consequences/explain situations
- Begins to read and write, distinguishing capitals and lowercase
- Uses invented spelling (e.g. color could be spelled "kulr") (E)
- Arranges objects in order, according to size
- Completes simple maze
- Adds, subtracts
- Comprehends directional commands - left/right

Learn the Signs. Act Early.

www.cdc.gov/Milestones
1-800-CDC-INFO (1-800-232-4636)

Adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

Special acknowledgements to Susan P. Berger, PhD; Jenny Burt, PhD; Margaret Greco, MD; Katie Green, MPH, CHES; Georgina Peacock, MD, MPH; Lara Robinson, PhD, MPH; Camille Smith, MS, EdS; Julia Whitney, BS; and Rebecca Wolf, MA.

Learn the Signs. Act Early.

Centers for Disease
Control and Prevention
www.cdc.gov/Milestones
1-800-CDC-INFO

Milestone Moments

Learn the Signs. Act Early.

You can follow your child's development by watching how he or she plays, learns, speaks, acts, and moves.

Look inside for milestones to watch for in your child and how you can help your child learn and grow.

Learn the Signs. Act Early.

Centers for Disease
Control and Prevention
www.cdc.gov/Milestones
1-800-CDC-INFO

Your Baby at 2 Months

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What babies do at this age

Social/Emotional

- ☐ Can briefly calm himself (may bring hands to mouth and suck on hand)
- ☐ Begins to smile at people
- ☐ Tries to look at parent

Language/Communication

- ☐ Coos, makes gurgling sounds
- ☐ Turns head toward sounds

Cognitive (learning, thinking, problem-solving)

- ☐ Pays attention to faces
- ☐ Begins to follow things with eyes and recognize people at a distance
- ☐ Begins to act bored (cries, fussy) if activity doesn't change

How you can help your baby's development

- → Cuddle, talk, and play with your baby during feeding, dressing, and bathing.
- → Help your baby learn to calm herself. It's okay for her to suck on her fingers.
- → Begin to help your baby get into a routine, such as sleeping at night more than in the day, and have regular schedules.
- → Getting in tune with your baby's likes and dislikes can help you feel more comfortable and confident.
- → Act excited and smile when your baby makes sounds.
- → Copy your baby's sounds sometimes, but also use clear language.
- → Pay attention to your baby's different cries so that you learn to know what he wants.
- → Talk, read, and sing to your baby.
- → Play peek-a-boo. Help your baby play peek-a-boo, too.
- → Place a baby-safe mirror in your baby's crib so she can look at herself.

Your Baby at 4 Months

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What babies do at this age

Social/Emotional

- ☐ Smiles spontaneously, especially at people
- ☐ Copies some movements and facial expressions, like smiling or frowning
- ☐ Likes to play with people and might cry when playing stops

Language/Communication

- ☐ Begins to babble
- ☐ Babbles with expression and copies sounds he hears
- ☐ Cries in different ways to show hunger, pain, or being tired

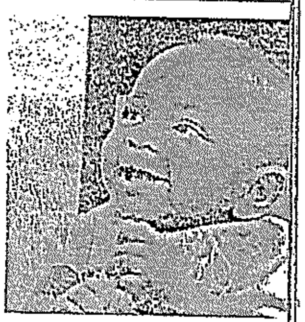
How you can help your baby's development

- → Hold and talk to your baby; smile and be cheerful while you do.
- → Set steady routines for sleeping and feeding.
- → Pay close attention to what your baby likes and doesn't like; you will know how best to meet his needs and what you can do to make your baby happy.
- → Copy your baby's sounds.
- → Act excited and smile when your baby makes sounds.
- → Have quiet play times when you read or sing to your baby.
- → Give age-appropriate toys to play with, such as rattles or colorful pictures.
- → Play games such as peek-a-boo.
- → Provide safe opportunities for your baby to reach for toys and explore his surroundings.
- → Put toys near your baby so that she can reach for them or kick her feet.

Your Baby at 6 Months

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What babies do at this age



Social/Emotional

- ☐ Knows familiar faces and begins to know if someone is a stranger
- ☐ Likes to play with others, especially parents
- ☐ Responds to other people's emotions and often seems happy
- ☐ Likes to look at self in a mirror

Language/Communication

- ☐ Responds to sounds by making sounds
- ☐ Strings vowels together when babbling ("ah," "eh," "oh") and likes taking turns with parent while making sounds
- ☐ Responds to own name
- ☐ Makes sounds to show joy and displeasure
- ☐ Begins to say consonant sounds (jabbering with "m," "b")

How you can help your baby's development

- → Play on the floor with your baby every day.
- → Learn to read your baby's moods. If he's happy, keep doing what you are doing. If he's upset, take a break and comfort your baby.
- → Show your baby how to comfort herself when she's upset. She may suck on her fingers to self soothe.
- → Use "reciprocal" play—when he smiles, you smile; when he makes sounds, you copy them.
- → Repeat your child's sounds and say simple words with those sounds. For example, if your child says "bah," say "bottle" or "book."
- → Read books to your child every day. Praise her when she babbles and "reads" too.
- → When your baby looks at something, point to it and talk about it.
- → When he drops a toy on the floor, pick it up and give it back. This game helps him learn cause and effect.
- → Read colorful picture books to your baby.

Your Baby at 9 Months

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What babies do at this age

Social/Emotional

- ☐ May be afraid of strangers
- ☐ May be clingy with familiar adults
- ☐ Has favorite toys

Language/Communication

- ☐ Understands "no"
- ☐ Makes a lot of different sounds like "mamamama" and "bababababa"
- ☐ Copies sounds and gestures of others
- ☐ Uses fingers to point at things

How you can help your baby's development

- → Pay attention to the way he reacts to new situations and people; try to continue to do things that make your baby happy and comfortable.
- → As she moves around more, stay close so she knows that you are near.
- → Continue with routines; they are especially important now.
- → Play games with "my turn, your turn."
- → Say what you think your baby is feeling. For example, say, "You are so sad, let's see if we can make you feel better."
- → Describe what your baby is looking at; for example, "red, round ball."
- → Talk about what your baby wants when he points at something.
- → Copy your baby's sounds and words.
- → Ask for behaviors that you want. For example, instead of saying "don't stand," say "time to sit."
- → Teach cause-and-effect by rolling balls back and forth, pushing toy cars and trucks, and putting blocks in and out of a container.

Your Child at 1 Year

What children do at this age

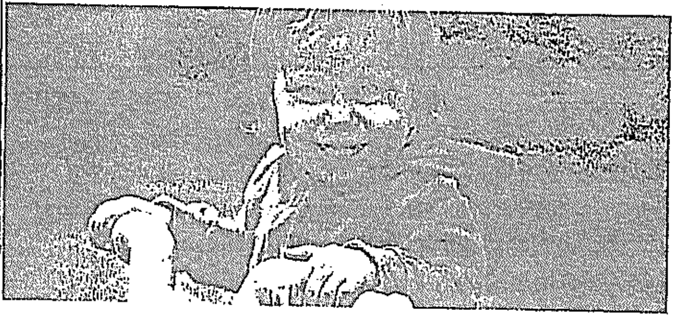
Social/Emotional

☐ Is shy or nervous with strangers
☐ Cries when mom or dad leaves
☐ Has favorite things and people
☐ Shows fear in some situations
☐ Hands you a book when he wants to hear a story
☐ Repeats sounds or actions to get attention
☐ Puts out arm or leg to help with dressing
☐ Plays games such as "peek-a-boo" and "pat-a-cake"

Language/Communication

☐ Responds to simple spoken requests
☐ Uses simple gestures, like shaking head "no" or waving "bye-bye"
☐ Makes sounds with changes in tone (sounds more like speech)
☐ Says "mama" and "dada" and exclamations like "uh-oh!"
☐ Tries to say words you say

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.



How you can help your child's development

→ Give your child time to get to know a new caregiver. Bring a favorite toy, stuffed animal, or blanket to help comfort your child.

→ In response to unwanted behaviors, say "no" firmly. Do not yell, spank, or give long explanations. A time out for 30 seconds to 1 minute might help redirect your child.

→ Give your child lots of hugs, kisses, and praise for good behavior.

→ Spend a lot more time encouraging wanted behaviors than punishing unwanted behaviors (4 times as much encouragement for wanted behaviors as redirection for unwanted behaviors).

→ Talk to your child about what you're doing. For example, "Mommy is washing your hands with a washcloth."

→ Read with your child every day. Have your child turn the pages. Take turns labeling pictures with your child.

→ Build on what your child says or tries to say, or what he points to. If he points to a truck and says "t" or "truck," say, "Yes, that's a big, blue truck."

Your Child at 18 Months

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What children do at this age

Social/Emotional

- ☐ Likes to hand things to others as play
- ☐ May have temper tantrums
- ☐ May be afraid of strangers
- ☐ Shows affection to familiar people
- ☐ Plays simple pretend, such as feeding a doll
- ☐ May cling to caregivers in new situations
- ☐ Points to show others something interesting
- ☐ Explores alone but with parent close by

Language/Communication

- ☐ Says several single words
- ☐ Says and shakes head "no"
- ☐ Points to show someone what he wants

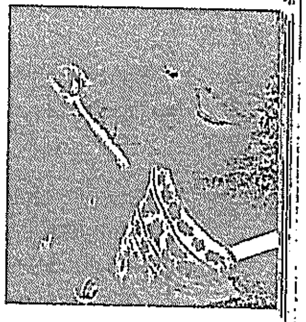
How you can help your child's development

- → Provide a safe, loving environment. It's important to be consistent and predictable.
- → Praise good behaviors more than you punish bad behaviors (use only very brief time outs).
- → Describe her emotions. For example, say, "You are happy when we read this book."
- → Encourage pretend play.
- → Encourage empathy. For example, when he sees a child who is sad, encourage him to hug or pat the other child.
- → Read books and talk about the pictures using simple words.
- → Copy your child's words.
- → Use words that describe feelings and emotions.
- → Use simple, clear phrases.
- → Ask simple questions.

Your Child at 2 Years

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What children do at this age



Social/Emotional

- ☐ Copies others, especially adults and older children
- ☐ Gets excited when with other children
- ☐ Shows more and more independence
- ☐ Shows defiant behavior (doing what he has been told not to)
- ☐ Plays mainly beside other children, but is beginning to include other children, such as in chase games

Language/Communication

- ☐ Points to things or pictures when they are named
- ☐ Knows names of familiar people and body parts
- ☐ Says sentences with 2 to 4 words
- ☐ Follows simple instructions
- ☐ Repeats words overheard in conversation
- ☐ Points to things in a book

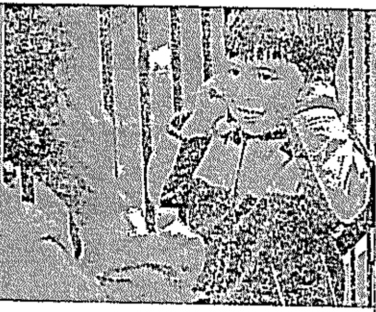
How you can help your child's development

- → Encourage your child to help with simple chores at home, like sweeping and making dinner. Praise your child for being a good helper.
- → At this age, children still play next to (not with) each other and don't share well. For play dates, give the children lots of toys to play with. Watch the children closely and step in if they fight or argue.
- → Give your child attention and praise when he follows instructions. Limit attention for defiant behavior. Spend a lot more time praising good behaviors than punishing bad ones.
- → Teach your child to identify and say body parts, animals, and other common things.
- → Do not correct your child when he says words incorrectly. Rather, say it correctly. For example, "That is a *ball*."
- → Encourage your child to say a word instead of pointing. If your child can't say the whole word ("milk"), give her the first sound ("m") to help. Over time, you can prompt your child to say the whole sentence — "I want milk."

Your Child at 3 Years

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What children do at this age



Social/Emotional

- ☐ Copies adults and friends
- ☐ Shows affection for friends without prompting
- ☐ Takes turns in games
- ☐ Shows concern for a crying friend
- ☐ Dresses and undresses self
- ☐ Understands the idea of "mine" and "his" or "hers"
- ☐ Shows a wide range of emotions
- ☐ Separates easily from mom and dad
- ☐ May get upset with major changes in routine

Language/Communication

- ☐ Follows instructions with 2 or 3 steps
- ☐ Can name most familiar things
- ☐ Understands words like "in," "on," and "under"
- ☐ Says first name, age, and sex
- ☐ Names a friend
- ☐ Talks well enough for strangers to understand most of the time
- ☐ Says words like "I," "me," "we," and "you" and some plurals (cars, dogs, cats)
- ☐ Carries on a conversation using 2 to 3 sentences

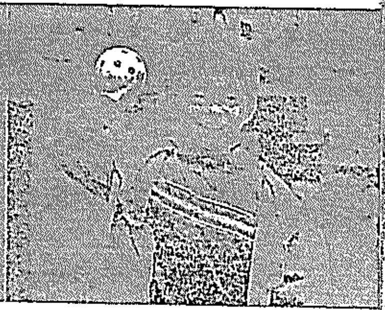
How you can help your child's development

- → Go to play groups with your child or other places where there are other children, to encourage getting along with others.
- → Work with your child to solve the problem when he is upset.
- → Talk about your child's emotions. For example, say, "I can tell you feel mad because you threw the puzzle piece." Encourage your child to identify feelings in books.
- → Set rules and limits for your child, and stick to them. If your child breaks a rule, give him a time out for 30 seconds to 1 minute in a chair or in his room. Praise your child for following the rules.
- → Give your child instructions with 2 or 3 steps. For example, "Go to your room and get your shoes and coat."
- → Read to your child every day. Ask your child to point to things in the pictures and repeat words after you.
- → Give your child an "activity box" with paper, crayons, and coloring books. Color and draw lines and shapes with your child.

Your Child at 4 Years

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.

What children do at this age

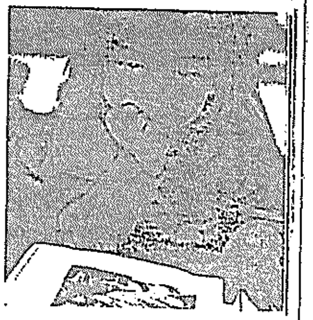


Social/Emotional

- ☐ Enjoys doing new things
- ☐ Is more and more creative with make-believe play
- ☐ Would rather play with other children than by himself
- ☐ Cooperates with other children
- ☐ Plays "Mom" or "Dad"
- ☐ Often can't tell what's real and what's make-believe
- ☐ Talks about what she likes and what she is interested in

Language/Communication

- ☐ Tells stories
- ☐ Sings a song or says a poem from memory such as the "Itsy Bitsy Spider" or the "Wheels on the Bus"
- ☐ Knows some basic rules of grammar, such as correctly using "he" and "she"
- ☐ Can say first and last name

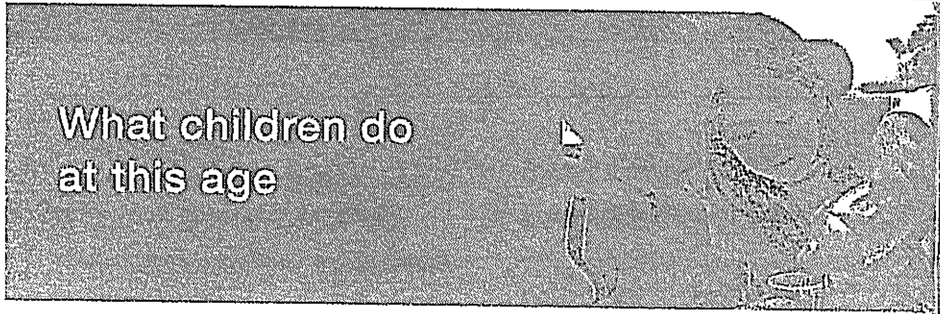


How you can help your child's development

- → Play make-believe with your child. Let her be the leader and copy what she is doing.
- → Suggest your child pretend play an upcoming event that might make him nervous, like going to preschool or staying overnight at a grandparent's house.
- → Give your child simple choices whenever you can. Let your child choose what to wear, play, or eat for a snack. Limit choices to 2 or 3.
- → During play dates, let your child solve her own problems with friends, but be nearby to help out if needed.
- → Encourage your child to use words, share toys, and take turns playing games of one another's choice.
- → Give your child toys to build imagination, like dress-up clothes, kitchen sets, and blocks.
- → Use good grammar when speaking to your child. Instead of "Mommy wants you to come here," say, "I want you to come here."

