SFSU and CDBS Announce New Teacher Training Program in Deaf-Blindness – see page 3!

California Deaf-Blind Services

reSources

Volume 12, Number 5 Spring 2007

What's New In Hearing

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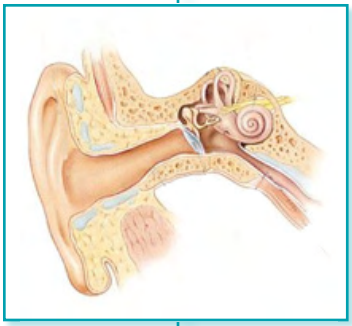
How We Hear

The **outer ear** collects the sound and sends it down the **ear canal** to the **eardrum**. The eardrum vibrates and the sound is sent to the bones of the middle ear. If there is a problem anywhere along the way it is called a **conductive hearing loss.** Conductive hearing losses can be mild or moderate.



The sound then goes to the **inner ear** which looks like a tiny snail shell. The ends of the hearing nerves are contained in this snail-like structure which is called the **cochlea.** If there is a problem in the cochlea it is called a **sensorineural hearing loss.** This is also often referred to as a nerve loss or nerve damage. Nerve hearing losses can be mild, moderate, severe or profound.

In This Issue

❖ ***HEARING & ASSISTIVE TECHNOLOGY*** ❖

Traditional Hearing Aids

A **bone-conduction hearing aid** is used if there is a problem in the outer or middle ear. The entire hearing aid is placed behind one of the ears using some sort of headband. There is no ear mold used.

An **air-conduction hearing aid** is used if the problem is in the inner ear. This hearing aid is usually worn over one or both ears. The hearing aid(s) is attached to an ear mold which is placed in the ear canal. Sometimes the hearing aid is worn on the body and connects with a cord to a mold in the ear canal. For children who have no more than a moderate hearing loss the entire hearing aid can be worn in the ear canal.

Implantable Hearing Aids

BAHA

A bone-conduction hearing aid can be placed directly in the middle ear by an ear surgeon. The hearing aid is placed inside the mastoid bone and vibrates the middle ear directly. The sound then travels on to the normal nerves in the cochlea. This is a medical procedure usually done on an out-patient basis in one day. This hearing aid is called a **Baha** (Bone Anchored Hearing Aid) and the **Cochlear Americas** corporation is the only one presently approved by the FDA to provide direct bone conduction amplification.

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Baha technology was developed in Scandinavia twenty years ago. The Baha is used primarily for those children who have some sort of congenital ear malformation, such as an abnormal or no ear canal (atresia). It has also been used for children with chronic otitis media. The Baha is also used for mixed hearing losses where the problem is both in the middle ear as well as in the inner ear. The children selected for the Baha are those with a mild to moderate hearing loss. Children have to be at least five years of age to have a Baha hearing aid implanted. For those under the age of five the Baha can be attached to a headband and worn on the head. Baha hearing aids have been approved for use by the FDA since 1996. Approximately 35,000 individuals have been implanted to date. A breakdown of the number of children implanted with a Baha is not available.

In Europe it is common to start implanting at eighteen months. In the US, an infant as young as nine months of age has been implanted with a Baha. It is interesting that in the US a physician can implant at any age based on their clinical/medical judgment. The FDA does not regulate medical practice.

Cochlear Implants

A hearing aid called a **cochlear implant** is also implanted inside the mastoid bone. The cochlear implant has developed from having a single electrode (thin wire) to approximately 24 electrodes. These electrodes leave the cochlear implant and are placed directly on the ends of the nerves in the inner ear (cochlea). The electrodes provide electric stimulation to the damaged nerves in the cochlea. This is also a medical procedure done by an ear surgeon. Cochlear Implant surgery is more complicated than for the Baha and usually requires an overnight stay in the hospital.

The first cochlear implant was approved by the FDA in 1984 and was developed by Cochlear Corporation. The cochlear implant has seen incredible changes in size. The original implant was attached to a cord outside the head which led to a bulky and heavy sound processor worn on the body. Today's body-worn device has gotten much smaller. The implant can also be attached to a device worn over the ear much like a regular over-the-ear hearing aid. This eliminates both the cord and body-worn sound processor. Presently the two principal companies that produce cochlear implants are **Cochlear Americas** and **Advanced Bionics.** The name of the device made by Advanced Bionics is referred to as a **Bionic Ear** which was approved by the FDA in 1996. The Bionic Ear has had a variety of names including "Clarion" and "Harmony." The name of the device made by Cochlear Americas is the **Nucleus** which was approved by the FDA in 1990. The current device is called "Nucleus Freedom." Both companies report about the same level of success for their devices. The children selected for cochlear implants usually have a severe to profound hearing loss and do not benefit from traditional hearing aids.

