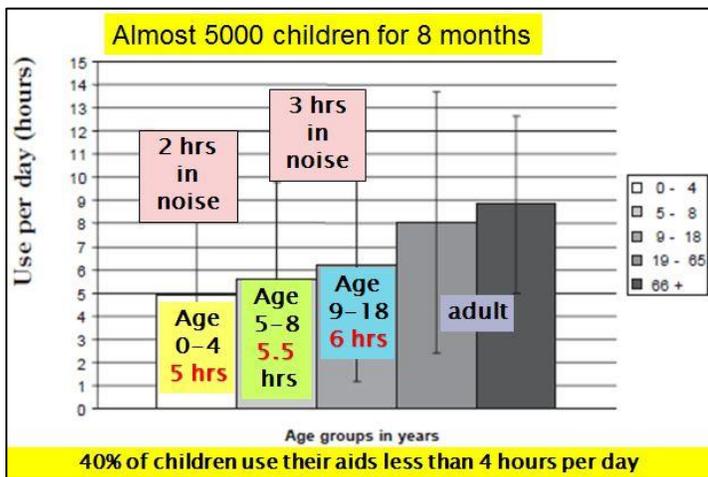


If We Could Improve Just ONE Thing Getting the Most Out of Early Hearing Loss Identification

Early Hearing Detection and Intervention (EHDI) is a fabulously successful health improvement initiative with 98%¹ of newborns in the US now being screened for hearing loss shortly after birth. Accomplishing truly universal hearing screening seemed very daunting in the 1990s but was accomplished in about a decade. The reality has now sunk in however, that hearing screening was the easy part.

The value of universal newborn hearing screening lies in the assumption that the developmental delays secondary to hearing loss will be prevented, or significantly minimized, for the children identified. Although we have seen this happen with many children whose parents have been involved in early intervention, a significant issue remains – lack of consistent hearing aid wear.

Eye-opening research in 2010² reported that only 10% of children wear their hearing aids all

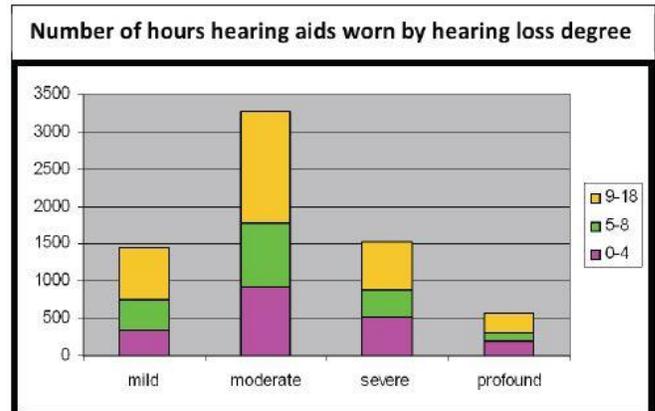


waking hours (Figure 1). This data was obtained on almost 5000 children from infancy through 18 years via the data logging capabilities of their hearing aids over an 8 month period. It is well recognized that amplification is the single most effective habilitation treatment we can provide to truly reduce the developmental effects of hearing loss. Growing the auditory brain of young infants via consistent use of amplification is the first step in an effective early intervention program for the 93%³ of families who have

chosen listening and spoken language as their child’s mode of communication. Therefore it is very disturbing that infants in the first year of life, on average, wear their hearing aids only 5 hours a day. The exposure to language and opportunities for auditory brain growth that could have been realized due to early identification of hearing loss are drastically reduced by this reality.

More disappointing is the result that the pattern of inconsistent hearing aid wear changes based on degree of hearing loss (Figure 2). Two assumptions can be drawn from the figure above. First, when families “see their child hear,” as in the case of a mild hearing loss, that they are less likely to use hearing aids consistently. This results in a child who tries to “pass” as typical hearing, frequently resulting in unnecessary gaps in educational performance. Second, families of children with severe to profound hearing loss who do not experience the desired benefit from hearing aids, meaning typically successful communication exchanges, also are less stringent about consistent hearing aid wear.