Your Child at 5 Years

Talk with your child's doctor at every visit about the milestones your child has reached and what to expect next.



What children do at this age

Social/Emotional

- ☐ Wants to please friends
- ☐ Wants to be like friends
- ☐ More likely to agree with rules
- ☐ Likes to sing, dance, and act
- ☐ Is aware of gender
- ☐ Can tell what's real and what's make-believe
- ☐ Shows more independence (for example, may visit a next-door neighbor by himself [adult supervision is still needed])
- ☐ Is sometimes demanding and sometimes very cooperative

Language/Communication

- ☐ Speaks very clearly
- ☐ Tells a simple story using full sentences
- ☐ Uses future tense; for example, "Grandma will be here."
- ☐ Says name and address

How you can help your child's development

- → Continue to arrange play dates, trips to the park, or play groups. Give your child more freedom to choose activities to play with friends, and let your child work out problems on her own.
- → Your child might start to talk back or use profanity (swear words) as a way to feel independent. Do not give a lot of attention to this talk, other than a brief time out. Instead, praise your child when he asks for things nicely and calmly takes "no" for an answer.
- → This is a good time to talk to your child about safe touch. No one should touch "private parts" except doctors or nurses during an exam or parents when they are trying to keep the child clean.
- → Teach your child her address and phone number.
- → When reading to your child, ask him to predict what will happen next in the story.
- → Encourage your child to "read" by looking at the pictures and telling the story.

Questions for my Child's Doctor

2 Months

4 Months

6 Months

9 Months

Learn the Signs. Act Early.

www.cdc.gov/Milestones
1-800-CDC-INFO (1-800-232-4636)

Adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

Special acknowledgements to Susan P. Berger, PhD; Jenny Burt, PhD; Margaret Greco, MD; Katie Green, MPH, CHES; Georgina Peacock, MD, MPH; Lara Robinson, PhD, MPH; Camille Smith, MS, EdS; Julia Whitney, BS; and Rebecca Wolf, MA.

Learn the Signs. Act Early.

Centers for Disease
Control and Prevention
www.cdc.gov/Milestones
1-800-CDC-INFO

Alabama

Public

Resources

Alabama Public Resources

1. Alabama Department of Public Health, Early Hearing Detection & Intervention (EHDI)
   www.infanthearing.org
2. Alabama Department of Public Health, Newborn Hearing Screening Program – Alabama Listening
   www.adph.org/newbornscreening
3. Alabama Department of Rehabilitation Services (ADRS) www.rehab.alabama.gov
4. Alabama Institute for Deaf and Blind (AIDB)
   www.aidb.org
5. Alabama's Early Intervention System (AEIS)
   www.rehab.alabama.gov
6. Children's Rehabilitation Service (CRS)
   www.rehab.alabama.gov

Alabama Department of Public Health

Alabama Early Hearing Detection & Intervention (EHDI)

www.infanthearing.org

Alabama Early Hearing Detection & Intervention (EHDI) Information

State Websites

- Alabama Department of Health—Newborn Hearing Screening Program
- State Stakeholder Meeting Agenda 2018 [PDF]

Early Hearing Detection & Intervention Contacts:

Mary Ellen Whigham, RN
Newborn Screening Nurse Supervisor
Alabama EHDI Coordinator
Bureau of Family Health Services
Alabama Department of Public Health
201 Monroe Street
Montgomery, AL 36104
Phone: 334-206-2944
Fax: 334-206-3791
Email Mary Ellen Whigham

Rachael Montgomery, BSN, RN
Newborn Screening Follow-up Nurse
Bureau of Family Health Services
Alabama Department of Public Health
PO Box 303017
Montgomery, AL 36130
Phone: 334-206-5955
Fax: 334-206-3791
Email Rachael Montgomery

Alabama Legislation

Alabama Guidelines

Alabama Grants

Information About EHDI Programs for Parents

- Materials Available from Alabama EHDI Program
- Communicate With Your Child Website and Brochure

For Health Care Providers

- Diagnostic Audiology & Pediatric Rehabilitation Services [PDF]

Alabama Dept. of Public Health Newborn Hearing Screening Program Alabama Listening

www.adph.org/newbornscreening

Newborn Hearing Screening

Alabama's Listening! is the Early Hearing Detection and Intervention Program (EHDI) for the Alabama Department of Public Health. The program was initiated in February 2001 to ensure all Alabama birthing facilities were able to screen for newborn hearing loss, which is the most commonly occurring birth disorder in the United States.

In 2008, Universal Newborn Hearing Screening (UNHS) became a mandated part of the Alabama Newborn Screening panel of disorders. The goal of the program is to create and maintain UNHS programs in Alabama to ensure early identification, treatment, and intervention of infants with hearing loss.

Any child who has been identified with hearing loss should be referred for early intervention services as early as possible. To utilize Alabama's Early Intervention System, fax a completed referral form to (334) 293-7393.

May is Better Hearing and Speech Month!

In celebration, the Office of Head Start's Early Childhood Hearing Outreach (ECHO) Initiative is joining the American Speech-Language-Hearing Association (ASHA) to host a coffee break webinar series to celebrate this year's theme "Communication for All." Refer to the Coffee Break Webinar Series information sheet for the schedule and instructions for viewing the presentations.

Congenital Cytomeglovirus (CMV) and Hearing Loss

Congenital CMV is the most common non-genetic cause of childhood sensorineural hearing loss. According to the CDC, about one out of every 150 babies are born with congenital CMV infection. However, only about one in five babies with congenital CMV infection will be sick from the virus or will have long-term health problems such as hearing loss.

Some babies without signs of congenital CMV infection at birth may have hearing loss. Hearing loss may be present at birth or may develop later in babies who passed their newborn hearing test. Congenital CMV infection can be diagnosed by testing a newborn baby's saliva, urine, or blood. Such specimens must be collected for testing within two to three weeks after the baby is born in order to confirm a diagnosis of congential CMV infection. For more information visit the CDC webpage.

Online Resource: Hearing Service Directory

Early Hearing Detection & Intervention Pediatric Audiology Links to Services (EHDI-PALS) is a new easy-to-use online directory that helps families find the nearest clinic providing the type of hearing service their child needs. Visit EHDI-PALS for more information.

Parent Resource: Online American Sign Language Class

Parents who have a deaf or hard of hearing child age 36 months or younger have the opportunity to learn American Sign Language (ASL) online at no cost. To participate in Sign It! parents must apply through the National Center for Hearing Assessment and Management (NCHAM).

Reporting Requirements for Hearing Screening

Each year, the Centers for Disease Control and Prevention's (CDC) Early Hearing Detection and Intervention Program (EHDI) conducts the Hearing Screening and Follow-up Survey (HSFS). This survey is designed to collect national data on the number of infants screened, diagnosed, and referred to early intervention for hearing loss, in an effort to monitor the state's efforts in meeting the national EHDI goals. For a comprehensive view of the data provided to the CDC and to see how Alabama compares to other states, you can access the Hearing Screening and Follow-up Survey at the CDC website.

Newborn Hearing Screening Resources

- Alabama Newborn Hearing Provider Directory

- Points to 1-3 body parts when asked

At 19 to 24 months:

- Understands approximately 300 words
- Puts two words together ("eat cookie") by 24 months of age
- Points to five body parts
- Responds to "yes" or "no" questions

Every Baby Should Have a Hearing Screening

Statistics show that between 1 to 6 newborns per 1,000 have some degree of hearing loss. Although these statistics indicate that it is unlikely that most babies will have a hearing loss, it is important to identify existing loss as soon as possible since the first two years of a baby's life are critical for learning speech and language. Because any hearing loss could affect a baby's speech and language development, diagnosis and appropriate intervention should occur by 6 months of age or earlier.

Hearing Screening Methods

There are two types of hearing screens that may be used to test for hearing loss. Both tests are very safe, take only minutes to perform, and are non-invasive. Most infants sleep though the hearing screening procedure.

- Automated Auditory Brainstem Response (AABR): A soft click is presented to each ear through miniature earphones while electrodes placed on the infant's forehead, neck, and shoulder record the response as it travels between the ear and brain. The response is analyzed to determine how well the inner ear and auditory nerve are working. This test method is recommended for high-risk newborns admitted to the NICU greater than five days and should be completed as a second test method if an infant is initially tested with AABR.
- Otoacoustic Emissions (OAE): Soft clicks or tones are presented into the infant's ear through a probe snugly placed in the entrance to the ear canal. A small microphone in the probe measures the echo that returns from the infant's ear. The OAE equipment analyzes this echo and determines how well the inner ear is working.

Hearing Screening Results

If an infant does not pass the first hearing screen, an attempt may be made to repeat the screen before hospital discharge, or it may be scheduled after going home. If an infant does not pass the second hearing screen, additional hearing tests should be administered under the care of an audiologist or otolaryngologist.

Although only a small percentage of infants who do not pass the hospital hearing screen actually have hearing loss, it is important for every baby to receive appropriate testing to adequately determine hearing ability. Also, because early intervention is so important to the development of infants with hearing loss, it is important that the testing not be delayed. It is recommended that all testing be completed by three months of age and that infants with hearing loss be enrolled in an intervention program as early as possible, but no later than six months of age. An audiologist and/or physician can provide information on local early intervention programs, or the information can be obtained by calling 1-800-CHILD-FIND (1-800-543-3098).

Retesting May Be Needed

The results of the a hearing test indicate an infant's hearing ability at the time of the test. Some children with recurrent ear infections, serious acute or chronic illness, or with a family history of hearing impairment may develop hearing loss later in life. If there are ever any concerns about a child's hearing ability, or speech and language

SPEECH AND LANGUAGE MILESTONES

BIRTH TO 3 MONTHS
- Startles to loud sounds
- Calmed by familiar voice

3 TO 6 MONTHS
- Turns head to search for a sound
- Uses eyes to look for sounds
- May squeal, whimper or gurgle
- Imitates own voice - "oohs" "ba-ba's"
- Enjoys rattles and other toys that make sounds

6 TO 10 MONTHS
- Turns head toward an interesting sound
- Babbles ("ma-ma", "ba-ba", "da-da")
- Begins to imitate speech sounds
- Understands "no," "bye-bye," and other common words

10 TO 15 MONTHS
- Points to or looks at familiar objects or people when asked to do so
- Imitates simple words and sounds
- Bounces or makes sounds when music is playing
- Enjoys games like "peek-a-boo" and "pat-a-cake"

15 TO 18 MONTHS
- Follows simple directions, such as "give me the ball"
- Answers when name is called from another room
- Responds to singing or music
- Understands simple "yes-no" questions
- Uses 10-20 words
- By 18 months, should use many more wor

WHERE CAN I GET MORE INFORMATION?

ALABAMA NEWBORN HEARING SCREENING PROGRAM

Bureau of Family Health Services
P.O. Box 303017
RSA Tower
201 Monroe Street
Suite 1350
Montgomery, Alabama
36130-3017
Phone: 334-206-2944
Toll Free: 1-866-928-6755
Fax: 334-206-3791
adph.org/newbornscreening

ALABAMA PUBLIC HEALTH

ALABAMA'S EARLY INTERVENTION SYSTEM

602 South Lawrence Street
Montgomery, Alabama 36104
1-800-543-3098
Fax: 334-[illegible]3-7393
www.rehab.state.al.us

Alabama's Listening
UNIVERSAL NEWBORN HEARING SCREENING

Universal Newborn Hearing Screening
Parent Information

Where can I get more information?

Alabama Newborn Hearing Screening Program
Bureau of Family Health Services
RSA Tower, 201 Monroe Street
Montgomery, Alabama 36104
Phone: 334-206-2944 or 334-206-5955 or 1-866-928-6755
Fax: 334-206-3063
www.adph.org

Alabama's Early Intervention System
2129 East South Boulevard
Montgomery, AL 36111
1-800-543-3098
Fax: 334-215-5035
www.rehab.state.al.us

Universal Newborn Hearing Screening Developmental Milestones in Hearing

Use this guide to see how your child is growing and learning

- Jumps or blinks to loud sounds
- Wakes up to loud sounds
- Quiets when he or she hears mom's voice

[illegible]

- Turns eyes or head to search for the sound source
- Responds to your voice even when you cannot be seen
- Enjoys toys that make sounds
- Starts babbling

- Responds to his or her name
- Turns head to the direction of the sound source
- Begins to imitate speech sounds

- Understands and follows simple directions
- Gives a block or toy to you when asked for it without pointing
- Imitates speech sounds of others

- Follows simple one step directions
- Uses 3-20 single words
- Points to 1-3 body parts when asked

[illegible]

- Understands approximately 300 words
- Puts two words together ("eat cookie") by 24 months of age
- Points to five body parts
- Responds to "yes" or "no" questions

FHS.536.011409.KB/DD

Universal Newborn Hearing Screening

ADPH
Alabama Department of Public Health
Bureau of Family Health Services

ALABAMA DEPARTMENT OF REHABILITATION SERVICES

ADRS

www.rehab.alabama.gov

ADRS

Services for Alabama's children and adults with disabilities

The Alabama Department of Rehabilitation Services (ADRS) *is the state agency serving children and adults with disabilities. Services are provided through 25 community-based offices, reaching residents in all 67 counties. In fiscal year 2018, the department served almost 45,000 Alabamians.*

ADRS provides services across a lifetime through four major programs: Alabama's Early Intervention System (EI), Children's Rehabilitation Service (CRS), Vocational Rehabilitation Service (VRS), and the State of Alabama Independent Living (SAIL) Service/Homebound.

