Early Intervention Services for Children Who Are Deaf or Hard of Hearing
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• A coordinated and comprehensive system of programs, services, and resources
• Designed to meet the physical, intellectual, language, speech, social and emotional needs of children from birth to three years who have a developmental delay or are at risk for developing a delay.
The First Step: Newborn Hearing Screening

• Screened by 1 month
• Diagnosed by 3 months
• Intervention by 6 months
Hearing Impairment Impacts

- Speech & Language Development
- Communication Skills
- Cognitive Development
- Social Emotional Development
Best Practice

• Infant Hearing Screening
• Early Identification
• Early Intervention
• Family Involvement
• Professional Standards
• Family Choice
Where Does Early Intervention Take Place?

- Natural environment
- Clinic
- School
Early Steps

Florida Department of Health

Children’s Medical Services

Early Steps

Regional Early Steps

SHINE
Serving Hearing Impaired Newborns Effectively (SHINE)

- Individualized Family Support
- Family Education
- Natural Environment
- Resources
Foundation Philosophies of SHINE

• Parents of children recently diagnosed require emotional support and information about hearing loss.
• Parents need unbiased information about communication options.
• Active family involvement can enable language development at a typical rate.
SHINE Goals

• Family education of impact of hearing impairment.
• Knowledge of auditory skill development
• Knowledge of strategies to provide communication access.
• Monitor development of communication skills.
Goals of Early Intervention

• Receptive language
• Expressive language
• Auditory perception
• Speech development
Central Auditory Development

- Central auditory system is highly plastic during the first 3.5 years of life.
- After 7 years of age without auditory input MRI studies have shown that the auditory cortex of the brain is re-organized.
- MRI studies indicate that the auditory cortex shows minimal auditory reception after seven years of age.

Anu Sharma (2002)
Cortical Auditory Evoked Potentials
Auditory Access

• Hearing aids
• Cochlear implants
• Baha
• FM systems
Cochlear Implants

- Useful when hearing aids are not effective
- Surgical procedure
- Send electrical signals directly to auditory nerve

Illustration courtesy of Cochlear Corporation.
Baha Implantable Bone Conduction Hearing Aid
Baha Bone Conduction Aid
How the Baha implant works
Auditory/Linguistic Learning

• Child becomes more aware of sound.
• Connects sound with meaning.
• Understands more complex language
  – In quiet circumstances
  – In a variety of more difficult listening conditions.

Elizabeth B. Cole and Carol Flexer, 2007
“We don’t have ear lids”

Carol Flexer, 2010
Trust the Hearing

- Check technology
- Use listening
Levels of Auditory Skills

• Detection
• Discrimination
• Recognition/Identification
• Comprehension
Communication

• Unbiased information
• Choices
• Strong emotions tied to language
Continuum of Communication Modality

Auditory-Verbal  Auditory-Oral  Cued Speech  TC  ASL

AUDITORY  VISUAL
American Sign Language

- Visual language
- Has it’s own vocabulary and grammar
- Distinct from any spoken language
Bilingual/Bicultural

- ASL is first language
- English or family’s native language is second language
- Focus is on the written form of the second language.
Total Communication

• Combination of communication options
• Oral and manual
• Use of Manually Coded English, ASL, Cued Speech
• Use of auditory technology
Cued Speech

- Visual code based on the sounds used within words
- Hand-shapes visually represent speech sounds
- Tool for speech reading spoken languages
- Not a separate language
Auditory-Oral

• Maximum use of technology for auditory access
• Focus on listening and spoken language
Auditory Verbal

- One aspect of auditory-oral
- Focus on development of listening skills
- Reliance on hearing alone during specific teaching times
- Parent training and participation highlighted
- Certification process as a Listening and Spoken Language Specialist
Choice

- Families must have unbiased information
- Must have choice
- Can mix and match approaches
SKI-HI Curriculum

• Curriculum for family centered programming for infants and young children with hearing loss.

• Topics with visuals, handouts, and activity sheets.