So, if we could improve just one thing to attain better outcomes secondary to early identified



hearing loss it would be to provide families with the support they need to accomplish full-time hearing aid wear for their children. In 2012⁴, a survey inquiring about strategies to keep hearing aids on young children was completed by 286 parents and 101 pediatric audiologists. There were two strong findings: 1) families are overwhelmed and really do not understand the impact of hearing loss at the time that they are being told their child needs amplification and 2) audiologists typically lack information on what strategies and hearing aid retention accessories are truly effective in order to provide families with the support needed for them to deal with infants and toddlers who take off their hearing aids.

Because parents have very little experience watching their newborns respond to sound in their environment and 19 of 20 babies with hearing loss come from families without the trait of early hearing loss it is typical for families attending the diagnostic hearing evaluation to see it as perfunctory, without expectation for a negative finding. Once the hearing loss is diagnosed, the news engages the flight or fight response within the amygdala of the brain and it is not possible for the parents to process information. Therefore it is suggested that a ‘sound bite’ be used by the audiologist prior to conducting the evaluation:

6 Points to Include in the Soundbite

- a) Screening hearing in newborns is so important that it now happens to almost every baby in the US.
- b) It is important to screen hearing early because of brain development –connections are being created NOW for babies brains to make sense of sound.
- c) Babies need to hear words clearly to learn to understand words and use words on time (1 yr).
- d) It takes 20,000 hours of listening before a young child’s brain is ready to learn to read (5-6 yrs).
- e) Even a small amount of hearing loss will impact brain development and when a child starts to talk or readiness to learn to read.
- f) We need to find hearing loss early so learning problems can be prevented as much as possible

Example: “We screen every baby in the country as newborns because it is so important to identify hearing loss early, when the brain is developing. Babies need to hear words clearly to learn to understand and use words on time, at around a year old. It takes 20,000 hours of listening before a young child’s brain is ready to learn to read at about age 5-6. Even a small amount of hearing loss will impact brain development. This means that unless the hearing loss is found and addressed, a child will not say his first word on time and won’t be ready to learn to read when he starts school. If your child has a hearing loss then we need to find it now so these learning problems can be prevented as much as possible.”

Before the diagnosis of the hearing loss, this information is more likely to be processed. Hearing loss is invisible. Most people think of English class, Language Arts, or learning a foreign language when we talk about *Language*. Therefore the points in this sound bite approach aim to make the developmental effects of hearing loss clear to families by mentioning issues that are important to them: the child saying their first word shortly after age one and learning to read in kindergarten/first grade. Once the diagnosis has been made, the audiologist can answer parent questions by returning to the developmental effects of a hearing loss that has not been addressed appropriately.

Even if the parents have grasped the importance of consistent use of amplification as a prerequisite to a typical rate of language learning, it is still no easy task to accomplish. Babies take of

their hearing aids at different ages for different reasons. To be most successful, the parent's response needs to take into account the reason why the hearing aids were removed and pair it with a strategy/accessory that will have a high likelihood of being successful at the child's particular age. Clearly, it is less than helpful for parents to continually hear, "Just keep putting the hearing aids back on" from the audiologist without real strategies to help overcome hearing aid wear issues.

Results of the 2012 survey provided information about strategies families found helpful at different ages. In addition, the survey requested the parents and audiologists to rate the safety, durability, effectiveness and ease of use of different hearing aid retention accessories. The results indicated clearly that audiologists are generally unaware of what is really safe or effective. The top five rated accessories/strategies are in Figure 3.

