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Technical Assistance Paper 312870

Meeting the Educational Needs of Students with Cochlear Implants and IDEA 2004

Purpose

This technical assistance paper (TAP) provides information to assist audiologists, teachers, speech-language pathologists, administrators, and parents in understanding the impact of a cochlear implant on a student's learning and educational development. The information may be helpful as public school personnel establish district procedures for addressing the unique educational needs of this population of students. Please note that the term "teacher" refers to the student's primary educator. This individual may be a teacher of the deaf/hard of hearing, a general education teacher, or an exceptional student education (ESE) teacher.

Background

A cochlear implant is an electronic device that provides access to sound to individuals who have a severe to profound hearing loss and are unable to gain optimal benefit from hearing aids. The device has internal components and external components. The internal components are surgically placed inside the inner ear, or cochlea. The external component consists of either a body-level or ear-level speech processor. The implant bypasses the damaged parts of the ear and sends electrical sound information directly to the auditory nerve. The device is programmed (or mapped) based on the child's responses to loud and soft sounds to provide optimal access to the speech spectrum. Although it does not restore hearing to normal, it can help the user perceive speech and environmental sounds.

In June of 1990, the Food and Drug Administration (FDA) approved the first cochlear implant device for children in the United States. The minimum age for implantation in the U.S. was initially set at 24 months for children with a severe to profound hearing loss. Today information is available showing that implants are safe and effective in younger infants. The candidacy criteria continue to change as more information becomes available. Currently, 12-month-old infants may be considered for the surgery. The candidacy criteria vary among cochlear implant centers. Specific criteria such as the amount of residual hearing, age of the child, length of deafness, medical contraindications, communications methodology, and parent's commitment to success may be used to help determine appropriate candidates for cochlear implants.

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The New Department of Education
John Winn, Commissioner

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BUREAU OF EXCEPTIONAL EDUCATION AND STUDENT SERVICES

Communication Modes

Students who are deaf or hard of hearing use a variety of communication modes. Prior to implantation, most school-age students have an established communication mode. For very young children, the communication mode used may vary with family members, friends, and professional staff. It is important that the students' modes of communication are accepted as they learn to listen with their cochlear implants. Once students are wearing the implants on a daily basis and are receiving training on developing listening and speaking skills, it is important that the students use their oral/aural skills each day. As students acquire more oral/aural skills and integrate them into their communication repertoire, it is important to accept and reinforce the use of these new skills. The following describes the most frequently used communication methods.

American Sign Language (ASL) is a visual-gestural language with its own grammar and syntax. Facial expressions; body movements; the intensity of the motions; and the shape, location, orientation, and movement of the hands are important aspects of ASL. Currently, no written form of ASL exists; however, some efforts are under way. ASL is used extensively within the deaf community.

Auditory/Oral is an oral approach that combines the use of speech, residual hearing, and speechreading as the primary means of communication. The *Verbotonal* method is an example of an auditory/oral method used in some schools.

Auditory/Verbal is a therapy technique that emphasizes the exclusive use of auditory skills. Auditory/Verbal therapists work individually with students and their families in order to assist them in the use of their hearing aids or cochlear implants to listen, to process verbal language, and to monitor their own speech. This technique is similar to the auditory/oral method except it does not encourage speechreading.

Contact Signing or Pidgin Sign Language or Pidgin Sign English are terms used to describe an individual's use of American Sign Language signs in English word order and with some inclusion of English morphemes. It is often used simultaneously with speech or a mouthing of words with no voice.

Cued Speech is a sound-based visual communication system that combines the natural mouth movements of speech with visual cues that represent groups of sounds. Cued speech uses eight handshapes to distinguish consonants that look alike on the mouth and four different positions near the mouth to represent vowels, making all the sounds of spoken language look different. These phonemically based cues are used to supplement speechreading.

Fingerspelling is the hand configurations that represent the letters of the alphabet. It is generally used for spelling proper names and words that have no known sign.

Manually Coded English is a system that uses signs, fingerspelling, or gestures to represent English manually. These signs are presented in English word order. The three well known manually coded English systems in educational programs are Signed English (SEE I), Signing Exact English (SEE II), and Seeing Essential English.