Alabama's Early Intervention System
serving birth to age 3

- EI coordinates services statewide for infants and toddlers with developmental delays and disabilities, working with community service providers and other agencies throughout the state as Alabama's Early Intervention System to provide services to EI children and their families.
- *FY18: served 7,497 infants and toddlers and their families*

Children's Rehabilitation Service
serving birth to age 21

- Every county in Alabama is served through a network of 14 community-based offices. Through services such as counseling, specialized therapy, and assistive technology for children and families, as well as disability training for teachers and other school staff, CRS staff work closely with local school systems to enable children with special health care needs to participate fully in school.
- CRS provides medical and care coordination to children with special health care needs in homes, schools, and other community settings. Through the CRS Hemophilia Program serves Alabama's children and adults with this life-threatening blood disorder.
- *FY18: provided services to 10,784 children and their families*

Vocational Rehabilitation Service
serving teens and adults

- VRS, the department's largest division, provides specialized employment- and education-related services and training to assist teens and adults with disabilities in becoming employed. The VRS-Blind/Deaf program provides assistance to Alabamians statewide through its Blind Services, Deaf Services, and OASIS (Older Alabamians System of Information and Services) programs.
- *FY18: served 24,784 Alabamians with disabilities, assisting 3,479 in becoming successfully employed*
- Through OASIS, provided instruction and services to 1,058 senior citizens to assist them in maintaining or gaining independent living skills to allow them to remain independent in their homes.

State of Alabama Independent Living/Homebound
serving people with the most-significant disabilities

- SAIL provides a wide range of education and home-based services to assist people with the most-significant disabilities in leading independent lives at home, at school, or in the workplace through seven community-based offices located throughout the state.
- *FY18: provided services to 1,521 Alabamians*

Meet th

ALABAMA INSTITUTE FOR DEAF AND BLIND

AIDB

www.aidb.org

- Our Mission

To provide comprehensive education and service programs of superior quality to children and adults who are deaf, blind, deafblind and multidisabled and their families.

Our Purpose

To transform the lives of those we serve beyond expectations by refusing to let adversity limit any individual's potential.

We are limitless.

AIDB Alabama Institute for Deaf and Blind

Deaf. Blind. Limitless.

aidb.org

Limitless Opportunities

Alabama School for the Blind

The Alabama School for the Blind (ASB) offers traditional and innovative educational experiences, technology and opportunities to students who are blind or have low vision. Comprehensive academic programs from pre-K to 12th grade, arts and athletics programs and adaptive technology prepare students for college, careers and fulfilling lives.

Alabama School for the Deaf

Like ASB, the Alabama School for the Deaf (ASD) helps students who are deaf or have hearing loss. Students receive a full pre-K-12 education along with classes and resources for independent living so they're able to dream freely and then pursue those dreams.

Helen Keller School

Named after one of Alabama's most famous citizens, the Helen Keller School of Alabama (HKS) has been serving students with multiple disabilities since 1955. HKS focuses on the needs, abilities and potential of each individual student, building individualized programs to give them the greatest opportunity for success.

E.H. Gentry

The E.H. Gentry Facility helps adults and families pursue independence and personal success. Residential programs on AIDB's campus and outreach programs throughout the state offer academic services, employment training, assistive technology and independent living skills built around each individual's needs and personal and professional goals.

Regional Centers

AIDB's eight regional centers extend the services and care AIDB provides across the state of Alabama. From early-intervention services for infants with disabilities to assistive technology for seniors living with age-related hearing or vision loss to interpreter services for businesses embracing a diverse workforce, AIDB works within our communities to offer support when and where it's needed.

Tuscaloosa *serving Bibb, Choctaw, Fayette, Greene, Hale, Lamar, Marengo, Perry, Pickens, Sumter and Tuscaloosa counties*

Birmingham *serving Blount, Chilton, Jefferson, Shelby and Walker counties*

Mobile *serving Baldwin, Clarke, Conecuh, Escambia, Mobile, Monroe and Washington counties*

Shoals (Tuscumbia) *serving Colbert, Cullman, Franklin, Lauderdale, Lawrence, Marion, Morgan and Winston counties*

Talladega *serving Calhoun, Cherokee, Clay, Cleburne, Coosa, Etowah, Randolph, St. Clair and Talladega counties*

Huntsville *serving DeKalb, Jackson, Limestone, Madison and Marshall counties*

Montgomery *serving Autauga, Bullock, Butler, Chambers, Crenshaw, Dallas, Elmore, Lee, Lowndes, Macon, Montgomery, Pike, Russell, Tallapoosa and Wilcox counties*

Dothan *serving Barbour, Coffee, Covington, Dale, Geneva, Henry and Houston counties*

AIDB Alabama Institute for Deaf and Blind

Deaf. Blind. Limitless.

AIDB is an affirmative action/equal opportunity institution.

aidb.org

AIDB Alabama Institute for Deaf and Blind

Deaf. Blind. Limitless.

Communication Options for Deaf/Hard-of-Hearing Children

Approach	Definition	Basic Fundamentals	Language Acquisition	Amplification	Caregiver/Family Commitment
ASL/English Bilingual Approach (formerly the bilingual-bicultural approach)	American Sign Language (ASL) is a complex visual and spatial language that is complete with its own rules of grammar, sentence, and sign formation.	• Visual vs. Auditory • Provides full visual access to communication • Considered the first and natural language of the Deaf • Develops over time • No spoken or printed form • Different grammatical features • Uses fingerspelling	Primary language allowing the child to communicate before learning to listen/talk. English is considered a second language.	Amplification is not required; it is accepted, however neither encouraged nor discouraged.	The child needs access to models who are fluent ASL users.
	The goal of the bilingual approach is to provide an opportunity for children to be academically and linguistically competent in both English and ASL.	• Based on principles of second language acquisition • Develop connections with the language and culture of their families • Equal emphasis on developing competence in both languages	Language acquisition occurs simultaneously in 2 languages.	Amplification is not required; it is accepted, however neither encouraged nor discouraged.	Emersion into both languages is necessary.
Cued Speech	Cued Speech is a visual communication system. It is considered an oral system because in Cued Speech, hand movements are used as a supplement to speechreading. Specifically, the mouth movements of speech are combined with "cues" on the hand to make all of the sounds clear to a deaf person.	• Tool that can show any spoken language • Uses 8 handshapes for consonants and 4 positions for vowels • Always used with a spoken language • Cues do not carry meaning therefore it is not described as a language	Language is learned through amplification, speechreading, and use of cues.	Amplification is encouraged to maximize the use of remaining hearing.	Parents are primary teachers. Caregivers cue at all times.
Total Communication	Total Communication is an eclectic approach that combines a variety of formal and informal methods; both oral and manual. The philosophy of this approach is to use a combination of signs, speech, gestures, pictures, print, or other communication methods that take into account the child's strengths, needs, and learning styles.	• Any or all approaches can be used to develop language and cognitive skills • Visual and auditory input can tap into strengths and abilities of the child • Approaches used with TC: ASL, MCE, SimCom, Fingerspelling, Amplification, Auditory Training, Cued Speech, Print	Language is developed through a combination of experiences.	Amplification is strongly encouraged to maximize residual hearing.	Family is encouraged to learn the system the child uses.
Listening and Spoken Language	Auditory-oral education is designed to help children with hearing loss learn to talk well enough to communicate confidently and accurately solely through the use of speech.	• Capitalize on the child's hearing to the maximum extent possible • Emphasis on developing listening skills • Instruction directed toward developing spoken language • Early identification, maximum access to sound • Provides family support • Teaches parents as coaches • Expectation to listen and talk to be mainstreamed and fully independent in a hearing world	Language occurs through a combination of early consistent use of amplification and speechreading.	Early and consistent use is critical.	Parents and family must be highly involved.
	In Auditory-Verbal Therapy (AVT), parents work in partnership with an auditory-verbal therapist who guides in helping the child learn to communicate in spoken language by learning to listen.	• Hearing technology is critical for the development of listening and spoken communication • Active participation in AVT • First years of life are critical • Family coached by a team of highly qualified professionals • Promotes acquisition of spoken language through listening (without visual cues) • AVT provides education, guidance, advocacy, and family support	Developed through aided listening with the outcome to be mainstreamed as soon as possible.	Early, consistent, successful use of amplification is critical.	Caregivers are required to participate in all therapy sessions. Caregivers are the primary teachers who provide a language rich environment.

Ski-Hi Curriculum, Vol. 1&2, North Logan, Utah

The Moog Center for Deaf Education, St. Louis, MO

Choices in Deafness: A Parent's Guide to Communication Options, Sue Schwartz
Woodbine House, 2007

firstyears.org – UNC Chapel Hill Division of Speech and Hearing Sciences

ALABAMA'S
EARLY
INTERVENTION
SYSTEM

AEIS

www.rehab.alabama.gov

Alabama's Early Intervention System

The early years are critical to the success of any child, but are especially vital for a child who has a developmental delay or disability.

Created as Part C of the Individuals with Disabilities Education Act (IDEA), Alabama's Early Intervention System (AEIS) is the beginning of Pre-K services for children with disabilities and developmental delays; school readiness is its sole function.

AEIS provides supports and services for infants and toddlers birth through age 2 (0 to 36 months of age) who have a medical diagnosis that can delay normal development or who have a developmental delay causing the child to not meet developmental milestones.

Early intervention supports and services focus on teaching the parents and other caregivers ways to help the child learn and participate in everyday activities. AEIS also prepares infants and toddlers with disabilities and developmental delays for transition to the Alabama State Department of Education's and local school systems' preschool program for 3- to 5-year-olds by providing specialized instruction; physical, occupational, and speech-language therapies; service coordination; and parent and family education. Additionally, AEIS provides training to local school system teachers to ensure a smooth, seamless transition to school for infants and toddlers with developmental disabilities.

Early Intervention Resource Library

Employment Opportunities in AEIS

Early Intervention Personnel

- El program's contact information
- District Early Intervention Staff
- Governor's Interagency Coordinating Council (ICC Members)
- El Districts Map
- AEIS FY2018 SI Webinar Session 1 Application
- AEIS FY2018 SI Webinar Session 2 Application
- AEIS FY2018 SI Webinar Session 3 Application
- AEIS FY2018 SI Webinar Session 4 Application
- El Vendor Application revised 8-2017
- ICC Personnel Standards (approved 6.07.2017)

Reports

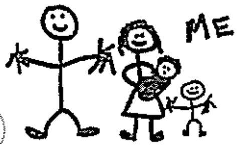
- FFY2016 Annual Performance Review
- CSPD Plan SFY 18-19
-
- Alabama's Early Intervention System program profiles

Documents/Forms

- Procedural Safeguard forms
- System of Payment forms
- A Vital Message About Alabama's Early Intervention System
- A Vital Message About AEIS (Spanish Version)
- Vital Message FAQ
- Transition
- Individualized Family Service Plan (IFSP) formats
- Verification Procedures revised 10.01.2017
- Verify Certificate FY2018 updated
- AEIS Child Outcome Summary
- Parent Power (developing a family support group)
- Eligible Family's Guide to the Early Intervention System
- Eligible Family's Guide to the Early Intervention System (Spanish)
- Provider Appraisal Review Handbook revised 10.01.2017
- Child Find Referral revised 11.2017
- Child Find Referral Information Sheet revised 11.2017
- Eligible Parent's Concern Fact Sheet
- Eligibility Determination Report (revised 12.2015)
- IFSP Report to Physician Form
- Model Progress Note
- Public Awareness/Training/Family Support Activity Report Form
- Help Me Grow Release of Information Form

ALABAMA EARLY INTERVENTION SYSTEM

DISTRICT OFFICE	COUNTIES SERVED
I. Huntsville 3000 Johnson Road Huntsville, AL 35805-5847 (256) 650-1702 1-800-283-9352	Colbert Cullman Franklin Jackson Lauderdale Lawrence Limestone Madison Marion Marshall Morgan Winston
II. Birmingham 234 Goodwin Crest Drive Suite 105 Birmingham, AL 35209 P.O. Box 19888 Birmingham, AL 35219-0888 (205) 290-4550 1-888-430-7423	Jefferson Shelby Walker
III. Anniston 1910 Coleman Road Anniston, AL 36207-6816 (256) 240-8802 1-800-289-9533	Blount Calhoun Cherokee Clay Cleburne DeKalb Etowah St. Clair Talladega
IV. Montgomery 602 S. Lawrence Street P.O. Box 4280 Montgomery, AL 36103-4280 (334) 293-7500 1-800-441-7607	Autauga Bullock Chambers Chilton Coosa Elmore Lee Lowndes Macon Montgomery Pike Randolph Russell Tallapoosa



A Vital Message about Alabama's Early Intervention System

Congress established the Early Intervention (EI) program in 1986, as part of The Individuals With Disabilities Education Act (IDEA), Part C, in recognition of "an urgent and substantial need" to: enhance the development of infants and toddlers with disabilities; reduce educational costs by minimizing the need for special education through EI; minimize the likelihood of institutionalization, and maximize independent living; and, enhance the capacity of families to meet their child's needs.

Alabama's EI System is committed to providing quality services for eligible children, birth to three, and their families. The focus of EI is to train, equip and support parents/caregivers in being the first and best teachers for their child.

Seven Core Values of Alabama's Early Intervention System (AEIS)

Family Centered

Services and supports are aimed at helping your family support and care for your child. Research indicates that a child's most effective teachers are those with whom they have a nurturing relationship and with whom they spend the most time, such as his or her mother, father, grandparent, childcare provider or primary caregiver. How these individuals interact with your child while feeding, diapering, playing, and cuddling will have the greatest impact on how your child develops and learns.

- *Developmentally Appropriate*

A team of professionals will assist you with understanding typical development and how your child is likely to develop based on factors which may include a medical diagnosis or delay. Services and home activities are designed to support your child's development. Your EI team will assist your family with the functional and developmental needs of your child and family "today".

- *Individualized*

If your child is eligible for services, your Service Coordinator will assist you and your family in developing an Individualized Family Service Plan (IFSP), which will include individualized outcomes based on needs and your priorities. From this plan, you and your Service Coordinator will identify a team of professionals, other family members, caregivers, and/or friends to help in reaching the outcomes included in the IFSP. This plan can and should change as your child grows and develops, and is based on your child's progress toward meeting these outcomes.

- *Provided in natural environment*

EI services are provided in a location where your child and family typically would be: home, childcare, playgrounds, etc. Natural environments also include the daily activities and routines of your family.

- *Trains/Equips the Parent/Caregiver*

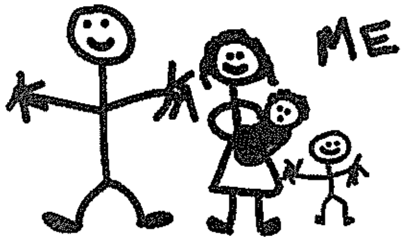
AEIS is a program that supports and trains families and caregivers. EI will aid and support your family while teaching you skills to meet your child's developmental needs. With the support of your team of professionals, together we will work to carry out these activities on a daily basis so that your child and your family will meet your outcomes.

- *Collaborative*

Your EI team will work closely with each other as well as with you and your child to reach outcomes. The team can also work with other service providers which might include your child's physician(s), therapists from other agencies, child care providers, community partners, and other specialists. If you or your physician feel more services are needed which are determined to be outside the scope of EI, your Service Coordinator will assist you in identifying resources that might supplement EI services, using either your public or private insurance.