Parent Ratings of Hearing Aid Retention Accessories/Strategies						
Based on the results of the Children's Hearing Aid Retention Survey (Anderson & Madell, 2012).						
Retention Accessory	Effectiveness	Child Safety	Durability	Ease of Use	Keeps aids on & working	Average of all areas
Ear Gear	1	2	1	2	1	1
Cap	3	1	2	1	2	2
Safe-N-Sound	2	1	3	2	2	3
Wig / Toupee Tape	2	3	9	4	4	4
Oto / Critter Clips	5	7	7	6	5	5

8 Retention Accessories were rated in a survey completed by 286 parents.

Based on the information from the 2012 survey, three brochures were developed for audiologists and early intervention providers to give to parents of young children with hearing loss to support consistent hearing aid wear. The strategies presented in the three brochures are specific to specific developmental reasons why children remove their hearing aids: Babies - 0-12 months, Toddlers - 12-24 months, Preschoolers - 2-5 years. These brochures were designed to be printed double-sided on a standard office inkjet printer or other printing source. They are available for free download at <http://successforkidswithhearingloss.com/hearing-aids-on>. In addition, Oticon Pediatrics⁵ has combined the text of the three brochures into one brochure that they will be making available through the product brochures available for order on their website (free of charge). Refer to website to see the content of the brochure below.

If we can successfully support families in their understanding of the importance of consistent hearing aid wear and provide them with strategies to do so, we will come ever closer to realizing the promise of near-typical language outcomes for children with early identified hearing loss.

Toddlers: 12-24 months.

Meeting the Challenge

Keeping Hearing Devices on Young Children

12-18 months During the second year, the exploring toddler begins to do many things independent of his parents ("Me do").

- Many times like your child is getting into everything. It isn't unusual to find your toddler through a window of the hearing aid case that may be going through a stage where he is learning to control his movement and holding the hearing aid.
- It is an especially important time to consider what the baby is getting out of taking the hearing aids. Is he learning to wear them? Is he trying to get your attention? Is he trying to get you to do the fun things you did but that he can't do by himself?
- Whenever you choose to do an experience to his taking off the hearing aid, be sure you are doing what you need to do to control it. You don't want your baby to learn to associate the hearing aids with your anger. At this stage, the best way to deal with them.
- Temperament plays a big role throughout toddlerhood. Babies who are more laid back, more cooperative and who are more comfortable from being interrupted are easier to train to wear the hearing aids than a temperamental child who is very active, curious, and who is very independent.

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Why do we need hearing aids?

Children learn almost everything by hearing. Without using hearing aids, every day your child's learning will likely be significantly delayed by the time they start kindergarten. They might never catch up!

- The part of the brain that makes sense of sound needs to be developed before hearing can reach the brain. The part of hearing aids to make sound heard. You allow the auditory part of the brain to grow. This brain growth has to happen before it can be hearing to the world and work, to talk and to read.
- Early growth of the brain is the best time for the child to make up for late. To develop the auditory part of the brain, a child must hear his or her best ALL day long, every day.
- Your child can't learn words if he or she can't hear. Typically hearing children hear what words by 18 months. If your child can't hear, he or she won't learn what words are saying around them, your child's hearing aids need to make sure he or she can hear the right words when he is 18 months old.

When do we need hearing aids?

To be ready to start school like other children, your child needs to wear hearing aids every waking hour from infancy. A child needs to use hearing aids all day, every day to develop speech, language and social skills like other children his or her age.

- Children who have not hearing aids all day, every day must be able to listen to the 20,000 hours needed to be ready to read to most of the children in their class.
- Even children with total hearing loss can talk and understand what is said to them with hearing aids. If they do not use hearing aids every waking hour.
- The important time for brain growth during the first year is called the critical period. After this time, the child's brain will not be able to catch up to the other children.

Did you know?

Babies learn to do a year before they can talk. A baby who isn't hearing well for only 2 months after that 1 year is too late for best. Preschoolers with hearing loss who aren't consistently wearing their hearing aids will not be able to catch up to the other children.

Our secret thanks to those who donated funds for printing this brochure

Children's Hearing Aid Retention Project
Kaiten L. Anderson PhD & Jane K. Madell PhD
© 2012. For more information and information go to:
<http://successforkidswithhearingloss.com/hearing-aids-on>
or www.hearingaidson.com/hearing-aids-on

Hearing Device Retention Accessory Information

Hearing and retention accessories not included below were rated as less effective.
More information on survey results can be found at <http://successforkidswithhearingloss.com/hearing-aids-on>
Ratings based on the results of the Children's Hearing Aid Retention Survey completed by 286 parents (Anderson & Madell, 2012).