Total Communication is a philosophy of communication that uses signs, fingerspelling, speechreading, use of residual hearing, speech, and sometimes cued speech. The communication mode used depends on the needs of the student and the communication environment. The

student relies on residual hearing, speechreading, signs, fingerspelling, facial expressions, and gestures to perceive the message. Signing and speaking at the same time is known as *simultaneous communication*, which falls under the category of total communication.

Factors That May Affect a Student's Success

A student's ability to use the cochlear implant for communicating appears to depend on a variety of factors. Age at onset of deafness, duration of deafness, age of implantation, status of the cochlea, use of the cochlear implant, device factors, cognitive and attention skills, previous speech and auditory experience, nature and intensity of aural (re)habilitation, and motivation may affect a student's progress. Additionally and perhaps most importantly, continued, consistent parental support is key to an individual student's achievement (Cochlear Corporation, 1999; NHI, 1995; Spencer, 2002).

Students' success using their implants varies and depends on many factors. The Colorado Cochlear Implant Consortium's Pediatric Cochlear Implant Fact Sheet (2001) provides the following findings from numerous research studies investigating children's use of cochlear implants. Students may experience

- Significant increases in speech intelligibility and speech perception
- Significant, continued increases in receptive and expressive language
- A trend for better performance with those children implanted before the age of five to seven years
- When implanted early, as much success for those who lost their hearing before or during the time that they were learning spoken language as for those children who lost their hearing after acquiring spoken language

Meeting the Educational Needs of Students with Cochlear Implants

Each child has unique skills and educational goals. Students with cochlear implants are individuals with different auditory skills, cognitive skills, and methods of communication. Students' backgrounds, educational experiences, and family support should be considered in determining services needed to help students access and progress in the general curriculum. To optimize the benefits of a cochlear implant, parents must work with professionals to ensure the device is constantly working properly and worn by the student daily. Educational resources must be made available, and staff must be trained to address students' specific educational needs, as per the student's individual educational plan (IEP).

Steps to ensuring access to the curriculum includes a daily functional check of the implant, selection of a supportive learning environment, awareness of any special safety considerations, planned appropriate learning experiences, selection of needed resources, and selection of skilled team members. The acoustical environment, learning experiences, and resources provided by the professional staff and parents contribute to students' successful use of a cochlear implant. The student's acceptance of the device and personal communication goals must be considered in planning and implementing training for educational staff to maximize the benefits of an implant. After appropriate communication goals are identified and training is implemented, the communication skills must be an integral part of the student's educational services and daily living environment.

At the 2002 Cochlear Implant and Sign Language Putting It All Together (Identifying Effective Practices for Educational Settings) Conference, several issues emerged repeatedly throughout the conference.

- A one-size-fits-all approach will not meet the needs of all students with cochlear implants.
- Sign language and spoken language can support each other in the learning process.
- Educational settings that incorporate sign language must ensure opportunities to develop the use of hearing and spoken language.
- Services to facilitate the development and expansion of spoken language skills must be incorporated into the student's total education program.
- Opportunities to develop and utilize spoken language are essential to student progress.
- Staff from the cochlear implant center and the educational setting must work collaboratively to meet students' individual educational needs. Many strategies and techniques used to develop language skills with students who are deaf are beneficial for students with cochlear implants; however, expectations and outcomes must capitalize on the student's increased auditory potential.
- Many students with cochlear implants function as hard-of-hearing students rather than hearing students.
- Language development, social/emotional adjustment, and academic success vary from student to student, and students will need different types of support in the educational setting.

Functional Check of the Cochlear Implant

Students' cochlear implants must be working properly before they can benefit from their use. During the first three to six months use of the implant, it is common for students to need changes in the programming or map stored in the memory of the speech processor. The map is based on the student's responses to quiet and louder sounds to provide optimal access to the speech spectrum. Very young students may not be able to tell you if the implant is functioning properly. Parents and teachers should continually observe students' behavioral responses to environmental and speech sounds. Maintenance of anecdotal logs and conferring with others (i.e., speech/language pathologist, general education teacher, teacher of the deaf/hard of hearing) may provide consistent behavioral response information.