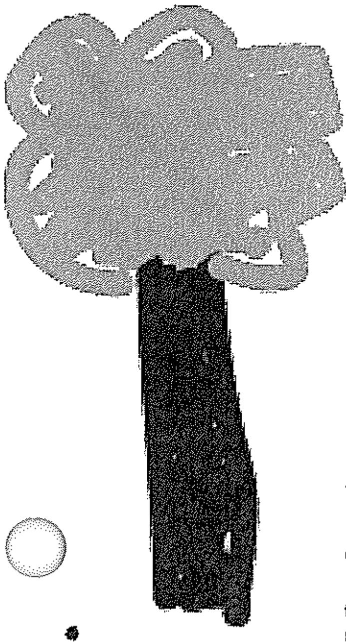
June 1, 2018

The **Pathway** of **Early Intervention**



1. Referral

- System of identifying all children (ages birth to 3) who may be eligible for Early Intervention (EI) services
- Fax (334-293-7393) or call (1-800-543-3098) referral information to Child Find, which is answered by staff from ADRS as the lead agency for early intervention
- Family contacted by Early Intervention service coordinator

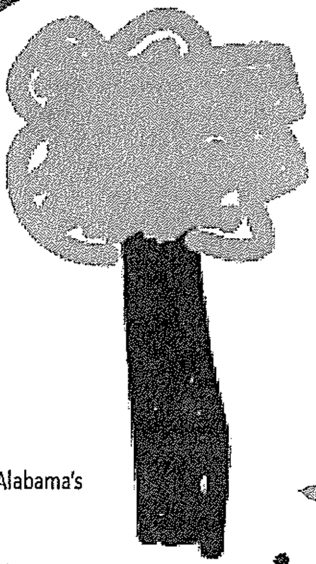


2. Service Coordination

- Every family involved in EI is assigned a service coordinator (SC)
- The SC assists and enables a child with a disability and family to receive services and rights required under Early Intervention
- The SC coordinates evaluations/assessments and all services required under Early Intervention

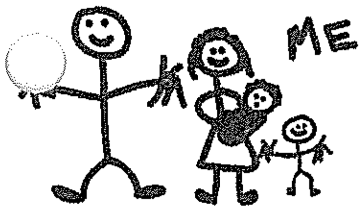
3. Child and Parents Rights

- Procedures to ensure the rights of each eligible child and family
- Provides protection for family and service providers throughout the family's involvement in Early Intervention
- The service coordinator is responsible for informing families of their rights
- Parents will be provided documents and forms as part of the process to protect confidentiality, release of information, consent to change services, etc.



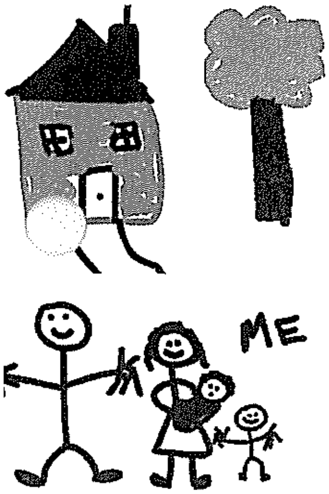
4. Evaluation/Assessment

- Process to determine if the child meets Alabama's eligibility criteria
- Parents must give written consent
- The child's functioning abilities in the five developmental areas (communication, social or emotional, physical to include vision/hearing, cognitive and adaptive) are reviewed
- Process is completed within 45 calendar days of referral
- If the child is eligible, then parents are offered a Voluntary Family Assessment



Alabama's **Early Intervention** System

Families are the foundation of our system.



FAQs *about* Alabama's **Early Intervention** System

What is Alabama's Early Intervention System?

Alabama's Early Intervention System (AEIS) is a coordinated, family-focused system of resources, supports and services for eligible infants and toddlers birth to 3 years who have developmental delays. AEIS is supported by federal, state, and private funding sources. It is a system of service delivery that is voluntary on behalf of the family, meaning even if the child is eligible for services, the parent must consent to participation in AEIS.

What is "developmental delay"?

The term "developmental delay" means that a child is not growing as expected physically and/or mentally. For example, infants and toddlers may be delayed in walking, talking, speaking, learning, or understanding. In Alabama, a child with a delay of 25 percent in one of the five developmental areas (physical [to include vision and hearing], communication, adaptive, cognitive, social or emotional) is eligible for early intervention. A child may also be eligible based on a diagnosed physical or mental condition that is likely to lead to a developmental delay.

When a child has a developmental delay, it can affect the whole family, and parents may face uncertainty about their child's future. AEIS helps families learn about resources, supports, and services that are available and how to care for a child who has developmental delays.

What is AEIS Child Find?

Child Find is Alabama's statewide effort to locate, identify, and evaluate children who may have developmental delays. Anyone may submit referral information or learn about available resources for infants and toddlers ages birth to 3 years by calling the AEIS Child Find number, 1-800-543-3098. For children 3 and older, contact your local school system or the State Department of Education.

To begin the process, anyone who contacts AEIS Child Find will be asked a few simple questions:

- What is the child's name, birthdate, and Social Security number?
- What is the name, phone number, and address of the parent?
- What is your name (if you are not the parent), phone number, and address?
- What is the reason for calling Child Find?

What happens after a referral is made?

Alabama's Early Intervention System provides evaluation and assessment to determine if the child meets the state's eligibility definition. Once the child has been evaluated and found to be eligible, the family, the service coordinator, and the service providers work together to develop an Individualized Family Service Plan (IFSP). The IFSP describes the supports and services necessary to meet the outcomes for the child and family.

Eighteen Months

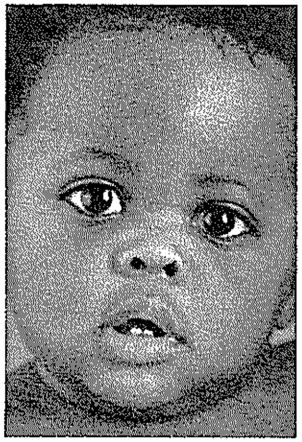
- ☐ Can buil[illegible]ower with three blocks
- ☐ Likes to c[illegible]b and take things apart
- ☐ Can say five to ten words
- ☐ Tries to put on shoes
- ☐ Drinks from cup held in both hands
- ☐ Likes to help a parent

Two Years

- ☐ Able to run
- ☐ Walks up/down stairs using alternate feet
- ☐ Says at least 50 words
- ☐ Sometimes uses two-word sentences
- ☐ Points to objects in a book

Three Years

- ☐ Can repeat two numbers in a row
- ☐ Knows his/her sex
- ☐ Dresses him/herself except for buttoning
- ☐ Can copy a circle
- ☐ Can follow the commands of on, under or behind
- ☐ Knows most parts of the body
- ☐ Jumps lifting both feet off the ground
- ☐ Can build a tower with nine blocks
- ☐ Verbalizes toilet needs



If you feel your young child, age birth to 3, is not learning or growing in the way you expect, call

Early Intervention CHILD FIND 1-800-543-3098

Alabama's Early Intervention System

a division of the

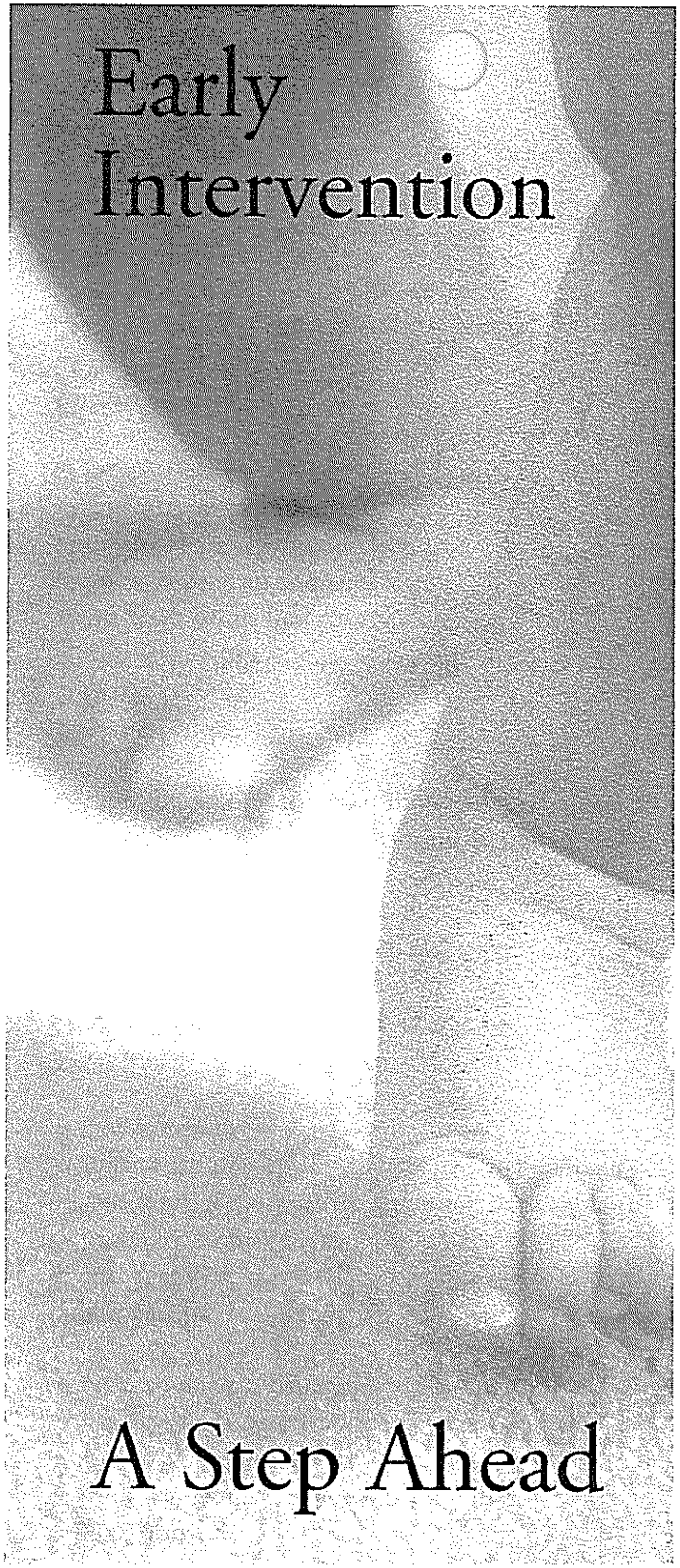
Alabama Department of
REHABILITATION SERVICES

602 S. Lawrence St.
Montgomery, AL 36104
(334) 293-7500 • 1-800-441-7607
www.rehab.alabama.gov

This brochure is provided by Alabama's Early Intervention System in conjunction with Blue Cross and Blue Shield of Alabama.

For more information about these organizations visit: www.rehab.state.al.us for Alabama's Early Intervention System and www.bcbsal.com for Blue Cross and Blue Shield of Alabama.

Early Intervention



A Step Ahead

ADRS

Services for Alabama's children and adults with disabilities

The Alabama Department of Rehabilitation Services (ADRS) *is the state agency serving children and adults with disabilities. Services are provided through 25 community-based offices, reaching residents in all 67 counties. In fiscal year 2018, the department served almost 45,000 Alabamians.*

ADRS provides services across a lifetime through four major programs: Alabama's Early Intervention System (EI), Children's Rehabilitation Service (CRS), Vocational Rehabilitation Service (VRS), and the State of Alabama Independent Living (SAIL) Service/Homebound.

Alabama's Early Intervention System
serving birth to age 3

- EI coordinates services statewide for infants and toddlers with developmental delays and disabilities, working with community service providers and other agencies throughout the state as Alabama's Early Intervention System to provide services to EI children and their families.

- *FY18: served 7,497 infants and toddlers and their families*

Children's Rehabilitation Service
serving birth to age 21

- Every county in Alabama is served through a network of 14 community-based offices. Through services such as counseling, specialized therapy, and assistive technology for children and families, as well as disability training for teachers and other school staff, CRS staff work closely with local school systems to enable children with special health care needs to participate fully in school.

- CRS provides medical and care coordination to children with special health care needs in homes, schools, and other community settings. Through the CRS Hemophilia Program serves Alabama's children and adults with this life-threatening blood disorder.

- *FY18: provided services to 10,784 children and their families*

Vocational Rehabilitation Service
serving teens and adults

- VRS, the department's largest division, provides specialized employment- and education-related services and training to assist teens and adults with disabilities in becoming employed. The VRS-Blind/Deaf program provides assistance to Alabamians statewide through its Blind Services, Deaf Services, and OASIS (Older Alabamians System of Information and Services) programs.

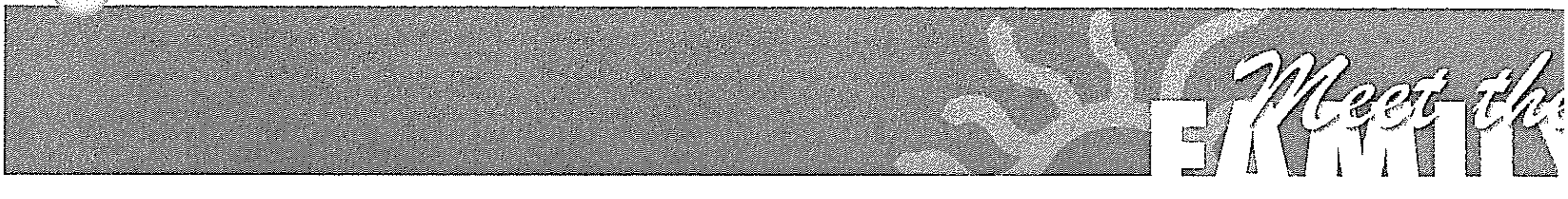
- *FY18: served 24,784 Alabamians with disabilities, assisting 3,479 in becoming successfully employed*

- Through OASIS, provided instruction and services to 1,058 senior citizens to assist them in maintaining or gaining independent living skills to allow them to remain independent in their homes.

State of Alabama Independent Living/Homebound
serving people with the most-significant disabilities

- SAIL provides a wide range of education and home-based services to assist people with the most-significant disabilities in leading independent lives at home, at school, or in the workplace through seven community-based offices located throughout the state.

- *FY18: provided services to 1,521 Alabamians*



CHILDREN'S REHABILITATION SERVICE

(CRS)

www.rehab.alabama.gov

Hearing Clinic

Purpose: To provide otolaryngology services and supporting audiological services as time permits to children with hearing loss and/or chronic ear disease.

Diagnoses: Chronic otitis media, ossicular chain abnormalities, tympanic membrane

perforation, atresia, other causes of conductive hearing loss, sensorineural hearing loss and others.

Goals: To provide otologic and audiologic care and follow-up in a timely manner.

Hearing Aid Clinic

Purpose: To evaluate, select, fit and dispense hearing aid(s), maintain hearing aids and accessories issued to CRS clients; to provide ongoing evaluation and monitoring of hearing status and opportunity for client/family/ teacher education regarding the use of amplification.

Diagnoses: Chronic otitis media, ossicular chain abnormalities, tympanic membrane perforation, atresia, other causes of conductive hearing loss and sensorineural hearing loss.

Goals: To insure that patients are fit with appropriate amplification devices, that they are utilizing the devices and know how to maintain their equipment on an ongoing basis and that the amplification devices remain functional.

Hearing Assessment Clinic

Purpose: To provide audiologic assessment for those children who refer from newborn hearing screening or have failed a previous hearing screen, or have been identified as having risk factors for developing later onset and / or progressive hearing loss.

Diagnoses: Physician referral not required for this clinic.