More than 100,000 individuals worldwide have received cochlear implants, 86,000 for the Cochlear Nucleus and 23,000 for the Clarion. In the United States, the number is more than 22,00 adults and 15,000 children. Some children continue to wear a hearing aid in the ear opposite to the cochlear implant ear. Seven years ago the FDA lowered the eligibility age to twelve months for the Nucleus because early auditory stimulation is so important to language development. The age for implantation has also been lowered to twelve months for the Bionic Ear. A limited number of infants under the age of one year have been implanted. As with the Baha, physicians are not regulated by the FDA and can implant infants of any age. An increasing number of multi-handicapped deaf children have received cochlear implants. A total of seventeen deaf-blind children who have received cochlear implants have been reported on the California statewide census.

The attachment of FM systems to the cochlear implant has also been much improved. This is especially important for children in the classroom. The implants are also presently water-resistant.

Bimodal Cochlear Implants

An increasing number of professionals are now recommending that for those individuals who have a cochlear implant that they continue to wear a standard hearing aid in the other ear. This is called "bimodal" hearing aids. When an individual has a hearing loss in the inner ear it is usually just the ends of the nerves that are damaged. The rest of the nerve is usually working. However, it has been found that over time the nerves themselves become damaged if there has been no sound delivered to them. It is particularly important, therefore, for a child to wear a standard hearing aid in the non-implant ear so that if that ear also receives a cochlear implant at a later date the nerves are still working because they have continued to be stimulated.

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Bilateral Cochlear Implants

There are 3000 individuals, including children, who have already received a Cochlear Implant in both ears.

Future Implants

Under development at the present time is a device called a "**hybrid**." This will incorporate a standard hearing aid and a cochlear implant in the same device. This is probably about five years down the road. All of these changes in the cochlear implant design takes place in the sound processor which is worn like a behind-the-ear hearing aid. This is important because that part of the cochlear implant which is implanted in the mastoid bone does not have to be replaced by future surgeries.

It is also possible that, in the future, the entire cochlear implant system will be implanted with no parts on the outside of the head or body. This will be especially desirable for children.

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SFSU and CDBS Announce New Teacher Training Program in Deaf-Blindness

University–CDBS Partnership Project

San Francisco State University has been awarded a four-year personnel preparation grant from the U.S. Department of Education, Office of Special Education Programs. The new program—a partnership between SFSU's Moderate/Severe Disabilities Credential Program and California Deaf-Blind Services—will prepare teachers to meet the needs of students who are deaf-blind and develop the next generation of leaders in the field of deaf-blindness.

This endorsement program in the education of learners who are deaf-blind will include, in addition to all coursework and fieldwork requirements for the Moderate/Severe Disabilities Credential Program, the following opportunities:

- one semester of fieldwork at a site serving at least one student who is deaf-blind, with supervision from a CDBS Educational Specialist;
- additional coursework in visual impairment, hearing impairment, and deaf-blindness;
- an eight-week internship with California Deaf-Blind Services, concurrent with student teaching, that includes observation, supported engagement in technical assistance activities, extensive reflections with CDBS staff on effective practices for educating students who are deaf-blind, team collaboration, and technical assistance to educational team members and families;
- a regional training provided to families and support providers of children who are deaf-blind.

Students will be eligible to receive substantial stipends of approximately $15,000.

For more information, contact:

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IDEAs that Work
Office of Special Education Programs

San Francisco State University

Useful Web Resources for Issues Related to Hearing, Cochlear Implants, and Bone Anchored Hearing Aids

Hearing

http://www.tsbvi.edu/Outreach/seehear/archive/listening.html

Are You Listening? Auditory Issues for Children with Visual Impairments

by Kate Moss, Family Training Specialist

(based on material presented by Jim Durkel, Audiologist and Education Specialist for Deaf-Blind Outreach)

This is a great article from the Texas School for the Blind and Visually Impaired's newsletter SEE/HEAR that we have used extensively as a workshop handout. The article includes the following sub-headings: How Do We Hear?, Causes Of Hearing Loss, Characteristics Of Sound, Components Of Understanding The Spoken Word, Other Factors Influencing Auditory Skills, Addressing The Effects Of Hearing Loss, and Strategies For Developing Listening Skills. If you haven't seen the TSBVI website, check it out; it has an extensive collection of articles specific to deaf-blindness.

http://www.boystownhospital.org/Hearing/info/index.asp

Boys Town National Research Hospital

From the website: Boys Town National Research Hospital provides parents with a variety of helpful information related to hearing loss in children.

http://health.howstuffworks.com/hearing.htm

How Stuff Works

The "How Hearing Works" section of this website has an excellent overview of hearing with very clear, easy-to-understand graphics.