Parents should complete a quick, functional check of their child's cochlear implant each day. In the school setting, a daily check must also be performed by the person designated by the IEP team (i.e., speech/language pathologist, specific teacher). A functional check determines whether or not the device is working. An informal test of speech sound perception is the Ling Six-Sound Speech Test. These sounds sample points across the frequencies in which all speech sounds occur. Programming adjustments may be indicated when there are changes in auditory skills and/or speech skills of the student. Check to ensure that the cords are plugged in correctly, the appropriate setting is used, batteries are charged, and the cord doesn't need to be repaired or replaced. For detailed procedures on conducting a functional check of the cochlear implant refer to *Cochlear Implants and Children: A Handbook for Parents, Teachers and Speech and Hearing Professiona*ls and the *Teachers Guide: Nucleus Cochlear Implant Systems* listed in the reference section of this TAP.

Learning Environment

Parents and professional staff must work cooperatively to provide an appropriate learning environment for students with cochlear implants. Classroom acoustics and the level of static electricity in the learning environment can affect the function of students' cochlear implants. Teachers and audiologists should work together to ensure an appropriate acoustical environment to maximize the student's listening ability. To reduce the effect of distance, background noise, and reverberation in the classroom, an appropriate assistive listening device (ALD), such as a personal frequency modulation (FM) system, a desktop soundfield FM system, or an infrared system (once a compatible infrared system is developed) may be beneficial.

Background noise in the classroom can mask and distort sounds heard by the student. The following are suggestions for improving classroom acoustics:

- Close the classroom door to avoid ambient noise from activities in the hall.
- Cover hard, reflective surfaces, such as floors, walls, and desks, with sound absorbing materials. Sound absorbing materials may be acoustic tiling, cloth, carpeting, or cork.
- Arrange the classroom so that instruction occurs away from high noise sources.

For additional resources on improving classroom acoustics refer to *Improving Classroom Acoustics: Inservice Training Manual*; *FM Sound Field Amplification: A Practical User's Guide;* or the American National Standards Institute (ANSI) *Standards on Classroom Acoustics*.

Every effort should be made to reduce the buildup of static electricity in the classroom to protect the cochlear implants. In its brochure, *Static Electricity and Cochlear Implants,* the Cochlear Corporation provides the following information on protecting the cochlear implant from static electricity as well as other safety considerations.

All cochlear implants have features to protect against "static" or electrostatic discharge (ESD). However, ESD damage may occur if the static electricity level is excessive. ESD can damage the electrical components of the cochlear implant system or corrupt the program in the speech processor. Different types of material and relative humidity are the two main factors affecting the level of static electricity in the environment. Suggestions for reducing the buildup of ESD in the classroom include

- Using metal furniture as opposed to plastic furniture
- Spraying anti-static spray on carpets and clothing
- Placing an anti-static shield over your computer monitor and an anti-static mat under the computer chair, keyboard, and mouse
- Using a humidifier to increase humidity levels and decrease the potential of static electricity buildup
- Wearing natural clothing fibers such as cotton and silk, which generates less static electricity than wearing synthetic fibers like nylon, polyester, rayon, or acrylic
- Wearing leather-soled shoes, which generates less static electricity than wearing rubber-soled shoes
- Removing the speech processor and headset before playing on a trampoline, plastic playground equipment, or occupational/physical therapy equipment
- Wearing the implant cables next to the skin to reduce the possibility of the implant cables brushing up against objects with high levels of static electricity.

Safety Considerations

Parents must inform school staff of any safety restrictions regarding physical activities for students with cochlear implants. Specific safety concerns should be written in the student's individual educational plan (IEP) and shared with all professional staff. To avoid losing or damaging the speech processor and headset, it may be necessary to remove them before going to recess or gym, depending on the age of the student.

The cochlear implant is not waterproof. It should not be worn while swimming or taking a shower. Students with cochlear implants should wear hooded raincoats when going out in the rain. For young students wearing a speech processor in a front harness, care must be taken to protect it from food or drink spills.