Goals: To insure that children with hearing loss or those at risk for hearing loss are identified and monitored appropriately as recommended by the Joint Committee on Infant Hearing (JCIH).

CHILDREN'S
Rehabilitation Service

Creating Partnerships ~ Building Futures

FAMILY-CENTERED, COMMUNITY-BASED

A division of the Alabama Department of Rehabilitation Services, CRS is a statewide organization of health care professionals who are committed to providing quality medical rehabilitation, care coordination and support services for children and adolescents with special health care needs and their families. Every county in Alabama is served through a network of 14 community-based offices.

ELIGIBILITY REQUIREMENTS

Any child or adolescent under 21 years of age, regardless of income, who is a resident of Alabama and has a special health care need may receive CRS services. Individuals with hemophilia are eligible for services beyond 21 years of age.

FAMILY PARTICIPATION

Families participate in the cost of treatment for their child based on a sliding fee schedule and by using any Medicaid or insurance coverage.

CRS participates in Alabama's Early Intervention System for infants and toddlers and their families. Referral can be made by calling any CRS local office.

Anyone dissatisfied with any action related to delivery or denial of services may appeal the action to the local district supervisor.

In the provision of services and in employment practices, the Alabama Department of Rehabilitation Services does not discriminate on the basis of race, sex, creed, national origin, religion, age or disability. This information is available in alternate format upon request. Rev. 3/19

Cooperation, understanding and teamwork are at the heart of CRS. Teams of physicians, nurses, social workers, physical therapists, audiologists, speech-language pathologists, occupational therapists and registered dietitians often are called upon to provide services to children and their families. Parents, family members, teachers, volunteers and others in the community are part of the child's rehabilitation.

CRS is committed to providing quality services within a system of care that is family-centered, community-based and coordinated with health, education and other resources.

CRS IN SCHOOLS

CRS staff members work closely with local school systems to enable children with special health care needs to participate fully in school. Through services such as counseling, specialized therapy, and assistive technology for children and families, as well as disability training for teachers and other school staff, CRS offers the support vital to classroom success.

CRS Programs

Clinical Medical Program

Medical and related services for individuals with:

- orthopedic disorders
- scoliosis
- limb deficiency
- juvenile rheumatoid arthritis
- cleft lip and palate
- spina bifida
- cerebral palsy
- visual impairments
- hearing loss
- cystic fibrosis
- seizures
- hemophilia
- neurological conditions
- neurosurgical conditions
- traumatic brain injury

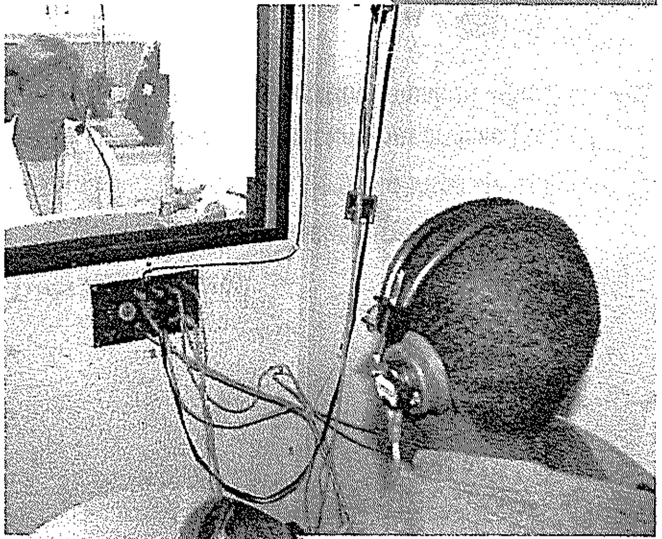
Clinical Evaluation Program

Clinical evaluations available to CRS children:

- Augmentative Communication Technology (ACT)
- Feeding
- Hearing Aid
- Teen Transition Clinic
- Seating, Positioning and Mobility
- Hearing Assessment Clinic
- Speech Pathology Clinic

Other CRS Programs

- Parent Connection Program
- Youth Connection Program
- Information and Referral Program
- Patient/Family Education Program
- Care Coordination Program



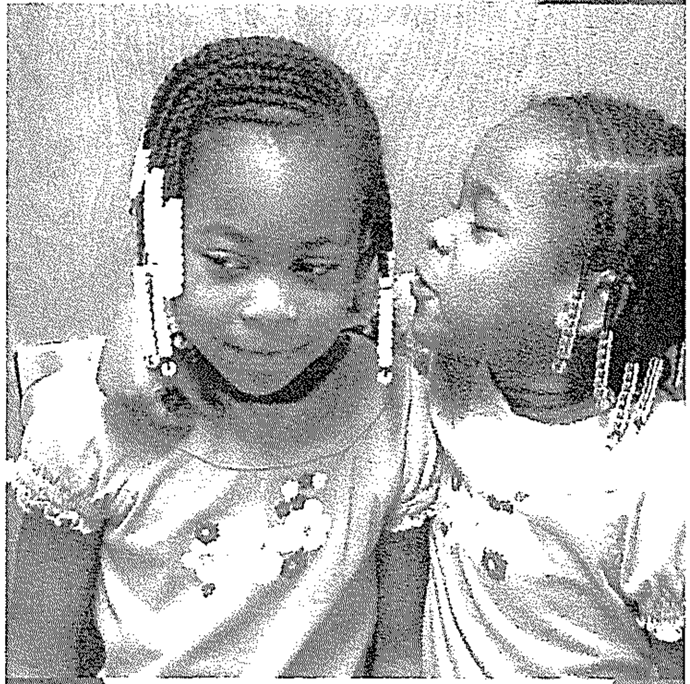
Sound FUTURE

Alabama Department of
REHABILITATION SERVICES
602 S. Lawrence St.
Montgomery, AL 36104
(334) 293-7500 • 1-800-846-3697
TTY 1-800-499-1816 • Fax: (334) 293-7373
www.rehab.alabama.gov/crs

In the provision of services and in employment practices, the Alabama Department of Rehabilitation Services does not discriminate on the basis of race, sex, creed, national origin, religi[illegible]e or disability.

This material is available in alternate format upon request. 4/17

Sound ADVICE



Hearing Services

CHILDREN'S
Rehabilitation Service

Rev. 9/2017

CHILDREN'S
Rehabilitation Service
Creating Partnerships ~ Building Futures

A division of the Alabama Department of REHABILITATION SERVICES

CRS Audiology Staff

Statewide Program Specialist

Carrie Overschmidt, AuD., CCC-A
Children's Rehabilitation Service
1610 Center St., Suite A
Mobile, AL 36604
1-800-879-8163
251-432-4560
Email: Carrie.Overschmidt@rehab.alabama.gov

Anniston/Gadsden

Kimberly Payne, Au.D. CCC-A
Children's Rehabilitation Service
1910 Coleman Rd.
Anniston, AL 36207
1-800-289-9533
256-240-6583
Email: Kimberly.Payne@rehab.alabama.gov

Andalusia/Dothan

Jordan Byrd, Au.D. CCC-A
Children's Rehabilitation Service
795 Ross Clark Circle, N.E.
Dothan, AL 36303
1-800-677-9123
334-678-5047
Email: Jordan.Byrd@rehab.alabama.gov

Homewood

Laura Rhodes, Au.D. CCC-A
Children's Rehabilitation Service
234 Goodwin Crest Drive (West Tower)
Birmingham, AL 35209
1-888-430-7423
205-290-4550
Email: Laura.Rhodes@rehab.alabama.gov

Huntsville/Muscle Shoals

Amanda Holley, Au.D. CCC-A
Caitlyn Roberts, Au.D. CCC-A
Children's Rehabilitation Service
3000 Johnson Rd.
Huntsville, AL 35805
1-800-283-9352
256-650-1701
Email: Amanda.Holley@rehab.alabama.gov
Caitlyn.Roberts@rehab.alabama.gov

Mobile/Jackson

Rebecca Blankenhorn, Au.D. CCC-A
Candice Mullen, Au.D. CCC-A
Children's Rehabilitation Service
1610 Center St., Suite A
Mobile, AL 36604
1-800-879-8163
251-432-4560
Email: Rebecca.Blankenhorn@rehab.alabama.gov
Candice.Mullen@rehab.alabama.gov

Montgomery/Opelika

Jane Laseter, Au.D. CCC-A
Children's Rehabilitation Service
602 S. Lawrence St
Montgomery, AL 36104
1-800-568-9034
334-293-7118
Email: Jane.Laseter@rehab.alabama.gov

Selma/Tuscaloosa

Carrie May, Au.D. CCC-A
Children's Rehabilitation Service
1400 James I. Harrison Jr. Pkwy E.
Ste. 100
Tuscaloosa, AL 35405
205-561-1802
Email: Carrie.May@rehab.alabama.gov

CRS Hearing and Hearing Aid Clinics are held at various locations throughout the state. More information can be obtained by calling the Program Specialist or by contacting the CRS State Office in Montgomery at 1-800-846-3697.

Alabama
Private
Resources

Alabama Private Resources

1. ACI Alliance Alabama
2. A.G. Bell Alabama
3. ALL for Children (Auburn Language & Learning) (ALL) www.all-forchildren.com
4. Children's Hospital HEAR Center
   www.childrensal.org/hear-center
5. Hand & Voices Alabama
   www.handsandvoices.org/chapters/starts
   www.facebook.com/groups/Alabamahandsandvoices
6. Huntsville Hospital Pediatric Therapy – Pediatric Audiology & Speech
   www.hhwomenandchildren.org/pediatric-therapy
7. Listening and Spoken Language Specialists in Alabama
8. National Association of the Deaf Alabama Chapter www.ALDEAF.org
9. WISE (Woolley Institute for Spoken-Language Education)/WISE Preschool*
   www.WISE4AL.org

*formerly the Alabama School for Hearing

ACI

ALLIANCE

American Cochlear Implant Alliance – Alabama

Are you a parent who wants to explore or consider cochlear implants for your infant or child who is deaf or hard of hearing? Are you a professional who works with infants and children with hearing loss and you need to know more about the power of this technology?

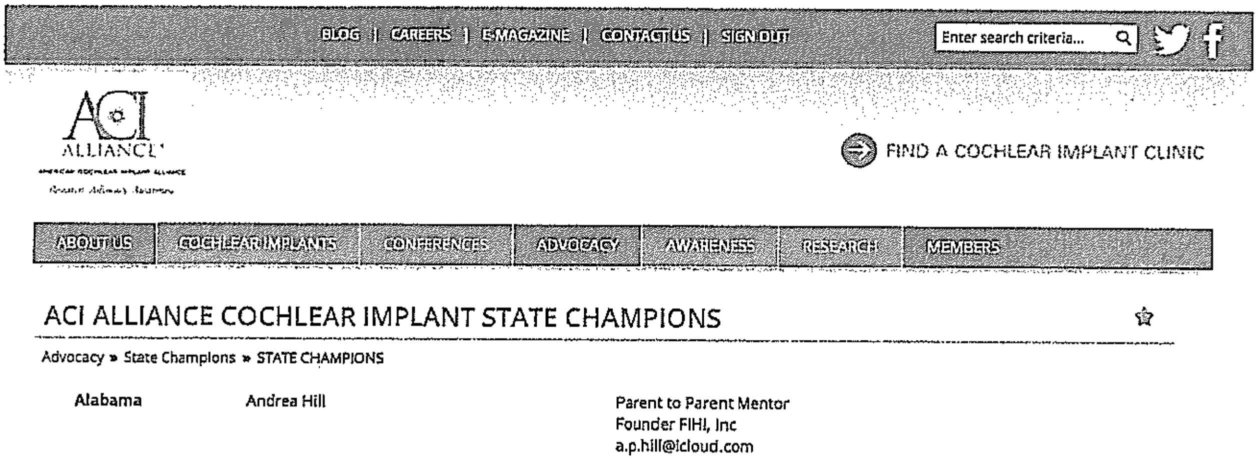
We are here to assist you. The American Cochlear Implant Alliance is a not-for-profit membership organization created with the purpose of eliminating barriers to cochlear implantation by sponsoring research, driving heightened awareness and advocating for improved access to cochlear implants for patients of all ages across the US. ACI Alliance members are clinicians, scientists, educators, and others on cochlear implant teams as well as parent and consumer advocates. An annual meeting for professional members is convened. Visit us today!

https://www.acialliance.org

ACI Alliance's role in advocacy is to educate and encourage policy-makers and payers to take steps that expand access to cochlear implants. Our national organization, in conjunction with our State Champions:

- monitor and initiate proactive measures to address cochlear implant insurance coverage at the state and Federal levels.
- participate in hearing loss and general disability organizations.
- address the current shortcomings of Early Intervention advisement services to families as they relate to comprehensive, unbiased information on options and technology to parents.
- support member advocacy efforts in Washington to expand knowledge about cochlear implants and issues of access.

For Alabama residents with specific question, concerns, or those desiring more information, contact Andrea (Andi) Hill / a.p.hill@icloud.com.



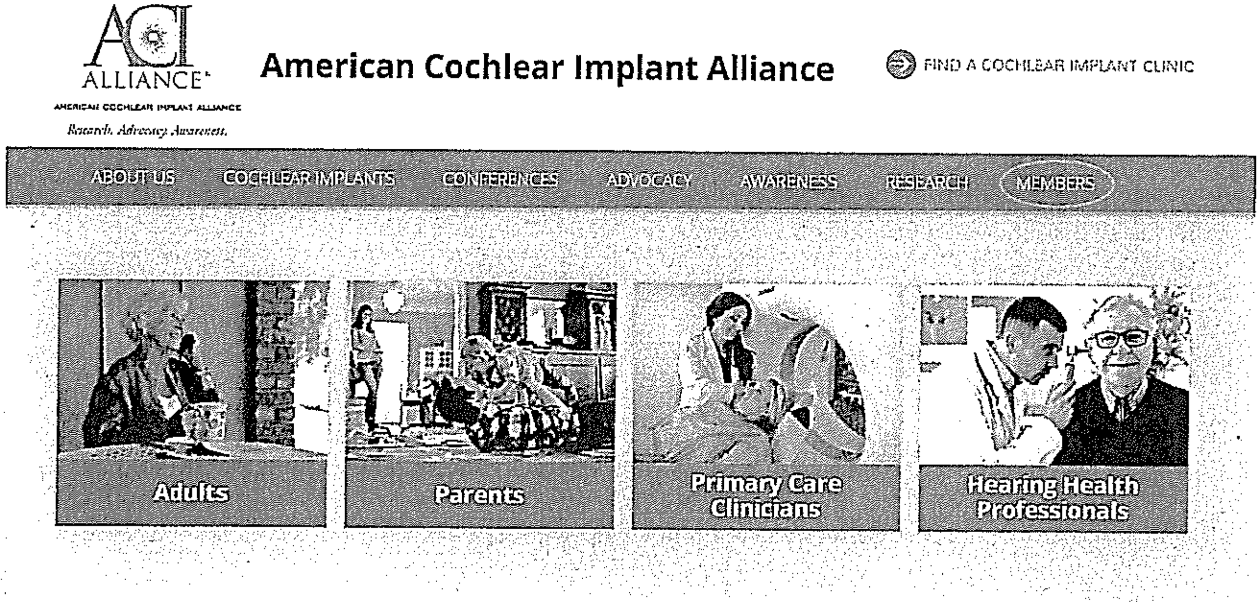
ACI ALLIANCE COCHLEAR IMPLANT STATE CHAMPIONS

Advocacy » State Champions » STATE CHAMPIONS

Alabama	Andrea Hill	Parent to Parent Mentor Founder FIHI, Inc a.p.hill@icloud.com

American Cochlear Implant Alliance – Alabama

Parents of infants and children who are deaf and hard of hearing and use cochlear implants can join the ACIAlliance:



Annual Fee: $10

Consumer membership is designed for the public at large and people of all ages with hearing loss and their families. Become a member and receive these benefits:

- **Alliance Digital Newsletter** - Up to four issues of this e-newsletter with personal stories and updates on the Alliance's mission including information on research, advocacy and awareness activities and a status report on performance against goals.
- **Advocacy Alerts** - Updates on the Alliance's efforts to work with health care plan executives and government officials and what you can do to make a difference.
- **Board of Directors Election*** - Opportunity to vote for the American Cochlear Implant Alliance Board of Directors and Chairman Slate put forth by the Alliance Nominating Committee (subject to by-laws regulations).