Ear Gear	Caps	Safe-N-Sound	Wig / Toupee Tape	Oto / Critter Clips
Spandex sleeve slips over hearing device. Soft, stretchy and fits snugly.	Caps cover hearing devices (over both sides) and protect from moisture and dirt.	Plastic loop slips over hearing device. Soft, stretchy and fits snugly.	Specifically made for use on caps. Attaches to top of hearing device and fits snugly over cap.	Plastic loop security system with push lock and pull out mechanism.
PROS: Stretchy and soft, allows for full range of motion. Spandex sleeve protects from moisture and dirt. Hearing aids being covered by spandex. Plastic clips are soft and comfortable and have long enough to slip over a child's head. Safe-N-Sound is a lightweight and soft. Silksaver caps have non-slip pads and are comfortable to wear. Velcro. Discontinue after hearing device is removed by parent. Use by children of all ages. Works on all hearing aids.	PROS: Effective at discouraging toddlers from removing hearing aids. Washable and durable. Hearing aids and hearing device caps are covered and have long enough to slip over a child's head. Safe-N-Sound is a lightweight and soft. Silksaver caps have non-slip pads and are comfortable to wear. Velcro. Discontinue after hearing device is removed by parent. Use by children of all ages. Works on all hearing aids.	PROS: Easy to install. One size fits all hearing aid and smaller hearing models. Flexible and soft. Comes in many different colors to increase child's interest and make it more fun. Effective at discouraging young child from pulling out the hearing aid. Velcro. Discontinue after hearing device is removed by parent. Use by children of all ages. Works on all hearing aids.	PROS: Good start for some change. Does not require much of a tight hearing aid. Not a tight fit. Prevents damage when child is just starting to use his hands to explore or when device is large/heavy for the child to use. Used primarily when child's energy is very high. Use all hearing devices.	PROS: Low cost, easy to install. Secure. One size fits all hearing aid and smaller hearing models and hearing device caps. Comes in many colors, and some models are available with cutouts on the face of device - encouraging child to wear their aids. Used by children of all ages wearing hearing aids, cochlear implants or BNA.
CONS: Warm for summer or southern climates. www.goggles.com www.hearingaidson.com	CONS: Warm for summer or southern climates. www.goggles.com www.hearingaidson.com	CONS: Warm for summer or southern climates. www.goggles.com www.hearingaidson.com	CONS: Breaks easily and may damage. One size fits all. Possible discomfort when removed - by child or parent. Child discomfort is not comfortable when it is removed if used frequently. One size fits all. Case always matches.	CONS: Breaks easily and may damage. One size fits all. Possible discomfort when removed - by child or parent. Child discomfort is not comfortable when it is removed if used frequently. One size fits all. Case always matches.
#1 Rated	#2 Rated	#3 Rated	#4 Rated	#5 Rated

References

1. Newborn hearing screening data: http://www.cdc.gov/ncbddd/hearingloss/2011-data/2011_ehdi_hsf_s_summary_a.pdf
2. Hours of hearing aid wear: http://www.phonakpro.com/content/dam/phonak/gc_hq/b2b/en/events/2010/Proceedings/Pho_Chap_12_Jones_Final.pdf
3. Personal communication: North Carolina Beginnings program; Joni Alberg 1/22/14.
4. Survey information and results: <http://successforkidswithhearingloss.com/hearing-aids-on>
5. Source of Oticon brochures: <http://www.oticon.com/professionals/paediatrics/publications-and-downloads/product-brochures.aspx>

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Anderson, K. L. (2014). If we could improve just one thing: Getting the most out of early hearing loss identification. Advance for Speech Language Pathology & Audiology. Published March 3, 2014. <http://speech-language-pathology-audiology.advanceweb.com/Hearing-Practice-Management/Columns/Pediatric-Pointers/If-We-Could-Improve-Just-ONE-Thing.aspx>