Cochlear Implants

http://www.wou.edu/cidb/

Cochlear Implants for Children with Combined Hearing and Vision Loss (research project in which California Deaf-Blind Services is a collaborative partner)

From the website: Many families struggle with the decision about whether to get a cochlear implant for their child. This decision becomes even more complicated when the child is blind or has a vision impairment, because very little information has been compiled that families can access for guidance in making their decision. Very little research-based information exists about the benefits and challenges of cochlear implants for children who are deaf or hard of hearing, who also have a vision impairment. This multi-year project will address a number of objectives to begin to provide a research base for more informed decision-making by families and service providers, in relation to cochlear implants for children who are deaf-blind. We invite you to explore our complete abstract, information for parents and professionals, and to contact us for more information or to learn how you can participate with us.

http://clerccenter.gallaudet.edu

Cochlear Implant Education Center, Laurent Clerc National Deaf Education Center, Gallaudet University

From the website: The Cochlear Implant Education Center is a unit of the Laurent Clerc National Deaf Education Center at Gallaudet University. The Center investigates, evaluates, and disseminates effective practices related to cochlear implant technology and its role in the education and lives of deaf children from birth through high school. The Center does not provide cochlear implant surgical services.

Bone Anchored Hearing Aids (BAHA)

http://www.umm.edu/otolaryngology/baha.html

Maryland Hearing and Balance Center, University of Maryland Medical Center

From the website: The Baha is a surgically implantable system for treatment of hearing loss that works through direct bone conduction. It has been used since 1977, and was cleared by the FDA in 1996 as a treatment for conductive and mixed hearing losses in the United States. In 2002, the FDA approved its use for the treatment of unilateral sensorineural hearing loss. Baha is used to help people with chronic ear infections, congenital external auditory canal atresia and single sided deafness who cannot benefit from conventional hearing aids. The system is surgically implanted and allows sound to be conducted through the bone rather than via the middle ear—a process known as direct bone conduction.

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News & Events

Mark Your Calendars!

COPE-DB Family Picnics:

Northern California Family Picnic
Saturday, June 23, 2007
10 a.m. – 3:00 p.m.
Tilden Park
Berkeley, California

Southern California Family Picnic
Saturday, August 25, 2005
10 a.m. – 3:00 p.m.
Junior Blind of America
Los Angeles, California

For more information about COPE-DB picnics, contact Jackie Kenley or Myrna Medina.

New Spanish Workshop:

La Visión y La Audición

(Vision and Hearing)

para familias y profesionales que hablan español y que tienen niños o jóvenes con problemas visuales y/o auditivos

(for Spanish speaking family members and professionals of children and young adults with visual and/or hearing problems)

Trainers: Gloria Rodriguez-Gil y Myrna Medina

Saturday, September 8, 2007

9:00 a.m. – 4:00 p.m.

Westside Family Empowerment and Resource Family Center
5901 Green Valley Circle, #320
Culver City, CA 90230

For more details, contact Gloria or Myrna.

THE CHARGE SYNDROME FOUNDATION

The 8th International CHARGE Syndrome Conference

July 27–29, 2007

Hilton Orange County
Costa Mesa, CA

A primary objective of the conference is to provide families with information and support that will help them achieve the best possible outcome for their individual situations. The second objective is to create opportunities for medical and educational professionals to learn from the experts who will be speaking at the conference, and from families with CHARGE.

And YES, volunteers are needed!

For further details point your web browser to the CHARGE Syndrome Conference page at http://www.chargesyndrome.org/conference-2007.asp, and then join the CDBS staff in our suite at the Hilton for an informal get together on Friday evening (see invite on next page). Feel free to call Family Specialist Jackie Kenley at 800-822-7884 extension 3 for more information.

News & Events

California Deaf-Blind Services

and

Coalition of Parents and Educators Deaf-Blind

Invite all
California Families and Educational Team Members attending the CHARGE Conference

To- a California "get together"
at the international charge conference
On- the evening of Friday,
July 27th, 2007
From- 6:00 pm until 9:00 pm
Please join us in our suite
at the Hilton hotel.

There will be light refreshments served.

On the day of the event, contact Jackie Kenley 415-609-0796 or Myrna Medina 323-363-7499 for the specific suite number.

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CDBS *reSources* is published quarterly by California Deaf-Blind Services.

This newsletter is supported in whole or in part by the U.S. Department of Education, Office of Special Education Programs, (Cooperative Agreement No. H326C030017). However, the opinions expressed herein do not necessarily reflect the policy or position of the U. S. Department of Education, Office of Special Education Programs, and no official endorsement by the Department should be inferred. Note: There are no copyright restrictions on this document; however, please credit the source and support of federal funds when copying all or part of this material.

IDEAs that Work
Office of Special Education Programs

Funding Source:

Public Law 105-17, Title I – Amendments to the Individuals with Disabilities Education Act, Part D, Subpart 2, Sec. 661(i)(1)(A)

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