Join as a Consumer

Consumer members have the option of adding two (2) additional family members to their membership account with separate email addresses for each member. **

*Exclusive benefit offered only to paid members in good standing per American Cochlear Implant Alliance by-laws regarding voting and non-voting members. Corporate members have no voting rights nor are they eligible to hold office.** Only one member of the membership may vote in the Board of Directors Election.

Membership fees are not tax deductible for Federal Income Tax purposes as a charitable contribution.

A.G. BELL
ALABAMA

www.agbell.org/connect#local

We're hear for you, Alabama!

a.g.bell
Alabama

Main: https://www.agbell.org

Alabama: http://www.agbell.org/Connect/Alabama-Chapter-Ag-Bell

Parent Hotline: http://www.agbell.org/Learn/New-Parent-Hotline

In Alabama, contact:

Marcia Hay-McCutcheon
AG Bell Alabama President
marcia.hay-mccutcheon@ua.edu

ALL FOR CHILDREN

Auburn Language & Learning for Children

www.all-forchildren.com

ALL for Children
Auburn Language and Learning

ACCEPTING ALABAMA & GEORGIA MEDICAID, BCBS, TRICARE, & UNITED HEALTHCARE

HOME ABOUT US CONTACT US OUR STAFF OUR SERVICES

WELCOME TO ALL FOR CHILDREN!

ALL (Auburn Language and Learning) is a pediatric, private practice located in Auburn, Alabama, offering speech, language, auditory, and literacy services to children of all ages. Our practice consists of speech-language pathologists, auditory-verbal therapists, and special educators. ALL for Children has been providing quality speech, language, auditory and literacy therapy to children in our area and surrounding areas since its doors were opened in March 2010.

Speech, language, auditory and literacy services include:

Evaluation and treatment of a variety of speech and language difficulties

Evaluation and treatment of language-based reading difficulties including dyslexia

Auditory-Verbal Therapy for children with hearing loss utilizing hearing aids and cochlear implants

Orton-Gillingham based multi-sensory instruction for the struggling reader

Feeding therapy for children with behavioral and sensory issues and rehabilitation after gastrostomy tube surgery

Evaluation and treatment for children needing augmentative and alternative communication

Children's Hospital of Alabama

HEAR CENTER

www.childrensal.org/hear-center

Hearing and Speech

- Our Team
- Audiology
- HEAR Center
- Speech-Language Pathology
- bular and Balance Program
- ur Children
- Useful Links

HEAR Center

The HEAR Center at Children's of Alabama aims to provide comprehensive diagnostic and treatment services for families and professionals working on behalf of children with hearing loss, while emphasizing the development of auditory skills and spoken language in a variety of communication formats. The multidisciplinary team includes an otolaryngologist, pediatric audiologists specializing in hearing aids and cochlear implants, and speech-language pathologists certified in Auditory-Verbal Therapy.

Services

- Auditory-verbal therapy services with certified listening and spoken language specialists (LSLS Cert. AVT)
- Aural rehabilitation therapy services according to chosen communication modality
- Cochlear implant candidacy evaluations, programming, and management
- Fitting and verification of hearing aids using research-based protocols
- Speech/Language/Auditory evaluation, individual therapy, and group therapy for children with hearing loss
- Parent mentoring

Children's HEAR Center is a comprehensive, multidisciplinary program for treatment and (re)habilitation of childhood hearing loss. Our multidisciplinary team strives to maximize each child's auditory, speech, and language potential through individualized, family-centered treatment plans, all in a child-friendly atmosphere.

HANDS & VOICES ALABAMA

www.handsandvoices.org/chapter/starts

www.facebook.com/groups/Alabamahandsandvoices

HANDS & VOICES™

Dear Fellow Parents and Caregivers,

If you are reading this, you probably just learned something about your child's hearing. Whether your child was just identified with a hearing loss, or you are going through the testing, or you are a seasoned parent looking for support and information to help your child thrive, welcome!

This is a place where we focus on what we can do as parents to help our kids succeed. We want that child of yours to change the world, our world. Alabama Hands & Voices, Inc. is a nonprofit organization made up of parents just like you. We collaborate with deaf and hard of hearing adults and with professionals who share our belief that "what works for your child is what makes the choice right."

We hope to build this chapter into a place where you can find practical and sometimes inspiring information to guide you in parenting your child. You can find us on our Facebook group - Alabama Hands & Voices, on our website – alhandsandvoices.org, by e-mail at alabamahinfo@gmail.com or by phone at (205) 677-3136.

You can do this and there is a whole community here to help!

Standing with you,

Your fellow parents at Alabama Hands & Voices

HANDS & VOICES

"What Works for your Child is what makes the Choice right"

Home | About Us | Resources | Services | Chapters | Topics | Contact H&V

Information about Hands & Voices

"Who are we? We are parents of ASL signers, cued speech users.... parents of kids with cochlear implants or total communicators... we are people who have common interests connected through the community of deafness. Hands & Voices is a safe place to explore options, get unemotional support (although we can be emotional about it!), learn from one another and share what we have in common. We value diversity and honor the role of parents and family as the single greatest factor in raising a WASK, (our favorite acronym: *W* ell- *A* djusted *S* uccessful *K* id)

"There is room in the community of deafness for an organization like Hands & Voices, and in fact, I think parents, and even many professionals, have been crying out for a group like this," says Leeanne Seaver, Board member. "Somehow parents connecting to other parents provides an element of credibility; there's a level of 'knowing & feeling' that only a parent experiences. And parents, especially parents of babies newly identified with deafness or hearing loss, need a way to connect like this without being wary of a sponsoring agenda from a service provider."

Hands & Voices is a non-profit, parent-driven organization dedicated to supporting families of children who are deaf or hard of hearing. We are non-biased about communication methodologies and believe that families can make the best choices for their child if they have access to good information and support. Our membership includes families who communicate manually and/or orally. From American Sign Language to cochlear implants, our organization represents people from all different approaches to, and experiences with, deafness or hearing loss. We have local chapters comprised mainly of parents along with professionals. If you're interested in opening a Hands & Voices group in your area, just contact us via this website for more information.

Decibel Ultra (Free) – Measures the volume and helps you figure out how big the noise level compared to same values. Ultra decibel measures the sound pressure level with built in microphone.

Ear Trumpet by Praxis BioScience ($1.99) **http://appfinder.lisisoft.com/app/eartrumpet.html** The hearing enhancer amplifies and adjusts sound to discretely improve hearing via the earphones attached to an iPhone or iPod.

Hearing Check by RNID (free) **http://appfinder.lisisoft.com/app/hearing-check.html** - Hearing Check is a quick, simple and completely confidential way to check your hearing, without the trek to the doctor's waiting room. Check your ears today! Our check is scientifically verified and is the best method of checking your hearing without seeing a medical professional.

S Series iQ by Starkey Laboratories (free) **http://appfinder.lisisoft.com/app/s-series-iq.html** Learn about hearing loss and hearing loss solutions, including our S Series iQ featuring Voice iQ, the newest noise reduction and speech preservation system. So fast and smart, it reduces the noise between the syllables of speech. Also has hearing loss sound demonstrations and educational resources.

iASL ($1.99) – Translates English to grammatically correct American Sign Language. Features a video dictionary of more than 5,800 signs. Has a conversational phrase bank.

iSign ($4.99) - Expanded version of iSign Lite. Animated phrase book of 800 ASL gestures. Signs can be added and removed from list of favorites. Also has a quiz feature.

Now NT by Starkey (free) **http://appfinder.lisisoft.com/app/now-nt.html** Learn about hearing loss and hearing loss solutions, including our NOW NT featuring Noise Tranquility, the newest noise reduction and speech preservation system. So fast and smart, it reduces the noise between the syllables of speech.

Senses-What do you hear? (free) **http://appfinder.lisisoft.com/app/senses-what-u-hear.html** The system is designed to conduct hearing screening, mainly in children and youth. The examination uses audiometric tone test procedure and testing speech intelligibility in noise.

Siemens Hearing Test (free) **http://appfinder.lisisoft.com/app/siemens-hearing-test.html** The Hearing Test was created by audiology experts at Siemens to help you determine whether you have hearing impairment.

iSign Lite (Free) – Small and free version of iSign. Has simple sign language vocabulary. This one has animated 3D characters that demonstrating the signs. Signs can be added and removed from list of favorites. Also has a quiz feature.

Sign 4 Me for iPad – A Signed English Translator by Vcom3D: Featuring a full-body avatar, this app for the hearing impaired contains over 11,500 sign language words. $12.99.

The Proloquo2Go The Proloquo2Go ($189.99)- app is ideal for patients who have difficulty speaking. This is an augmentative and alternative communication device that has a vocabulary of more than seven thousand words, current symbols and a text to speech feature. The menu allows users to choose the type of communication they want to pursue such as requests for help, questions, basic communications, or the ability to search by word category

Quick Voice Recorder (Free) – Voice Recorder for recording voice memos, voice email, dictation, lists, meetings, classes, or entire lectures.

Speak it Text to Speech ($1.99) – text to speech app. Reads e-mails, favorites, news articles documents and more.

Speaking and Listening Games HD ($22.99) 51 sheets to help preschool and primary kids develop listening and attention skills, understand language and develop expressive language. Games to stimulate language skills

Tap to Talk (free) – augmentative and alternative communication app. Just tap the picture and Taptotalk speaks.

Schedules/Notes

Picture Scheduler ($2.99) – task organizer for individuals with disabilities. Allows you to create picture, text, video or audio task (or combine them)

Awesome note Lite (+Todo) (free) – Notes plus to do app. Create regular notes or notes with photos attached.

SLP Specific Apps

Articulate It ($39.99) Articulate it! is an application designed to help children practice their pronunciation skills. Articulate it! is Smarty Ears' brand new app that allows speech therapists and parents work towards improving the speech of children with speech delays.

ArtikPix - ArtikPix Full ($29.99) – practice speech sounds in flashcard and matching activities. *articulation & phonology

Fluency Tracker ($8.99) – Individuals are able to track changes in the frequency of disfluency, changes in avoidance, behaviors, and feelings associated with speaking.

iSpeech for iPad ($3.99)- Wrapped up in a fun and attractive user interface, sounds are organized by the ages at which they should have developed, giving you benchmarks for where your child should be developmentally. Any problem sounds can then be selected to display the teaching information for that sound.

Pocket SLP Articulation (29.99) – A multisensory approach to articulation drills. Has over 2,100 high-quality flashcards that target both the words and sentence level clients and children.

Smart Oral Motor (9.99) – Application for children who need to practice oral motor skills. Includes 15 oral motor exercises, auditory information

Language Builder ($3.99)- Language Builder is designed to help children accomplish the following educational goals: 1) Improve sentence ideation ; 2) Improve sentence formation; and 3) Improve receptive and expressive language. Extensive use of audio clips promotes improved auditory processing for special needs children with autism spectrum disorders or sensory processing disorders. Auditory playback of child's voice offers reinforcement for language development.

Sentence Builder ($3.99)- Sentence Builder is designed to help elementary aged children learn how to build grammatically correct sentences. Explicit attention is paid to the connector words that make up over 80% of the english language. Sentence Builder offers a rich and fun environment for improving the grammar of all children.

Smarty Pants School ($2.99) offers a carefully-structured series of games and activities designed to strengthen children's early reading skills based on the scientific recommendations of the National Reading Panel.

Story Builder ($3.99)- Story Builder is designed to help children accomplish the following goals: 1) Improve paragraph formation; 2) Improve integration of ideas; and 3) Improve higher level abstractions by inference. Extensive use of audio clips promotes improved auditory processing for special needs children with autism spectrum disorders or sensory processing disorders. Story Builder offers a rich and fun environment for improving the ability to create a narrative.

Word SlapPs ($2.99)- Word SlapPs is used to teach vocabulary words specific to your child's world with images that you choose. Upload and save your images into customizable categories and pair them with your own recorded questions. Easy to use, Word SLapPs is designed by an SLP and modeled after Discrete Trial teaching. Children touch target images and are rewarded with sounds and/or visuals. Target vocabulary words alone or with up to two other images to increase difficulty. Word SLapPs comes pre-loaded with color and animal categories to start with. Word SlapPs is recommended for SLP's, teachers or parents.

Listening Skills

Sound Match (free)- classic memory game for the ears instead of the eyes

Sounds!- (free) sound effect app with over 50 sounds to practice identifying sounds

Audio Pairs ($.99) Train your brain and ears with a pair matching/concentration game where you have to match the sounds.

Spell and Listen Cards ($4.99)- the talking flashcards for spelling. Help spell, recognize and pronounce 550 everyday words.

Audio Sight Words ($.99)- Audio Sight Words introduces young learners to basic sight words. The audio feature adds a teacher dimension to the app. These audio sight word flashcards make great teaching resources for classroom and home. Preschool and kindergarten children learn early reading skills using these audio sight words flashcards.

iPad. The largest collection of its kind, the ICDL spans the globe with thousands of children's books from over 60 countries, in a wide assortment of beautiful languages with captivating illustrations.

Zombies vs. Literacy ($1.99)- Stop zombies from eating your brain by learning early reading skills. Practice word families and sight words and you'll discover that your brain is too big to be eaten! Fun, interactive application to practice early reading skills. Swipe through the alphabet, word families and sight words. Touch letters to hear them spoken. Complete Dolch and Fry sight words (K-5) Interactive word stampede; drag letters back to make fix the word. Keep track of the frequency and date of word lists. Build a custom word list to practice.

Zap Phonics Reading Games (free)- Toddlers and preschoolers will learn the very basics of reading the right way by associating sounds with the correct letter symbols. This game teaches kids the sounds that letters make versus the names of the letters.

Other

Smithsonian Channel (free)- see original series, documentaries, cool facts and more. View full episodes and video clips of Smithsonian Channel programs. The channel explores the history of our planet, culture, and life with family-oriented content.

TED (free)- presents talks from some of the world's most fascinating people. Over 900 TED talk videos from all over.

ABC Shakedown (free) * Alphabet with pictures, will say the letter and the sound of the letter. Shake the iPad to advance the letters randomly

Discovery News (free) **has news stories and video of events around the world *need internet access for news

Epic Sound Effects (free) *sound effects in categories, can be used for listening skills or as a reward.