If students play on plastic playground equipment or a trampoline, the speech processors and the headpiece may be removed to avoid damage to both the speech processor and the implanted device. It is not sufficient protection to turn the device off.

The internal receiver/stimulator is susceptible to damage if a student sustains a direct blow to the side of the head. Depending on the student's age and/or abilities, wearing a protective helmet during certain physical activities may help prevent such damage. Such activities may include but are not limited to contact sports or any sport in which an object or a person may hit the student's head.

Educational Services

Educational services for students with cochlear implants are based on the student's IEP. Members of a student's IEP team must work collaboratively to meet the educational needs of the student. Parents, teachers, audiologists, speech-language pathologists, and the student, as appropriate, should be members of the IEP team. Representatives from the cochlear implant center may or may not be able to participate in an IEP meeting; however, their recommendations and ongoing communication with the implant center can be very helpful in planning services for students. Also, representatives from the cochlear implant center may be able to provide resources for teachers and parents and provide workshops for students, parents, and school staff as deemed appropriate by the IEP team.

All students should have the opportunity to access the general education curriculum. In addition, students with cochlear implants require time and opportunities to develop language and communication skills to the greatest extent possible. Planning a student's schedule to include academics and directed opportunities to develop listening skills and oral language skills can be complicated. Teachers must incorporate auditory training, speech, and speechreading skills into academic instruction including vocabulary and concepts from academic classes in auditory, speechreading, and speech training exercises adds meaning and relevance to the activities.

Most students with cochlear implants need direct instruction to develop listening skills and oral speech. There are auditory learning techniques that have to be used to assist students in developing oral communication skills. It is not sufficient to place a child in a totally oral environment and expect the student to develop auditory and speech skills without assistance. Students must be given time to develop oral skills and must be expected to use them in various settings.

If a student used sign language as part of his or her means of communication prior to receiving the cochlear implant, individuals must remember that the student must be able to communicate with others and may rely on the use of signs as they develop oral skills. As students' oral skills develop, sign language may be used less often in the classroom.

Many of the techniques and strategies used to develop the communication skills of students who are deaf or hard of hearing are appropriate for students with cochlear implants. However, parents and professionals should have high expectations regarding auditory development for these students. To afford each student the opportunity to benefit from the device and to improve oral skills, it is necessary to have ongoing opportunities to develop and use these skills to communicate with others. Specific strategies to achieve these skills will vary according to the student's needs. A curriculum with a scope and sequence of skills will be helpful in planning activities to develop listening skills. Examples of associations and Web sites to contact for curriculum, assessment, and current information on cochlear implants are listed in the resources section of this TAP.

In order to benefit from the use of cochlear implants, communication training goals will include improving auditory, speechreading, and speech and language skills. The decision to focus on oral/aural does not mean that a student will not use signs in some situations. Some students who used speechreading and signs to communicate before receiving their cochlear implant may continue to use these skills in various environments. Communication methods used may vary with situations and individuals. Specific communication goals must consider the individual student's wishes and current skills, and services should be planned to assist students in developing their personal skills. Various strategies and techniques are required to meet a student's individual communication goals. The degree of success of using a cochlear implant varies from student to student. Students must have opportunities to develop listening skills and speech and language skills and opportunities to use these skills.

Many school districts are unclear as to whether they are responsible for mapping (or programming) a student's cochlear implant. Per Title 34, Sections 300.5 and 300.6, Code of Federal Regulations (CFR), the definitions of assistive technology and related services do not include a medical device that is surgically implanted, or the replacement of such device. In accordance with Section 300.34(b)(1), CFR, related services do not include a medical device that is surgically implanted, the optimization of that device's functioning (e.g., mapping), maintenance of that device, or the replacement of that device. However, per Section 300.34(b)(2), CFR, the exclusion of the term does not limit the right of a child with a cochlear implant to receive related services that are determined by the IEP team to be necessary for the student nor does it prevent the routine checking of an external component of a surgically implanted device to make sure it is functioning properly as required in Section 300.113(b), CFR.

Educational Planning

Students should be encouraged to share their concerns and goals by actively participating in IEP meetings. Each team member should be aware of effective practices and any new concerns that need to be addressed.