• Six day training program
Language Development

• Requires consistent exposure
• Need fluent models
• Need visual and/or auditory access
Intervention Strategies
Not Modality Specific

• Caregiver Strategies
• Interventionist Strategies
Caregivers

• Bath child in language
• Scripts for daily routines
• Read to their child
• Control auditory environment
Therapist

• Assess baseline skills.
• Establish short and long term therapy objectives.
• Provide activities that will elicit targets.
• Monitor progress.
Providing Talking Opportunities

- Sabotage
- Incomplete tasks
- Ridiculous actions
- Wait time
Sabotage

• Containers that cannot be opened without help.
• Toys that are too high to reach.
• Toys that don’t turn on.
Incomplete tasks

• Provide just a few pieces of a food item.
• Offer part of a toy.
• Give the paint but not the paintbrush.
Ridiculous actions

- Pour the milk with the cap on.
- Put pants on a doll’s head.
Wait Time

- Allows time for spontaneous production.
- Allows child to process information.
- Puts responsibility for conversation on child.
Monitoring Progress

• Auditory Skills
• Language Skills
Infant-Toddler: Meaningful Auditory Integration Scale (IT-MAIS)

- Modified version of the MAIS
- Parent or teacher report scale
- Assesses auditory behaviors of infants and toddlers in their natural environment
- Standardized interview technique

S. Zimmerman-Phillips, M.J. Osberger, A.M. Robbins
IT-MAIS

- Is the child’s behavior affected by wearing the sensory aid?
- Does the child spontaneously respond to name in background noise with only auditory cues?
- Does the child know the difference between speech and non-speech stimuli with listening alone?
Early Speech Perception Test
ESPT

- Category 1: No Pattern Perception
- Category 2: Pattern Perception
- Category 3: Some Word Identification
- Category 4: Consistent Word Identification

Jean S. Moog and Ann E. Geers, 1990
Language Assessments

• SKI-HI Language Development Scale
• Preschool Language Scale
• Receptive-Expressive Emergent Language Scale-3
Listening Room

• Advanced Bionics has developed this wonderful website with many activities for students of all ages.

[www.hearingjourney.com](http://www.hearingjourney.com)

Click on

“Listening Room”

Select Age Group
Reading is a multifaceted skill, gradually acquired over years of instruction and practice.

The Many Strands that are Woven into Skilled Reading
(Scarborough, 2001)

**LANGUAGE COMPREHENSION**

<table>
<thead>
<tr>
<th>BACKGROUND KNOWLEDGE</th>
<th>VOCABULARY KNOWLEDGE</th>
<th>LANGUAGE STRUCTURES</th>
<th>VERBAL REASONING</th>
<th>LITERACY KNOWLEDGE</th>
</tr>
</thead>
</table>

**WORD RECOGNITION**

<table>
<thead>
<tr>
<th>PHON. AWARENESS</th>
<th>DECODING (and SPELLING)</th>
<th>SIGHT RECOGNITION</th>
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</table>

Skilled Reading—fluent coordination of word reading and comprehension processes

- Increasingly automatic
- Increasingly strategic
A Word About Unilateral Hearing Impairment

• 22%-35% repeat a grade
• 13% need some special resource assistance
• 20% described as having behavior issues
Percent Failing at Least One Grade

- Bess et al
- Oyler and Matkin

- UHLs
- District Norms

Percentage

0 5 10 15 20 25 30 35
## Studies on Unilateral Hearing Loss

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Failed (1 or more grades)</th>
<th>Resource Help (1 or more years)</th>
<th>Combined (failed and/or resource help)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bess (1986)</td>
<td>35%</td>
<td>13.3</td>
<td>48.3%</td>
</tr>
<tr>
<td>Oyler (1987)</td>
<td>27.3%</td>
<td>40.7</td>
<td>68.0%</td>
</tr>
<tr>
<td>Jensen (1988)</td>
<td>18.0%</td>
<td>36.0%</td>
<td>54.0%</td>
</tr>
<tr>
<td>Martini (1988)</td>
<td>25.0%</td>
<td>?</td>
<td>?</td>
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</tbody>
</table>
Failure as a Function of Ear

- Right: 38%
- Left: 62%

Bess & Tharpe, 1986