Reviews/helpful comments on any of the items listed and additional apps are welcomed. Please send these directly to Ann Hughes, awhughes@vcu.edu

HANDS & VOICES™

COMMUNICATION CONSIDERATIONS A-Z™

American Sign Language

1. What is American Sign Language?

In the 19th century, American Sign Language (ASL) evolved from a combination of French Sign Language and homemade signs from Martha's Vineyard and New England homes with deaf children.

In the 1960's, researchers William C. Stokoe, Dorothy S. Casterline and Carl Croneberg noticed that ASL has linguistic parameters (phonology, morphology, syntax) found in other languages. They recognized ASL as a bona fide language with its own rules of grammar, sentence and sign formation. Like Spanish, French, Chinese and other languages, ASL is a language in and of itself, separate from English. The only difference is that ASL is visual rather than auditory.

ASL users convey critical information with their hands through the use of handshapes, locations, movements, palm orientations and non-manual grammatical signals (eyes, face, head, shoulders). Providing full visual access to communication and language, ASL can convey subtle, complex, and abstract thoughts. In short, ASL can communicate anything.

The English language has individual letters. Likewise, ASL and other signed languages consist of handshapes. In English, the letters must be arranged in specific ways to convey meanings. It is also true for ASL: handshapes are arranged syntactically.

Often the first language for many Deaf North Americans, it is now the fourth most commonly used language in the United States (Nakamura, 2002). It is best learned from other Deaf persons or through interac-

e. If my child uses ASL on a regular basis, would he/she be able to have a career?

The Deaf community is proud of its members who are actors/actresses, architects, artists, athletes, authors, automobile mechanics, bankers, chefs, clerks, computer whizzes, construction workers, educators, engineers, hoteliers, landlords, lawyers, medical doctors, merchants, paramedics, publishers, stockbrokers...in short, the sky is the limit.

4. What books or websites do you recommend on ASL?

Books:

Eriksson, P. 1998. *The History of Deaf People*, trans. by James Schmale. Orebro, Sweden: Tryckmakarna.

Lane, H. 1984. *When the Mind Hears: A History of the Deaf.* NY: Random

Lane, H., R. Hoffmeister, B. Bahan. 1996. *A Journey into the DEAF-WORLD.* San Diego: DawnSignPress.

Padden, C. & T. Humphries. 2005. *Inside Deaf Culture.* Cambridge: Harvard University Press.

Smith, A., E. L. Jacobowitz. 2006. Have You Ever Seen...? *An American Sign Language (ASL) Handshape DVD/Book.* Frederick, MD: ASL Rose.

Van Cleve, J. V., B. Crouch. 1989. *A Place of Their Own: Creating the Deaf Community in America.* DC: Gallaudet University Press.

Websites:

http://en.wikipedia.org/wiki/American_Sign_Language
http://www.signingtime.com
http://www.lifeprint.com/
http://www.edgateway.net/pub/docs/pel/bilingualism.htm
RID: http://rid.org/

Biography: Beth Sonnenstrahl Benedict

Dr. Benedict, an Associate Professor in the Department of Communication Studies at Gallaudet University, obtained her Ph.D. in Education with a specialization in Early Communication and Family Involvement from Gallaudet University in 2003.

Her work has focused on family involvement in schools with deaf and hard of hearing children, early childhood education, advocacy, early communication and partnerships between deaf and hearing professionals.

Currently a member of the Joint Committee on Infant Hearing, she represents the Council of Education of the Deaf which is developing a 2007 Position Statement. She was also a member of the U.S. Office on Disability's Health and Human Services Constituent Expert Working Group on Effective Interventions for Infants and Young Children with Hearing Loss. She has served on several boards and councils such Maryland Universal Newborn Hearing Screening Advisory Council and is the current president of the American Society for Deaf Children.

A frequent presenter at national and international conferences, schools and for family organizations, Dr. Benedict's published works include articles and chapters in numerous books related to early communication development.

Dr. Benedict, a deaf mother of two deaf daughters (Rachel, 18 & Lauren, 16), is married to A. Dwight Benedict. Her family often participates in research projects that investigate the development of communication and literacy.

Communication Considerations A to Z™ is a series from Hands & Voices that's designed to help families and the professionals working with them access information and further resources to assist them in raising and educating children who are deaf or hard of hearing. We've recruited some of the best in the business to share their insights on the many diverse considerations that play into communication modes & methods, and so many other variables that are part of informed decision making. We hope you find the time to read them all!

HANDS & VOICES™

COMMUNICATION CONSIDERATIONS A-Z™

Auditory/Oral Education

What is Auditory/Oral Education?

The Auditory/Oral (A/O) approach teaches infants and young children to use hearing and speech to develop spoken language for communication and learning. Children typically attend a pre-school or early elementary program taught by teachers and therapists with A/O and child development training and experience. Signs are not used in the A/O approach; however, natural gestures that are used in typical conversation are included.

What issues are at the forefront of Auditory/Oral Education?

The goal with A/O is for children to enter the mainstream after they have time to strengthen their language, social and cognitive development in an A/O program. Given the importance of working with A/O qualified educators and therapists, families are encouraged to inquire about professional training and experience.

What should every parent or professional know about Auditory/Oral Education?

Auditory/Oral education can be used with most children, regardless of whether that child's hearing loss is in the mild through profound range. Families who choose A/O commit to helping children use their hearing and speech for language and communication. Professionals work closely with families to help them use hearing aids, cochlear implants, FM systems or whatever hearing technology is appropriate for the child.

HANDS &
VOICES™

COMMUNICATION CONSIDERATIONS A-Z™

Auditory-Verbal Therapy

What is Auditory-Verbal Therapy?

In the typical Auditory-Verbal Therapy (A-V) model, listening is the primary avenue for the child to learn language. Hearing aids, cochlear implants and other recommended hearing technologies are used to help the child hear spoken language, which provides the foundation for learning how to talk. Signs are not used in the A-V approach; however, natural gestures that are used in typical conversation are included.

What issues are at the forefront of Auditory-Verbal Therapy?

Auditory-Verbal Therapy is provided by professionals from the fields of speech/language pathology, audiology and education of the deaf and hard of hearing. Those professionals with the designation Cert. AVT have fulfilled the requirements to be certified Auditory-Verbal Therapists. Others may practice Auditory-Verbal Therapy, and may be working towards certification. Families are encouraged to ask about the professional's background, training and experience.

What should every parent or professional know about Auditory-Verbal Therapy?

Auditory-Verbal Therapy can be used with most children; regardless of whether that child's hearing loss is in the mild through profound range. The goal is for the child to develop age-appropriate language abilities while living and learning fully in the mainstream, from the time the hearing loss is identified. Families who choose A-V are committed to working as partners with their child's A-V therapist. The role of the A-V professional is to inform, coach and support families as they learn how to be the most important teacher in their child's life.

HANDS & VOICES™

COMMUNICATION CONSIDERATIONS A-Z™

Communication Choices and Decision Making

by Mary Pat Moeller, Ph.D.

1. What do we mean by Communication Choices and Decision Making?

Decision making is a process of problem solving that leads us to a plan of action after considering our alternatives. Communication choices (described in other parts of this series) are the alternatives – the various approaches used to educate and converse with deaf and hard-of-hearing children. The decision making process around communication choices is a unique journey each family takes with their child to make connections, communicate and share the wonders of the world.

As parents, we make decisions for our children each day. The decision about how the family will communicate with a child is personal and precious...it has ramifications for all involved. So, it can seem especially weighty. I am not the parent of a D/HH child, so I cannot fully appreciate how overwhelming such decisions can be. However, as a parent, I can identify with the fear that accompanies complex decisions. Remember that the process is to choose from among alternatives – not to make a choice between right and wrong. The initial decisions are less of a burden if we recognize that they can be modified over time as we get more information. Many families revise their decisions at various times during the child's life. Others combine approaches in unique and creative ways, depending on the child's needs.

Families approach decision making in ways that reflect their unique styles, culture, values and concerns. There is no one "right" way. Some reference listed offers many practical ideas to families for building effective support systems. The Hanen Centre resource is not about decision making, but it offers a parent-friendly manual for communicating with a little one, regardless of communication approach.

REFERENCES USED IN THIS ESSAY

DesGeorges, J. & Kennedy, S. (2004). First visits and family support. In S. Watkins (Ed.) *SKI-HI Curriculum: Family-centered programming for infants and young children with hearing loss.* SKI-Hi Institute. Logan, UT: Utah State University Press.

Pepper, J. & Weitzman, E. (2004). It takes two to talk: A practical guide for parents of children with language delays. Ontario, CA: The Hanen Centre. www.hanen.org.

Schwartz, S. (Ed.), (1996). Choices in deafness: A parents' guide to communication options (Second Edition). Bethesda, MD: Woodbine House. Note: Third edition expected in June, 2007.

Website: http://www.ncbegin.com/communication-options-comm-options.html

---

Communication Considerations A to Z™ is a series from Hands & Voices that's designed to help families and the professionals working with them access information and further resources to assist them in raising and educating children who are deaf or hard of hearing. We've recruited some of the best in the business to share their insights on the many diverse considerations that play into communication modes & methods, and so many other variables that are part of informed decision making. We hope you find the time to read them all!

HANDS & VOICES™

COMMUNICATION CONSIDERATIONS A-Z™

Cued Speech

1. What is Cued Speech?

Cued Speech is a mode of communication using the mouth and hand to visually distinguish the building blocks (phonemes) of a spoken language to promote the development of language and literacy visually for those who do not receive sufficient input through listening or assistive devices. The cues represent the phonemes of English language.

2. What issues are at the forefront of Cued Speech?

Cued American English users have easy communication in the home in the parents' native language, develop language easily and naturally, and achieve the grade level or above literacy rates needed to compete in regular education settings.

3. What should every parent or professional know about Cued Speech?

Cued Speech can be taught in 12-15 hours and the user will leave the class knowing how to cue anything they want to say, albeit slowly. Users can cue accents and dialects, foreign languages, onomatopoeia, and idiomatic expressions.

Research* indicates that Cued Speech users have excellent language, superior lipreading skills, have an internalized understanding of English language and its structure, and have good writing skills.

HANDS & VOICES™

COMMUNICATION CONSIDERATIONS A-Z™

Will my child learn how to talk?

1. How can the goal of developing intelligible speech be accomplished?

If the family goal for the early-identified (in intervention by 6 months) infant/child with significant hearing loss is the development of auditory skills and intelligible speech, several questions about the infant/child's capabilities must be answered. Does the child have language skills (particularly vocabulary) in the first and second year of life that are comparable to peers with normal hearing? Does the child have the adequate oral motor skills to produce intelligible speech? Does the child have auditory access to all of the sounds of the native spoken language? Does the child have the cognitive capability for communicating with verbal symbols?

2. What issues are at the forefront of (this consideration)?

The knowledge and technology exists for 75% of infants/children with all degrees of hearing loss to develop intelligible speech by five years of age. For infants/children with profound hearing loss, this 75% probability only exists with cochlear implantation.

For children with hearing loss in early intervention (first three years of life) intelligible speech can be developed in all methods of communication, but only with a strong auditory skills development program. While it is possible that communications methods that are visual or tactile/kinesthetic can interfere with the development of intelligible speech, it is not probable. It is more likely that strong language development skills through visual/manual language systems can accelerate the development of spoken English or other native language because it provides the child with the knowledge of a verbal symbol system.

HANDS & VOICES™

COMMUNICATION CONSIDERATIONS A-Z™

Signing Exact English

By Patrice Stephenson and Esther Zawolkow

1. What is SIGNING EXACT ENGLISH (SEE)?

Signing Exact English (SEE) is a sign system that matches signs with the English language. It is one of the first manual English systems to be published (1972). Children who are exposed at an early age to SEE are able to learn English, including the many idiomatic expressions and uses of figurative language so unique to English. Thus, language learning opportunities are provided equivalent to those of hearing children.

2. What issues are at the forefront of SEE?

Parents are the first and most influential teachers for their children and they need a way to begin communicating with their children at birth. More than 90% of deaf or hard of hearing children are born to hearing parents. For those whose native language is English, SEE is quickly and easily learned, following the rules of the language they already know. The terms "native" or "natural" are frequently used to define a language associated with deafness. The truth is that the natural language of any child is that which is used consistently and continually in communicating with the child.

SEE also provides support for the growing number of children who use cochlear implants, or who use residual hearing, allowing them to match what they see with what they hear and speak in a simultaneous communication environment. This capability provides a natural bridge

Another source is through materials such as curriculum tapes or DVDs offered by:

Modern Signs Press, Inc.
562-596-8548
www.modernsignspress.com
modsigns@modernsigns.com

About the Authors:

Patrice Stephenson became involved with deaf education nearly 28 years ago when her deaf son was born. From that time forward, clear, accurate communication has been the focus of her work. Patrice has worked internationally with the SEE Center for the Advancement of Deaf Children since 1989 and she co-edits the SEE What's Happening newsletter (on-line at www.seecenter.org). She has worked as a skill specialist and mentor for Front Range Community College's Educational Interpreter Certificate Program, teaches in and coordinates the Educational Interpreter Development Certificate Program at Wichita State University, presents at workshops and conferences, and works actively in many related organizations to raise standards of service to students who are deaf and hard of hearing.

Esther Zawolkow, as a child of deaf parents (CODA), has known American Sign Language all her life. She holds a Comprehensive Skills Certificate from the Registry of Interpreters for the Deaf, and worked as an educational interpreter in the secondary level in southern California for many years. She is one of the developers of SEE. She has served on the National Task Force on Educational Interpreting. Esther continues to teach sign language, lecturing and conducting workshops nationally and internationally. She serves as president of Modern Signs Press and is the co-founder and a board member for the SEE Center.

Communication Considerations A to Z™ is a series from Hands & Voices that's designed to help families and the professionals working with them access information and further resources to assist them in raising and educating children who are deaf or hard of hearing. We've recruited some of the best in the business to share their insights on the many diverse considerations that play into communication modes & methods, and so many other variables that are part of informed decision making. We hope you find the time to read them all!

lean toward the auditory/oral aspects of Total Communication and may not provide a child with sufficient sign support to optimize language development. The reality of Total Communication is often an "anything goes" methodology, lacking in objective measures, guidelines and strategies.

A significant area of concern related to the simultaneous use of sign and spoken language is that the child does not get a clear representation of either English or American Sign Language (ASL). Given that ASL does not follow English word order, it cannot be "spoken." Spoken language is, by nature, difficult to see on the lips, so the child is not getting the complete English message either. Some feel that is more effective to use either ASL without voice, or spoken English without sign. However, when used appropriately, sign can effectively facilitate the development of spoken language.

3. What should every parent or professional know about Total Communication?

The original intent of the Total Communication philosophy was to provide each child with the communication tools needed for that child to develop language competence. This should continue to be the goal of every teacher for every child. However, the philosophy of Total Communication has often been over-simplified and has been confused with the Simultaneous Communication methodology that simply combines sign and spoken language. Sign and spoken language can be effectively combined, but parents and professionals need to be sure that language competence is being developed optimally taking into consideration the strengths and needs of the individual child.

Where else can I find information about (total communication)?

Schwartz, Sue; (Editor) Choices in Deafness: A Parents' Guide to Communication Options; Woodbine House, 1996 (2nd Edition)

Raising Deaf Kids: A World of Information Children with Hearing Loss; http://www.raisingdeafkids.org/communicating/choices/

Elizabeth D. Gibbs, Ann Springer, Betsy Gibbs; Early Use of Total Communication : An Introductory Guide for Parents; Brookes Publishing Company; 1994

Communication Considerations A to Z™ is a series from Hands & Voices that's designed to help families and the professionals working with them access information and further resources to assist them in raising and educating children who are deaf or hard of hearing. We've recruited some of the best in the business to share their insights on the many diverse considerations that play into communication modes & methods, and so many other variables that are part of informed decision making. We hope you find the time to read them all!

HUNTSVILLE HOSPITAL

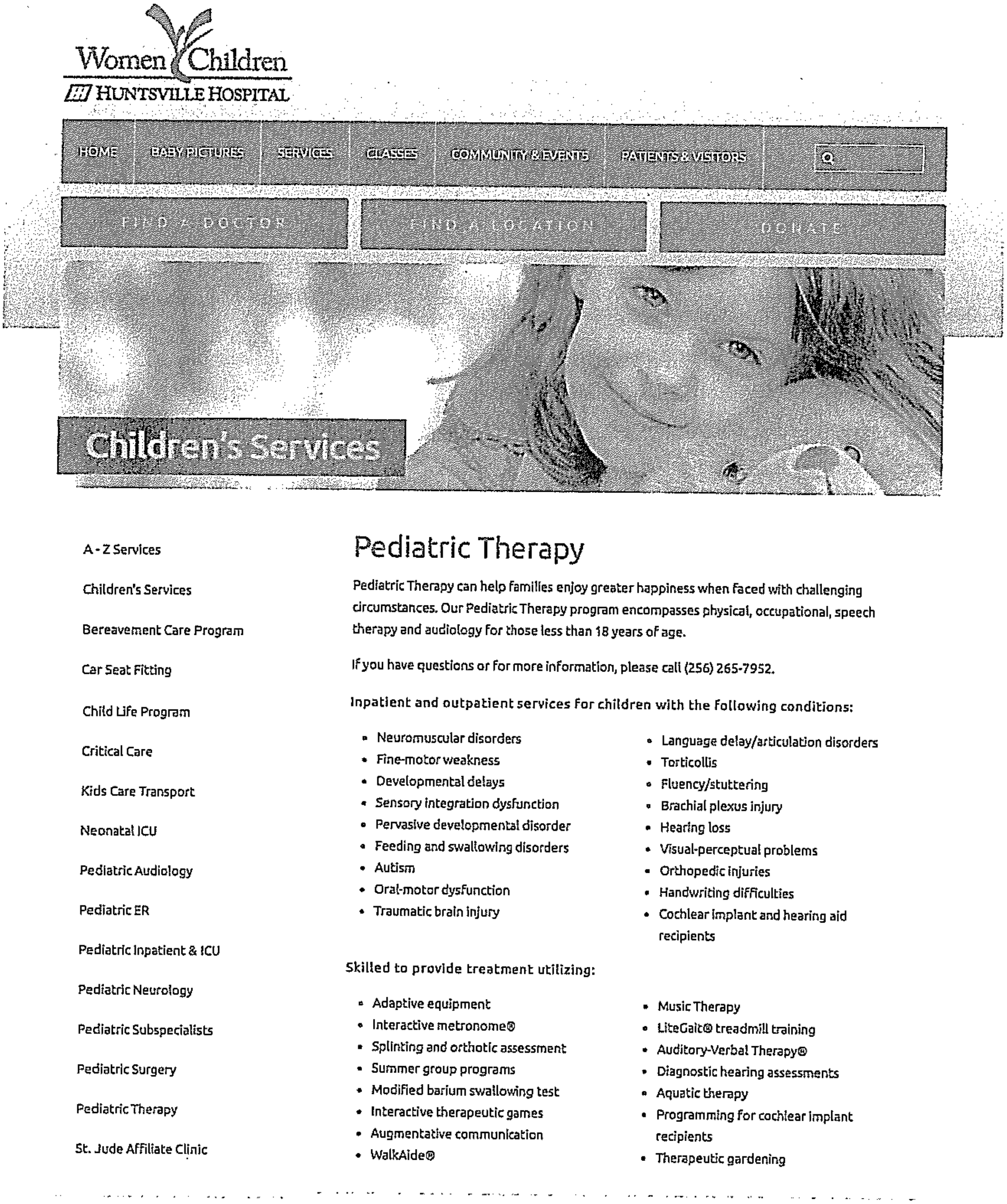
PEDIATRIC THERAPY

Pediatric Audiology & Speech

www.hhwomensandchildren.org/pediatric-therapy

Huntsville Hospital Pediatric Therapy

Pediatric Audiology & Speech Clinic



Pediatric Therapy

Pediatric Therapy can help families enjoy greater happiness when faced with challenging circumstances. Our Pediatric Therapy program encompasses physical, occupational, speech therapy and audiology for those less than 18 years of age.

If you have questions or for more information, please call (256) 265-7952.

Inpatient and outpatient services for children with the following conditions:

- Neuromuscular disorders
- Fine-motor weakness
- Developmental delays
- Sensory integration dysfunction
- Pervasive developmental disorder
- Feeding and swallowing disorders
- Autism
- Oral-motor dysfunction
- Traumatic brain injury
- Language delay/articulation disorders
- Torticollis
- Fluency/stuttering
- Brachial plexus injury
- Hearing loss
- Visual-perceptual problems
- Orthopedic injuries
- Handwriting difficulties
- Cochlear implant and hearing aid recipients

Skilled to provide treatment utilizing:

- Adaptive equipment
- Interactive metronome®
- Splinting and orthotic assessment
- Summer group programs
- Modified barium swallowing test
- Interactive therapeutic games
- Augmentative communication
- WalkAide®
- Music Therapy
- LiteGait® treadmill training
- Auditory-Verbal Therapy®
- Diagnostic hearing assessments
- Aquatic therapy
- Programming for cochlear implant recipients
- Therapeutic gardening

Pediatric Therapy

Pediatric Therapy can help families enjoy greater happiness when faced with challenging circumstances. Our Pediatric Therapy program encompasses physical, occupational, speech therapy and audiology for those less than 18 years of age.

If you have questions or for more information, please call (256) 265-7952.

Inpatient and outpatient services for children with the following conditions:

- Neuromuscular disorders
- Fine-motor weakness
- Developmental delays
- Sensory integration dysfunction
- Pervasive developmental disorder
- Feeding and swallowing disorders
- Autism
- Oral-motor dysfunction
- Traumatic brain injury

- Language delay/articulation disorders
- Torticollis
- Fluency/stuttering
- Brachial plexus injury
- Hearing loss
- Visual-perceptual problems
- Orthopedic injuries
- Handwriting difficulties
- Cochlear implant and hearing aid recipients

Skilled to provide treatment utilizing:

- Adaptive equipment
- Interactive metronome®
- Splinting and orthotic assessment
- Summer group programs
- Modified barium swallowing test

LISTENING &

SPOKEN LANGUAGE

SPECIALISTS IN

ALABAMA

Listening & Spoken Language Specialists in Alabama

If your goal for your child is to learn to listen and use spoken English to communicate, then having Listening & Spoken Language Specialists / Certified Auditory Verbal Therapists (LSLS/Cert AVT) or Listening & Spoken Language Specialists Certified Auditory-Verbal Educators (LSLS/Cert. AVEd) involved in your child's care is an important consideration. LSLS certified professionals have met very high, rigorous, objective, verifiable standards in the level of training, and experience they possess.

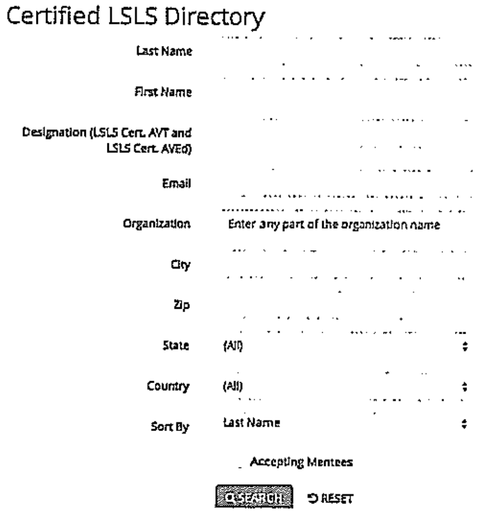
Certified LSLS professionals have specialized LSL expertise in working with infants and children who are deaf or hard of hearing and their families, as the family pursues the opportunity for their child to listen and talk. These professionals can work with deaf infants, toddlers, preschool children, and school-aged students. In addition to meeting the following basic standards to become certified, all LSLS/Cert AVTs and LSLS/Cert AVEds must meet annual continuing education requirements to keep their certifications in good standing:

- Master's degree in speech-language pathology, audiology, and/or education of the deaf.
- State board certification for speech language pathologists (CCC-SLP) and audiologists (CCC-A). As of 2007, practicing audiologists must now have a doctorate in audiology (AuD),, to be state certified.
- Extensive additional post-graduate education in Listening & Spoken Language (LSL).
- Hundreds of hours of supervised practice in which the professionals work with an already certified LSLS and infants & children with hearing loss and their families who are using LSL.
- and passed an international LSLS Certification Exam.

In addition to working directly with infants & children who are deaf or hard of hearing and their families, the "LSLS certified individual also may provide consultation to other professionals serving the child, including the general education teacher or the child's audiologist."[1]

Are you searching for certified Listening & Spoken Language Specialists in Alabama?

https://www.agbell.org/Membership/Membership-Search


Certified LSLS Directory

Organization: Enter any part of the organization name
State: (All)
Country: (All)
Sort By: Last Name

All currently certified LSLS professionals in good standing are listed here. At the time Alabama Early Intervention System's published the Pathways for Families resource book, the search feature for certified LSLS professionals would only function properly if you leave all fields blank and set to the default, as shown here. Locating the state in which the certified professional resides is the far right column of the search results pages.

---

1) https://www.agbell.org/Portals/26/PDFs/AVT%20Application%202017.pdf?ver=2017-12-11-123629-573

National Association
of
the Deaf

Alabama Chapter

www.ALDEAF.org

About

The mission of the Alabama Association of the Deaf is to promote, protect, and preserve the rights and quality of life of Deaf and Hard of Hearing persons in Alabama. The Alabama Association of the Deaf is an organization that promotes Deaf and Hard of Hearing to interact with each other as well as with the hearing community, legislature and agencies/organizations serving deaf and hard of hearing persons in Alabama such as:

ALRID

ADRS

COSDA

ADAC

Office of Deaf Services

AIDB

The Alabama Association of the Deaf (AAD) is affiliated with the National Association of the Deaf. The headquarter office of the NAD is in Silver Spring, Maryland.Delegates from Alabama attend the NAD biennial conference.

AAD: Organized in 1912. Incorporated in 1965.

WISE

WOOLLEY

INSTITUTE FOR

SPOKEN-LANGUAGE

EDUCATION

*WISE Preschool

*formerly the Alabama School for Hearing

www.WISE4AL.org

WISE

Woolley Institute for Spoken-Language Education

A smart start for Alabama's
infants & children
with hearing loss
and their families...

The Woolley Institute for Spoken-Language Education (WISE),* formerly the Alabama Ear Institute (AEI), is a 501 © not for profit organization dedicated to teaching deaf children to speak. WISE is a statewide, family focused program working in collaboration with certified Listening & Spoken Language Specialists across the state, Alabama's Early Intervention System, the State Department of Education, and other private and public entities which advance the education of deaf children who use listening and spoken language.

Hearing loss is the most common birth anomaly occurring 3 times per 1,000 births. In addition to infants born with hearing loss, another 3 of every 1000 children will develop educationally significant hearing loss during childhood, before their mastery of spoken language has fully developed. Over 90% of children identified with hearing loss have two parents with normal hearing. Parents are often shocked and overwhelmed, and thrust into a world unfamiliar to them. Parents must act quickly to partner with early interventionists who can offer guidance and education about options and opportunities for children with hearing loss. The comprehensive therapy and educational programs at WISE give children the opportunity to learn to speak, read, and participate fully in a hearing society. Through advanced technology (digital hearing aids and cochlear implants), the world of sound is open to most infants and children, even those born profoundly deaf. At WISE, we believe that spoken language is the key to independence for children with significant hearing loss. After graduation from WISE, children enter their neighborhood schools with the ability to speak for themselves and participate fully with their hearing peers.

How can WISE help you & your family?

WISE Early Intervention Program serves families of infants and toddlers diagnosed with hearing loss. WISE is committed to empowering parents through sharing information regarding hearing loss, communication options, language development, and hearing technology. Through partnerships with Certified Listening and Spoken Language Specialists (LSLS Cert AVTs), parents learn the skills and techniques necessary to foster a language foundation for their child with hearing loss. Therapy is family focused, individualized, and fun! The first three years are critical for developing language as the brain is programmed to learn language during these early years. When children are diagnosed early and receive appropriate intervention, they have the greatest opportunity to be successful in developing language and academic skills alongside their hearing peers.

WISE Preschool is the only school in the state dedicated solely to teaching deaf children to speak. WISE creates a learning environment that is similar to traditional preschool, while addressing the unique needs of children with hearing loss. We promote a language-rich environment where children can develop their listening, language, and speech skills in a positive and nurturing learning environment. Children are placed in small groups based upon their listening and language skills and instruction is provided by Certified Listening and Spoken Language Specialists. Each family receives an individual Auditory Verbal Therapy session during the week so that they may implement goals and practice techniques to help their child at home.

WISE

Woolley Institute for Spoken-Language Education

A smart start for Alabama's
infants & children
with hearing loss
and their families...

WISE Mainstream Support: WISE offers comprehensive support for children graduating from our program and entering their neighborhood school. Through collaboration with the school professionals, we design a program to address each child's unique needs.

WISE Professional Education: WISE offers training, observation and practicum placement for graduate students in speech/language pathology. Students from the University of Alabama, Auburn University, Samford University, and the University of South Carolina have gained experience in our programs.

WISE Family Network: Come join our NEST! Parents, grandparents, caregivers, and siblings of children who are deaf and hard of hearing have their own needs, often which are underrepresented and not effectively addressed, yet the role of parents and caregivers is the primary determining factor in a child's success. The way a deaf child interacts with his or her siblings can be a beneficial advantage in later developing appropriate peer interaction skills. At WISE, we have a team of seasoned, experienced parents, grandparents, and caregivers who have raised or are raising children with hearing loss to speak. They understand firsthand the critical role and challenges you face. Our network is here to empower, support, and train (NEST) you to be effective in meeting your child's many needs. Whether you just learned your infant was referred for follow-up testing after an abnormal result on her newborn hearing screening in the hospital or your son with hearing loss is leaving for college this fall, we are here for you.

Contact Us Today!

Phone: 205-728-5480

www.WISE4AL.org

WISE Program Director:

Nancy Gregg
Nancy.Gregg@WISE4AL.org

WISE Family Network for Empowerment, Support, & Training (NEST):

Family.Support@WISE4AL.org