Parents and siblings need to include the child with the cochlear implant in all family activities. It is important that the child receives continuous opportunities to improve communication skills. Meals, trips to the toy store, sports events, vacations, and all family activities are opportunities to reinforce sound association and language development. Use children's interest during play and story times to facilitate development of auditory and speech skills. Siblings should be encouraged to include the child in all neighborhood activities. Parents need to be fully informed of new curricular vocabulary and concepts being introduced in school so they can incorporate the information into home learning opportunities.

Teachers, including general education teachers, ESE teachers, and teachers of the deaf/hard of hearing who serve children with cochlear implants, are responsible for teaching academic content and addressing students' communication skills and needs. They must have high standards for students and require students to use their auditory skills and oral speech skills daily. Teachers must also reinforce the communication skills being addressed in students' auditory training, speechreading, and speech and language therapy. Teachers must work with other school personnel to ensure an acoustic learning environment that facilitates progress and achievement.

Speech-language pathologists in concert with audiologists may provide aural (re)habilitation services to assist students in enhancing their communication skills and ability to benefit from their cochlear implants. Speech-language pathologists facilitate students' abilities to detect and understand speech with their cochlear implants. They work with the students' classroom teachers by providing information about students' progress in developing speech, language, and auditory skills. If the student receives speech/language services outside of the classroom, the speech/language pathologist keeps the classroom teacher informed of specific skills being addressed in therapy sessions so these skills can be reinforced in the classroom.

Audiologists are important resources for parents and students interested in information on cochlear implants. It is important that an audiologist who is familiar with the student and his/her educational setting be included as part of the educational team and work cooperatively with staff from the cochlear implant center. Audiologists should be involved in the initial discussions when parents are considering a cochlear implant as an option for their child by providing parents with information about current cochlear implant devices, candidacy criteria, and a list of implant centers. Audiologists can discuss types of skill development activities that children will need to maximize the benefits of the implant. To best address the needs of the student, it is very important to have ongoing collaboration between staff of the implant centers and the audiologist from the educational setting. Audiologists from the educational setting can provide students' audiological information and assessment of auditory functioning within the classroom environment. They can also assist teachers with techniques to improve classroom acoustics and provide workshops on cochlear implants. For additional information on audiologists working with students with cochlear implants, you may want to refer to the Educational Audiology Association's Web site listed in the resources section of this TAP.

Administrative support is important and needed in meeting the educational needs of students. To provide quality services, staff must have the knowledge and skills to meet the educational needs of the students. A student's IEP team may determine that special training related to the needs of students with cochlear implants is needed for any staff member who routinely interacts with the student. This would be included on the student's IEP as "support for school personnel," according to United States Department of Education Title 34 Section 300.320(a)(4).

Conclusions

Today more and more students with cochlear implants are entering public school settings. Although they have varying levels of experience in using their implants, as a group they are functioning more like students who are hard of hearing than as students who are deaf.

The amount of time the cochlear implant is used each day affects the student's ability to develop and improve the use of auditory and oral speech skills. It is not sufficient to place a student with a cochlear implant in an inclusive setting and expect the student to develop auditory skills primarily through exposure to oral language. Conversely, some students may not require the level of support provided in a self-contained ESE classroom. Each student's personal communication and educational goals determine the type of educational support needed. The extent to which sound is integrated meaningfully into a student's daily life is very important. Before environmental sounds and speech can be meaningful to students, they must have opportunities to hear them in meaningful academic and daily living environments where sounds are associated with vocabulary, concepts, language, and communication.

Educational services for students who are deaf or hard of hearing must be individualized to meet students' unique educational needs. Parents and educators must work together to assist students in achieving their goals. Educational strategies for students with cochlear implants must take into consideration that these students will need direct instruction to develop and improve communication skills using their cochlear implants. Parents and educators must have realistic expectations and high standards for students with cochlear implants. The amount of emphasis given to auditory training, speechreading, speech, and language development depends on the student's skills and the need to develop or improve communication skills for various situations.

Appendix

Resources

Catalogues and ordering information on curriculum guides, books, pamphlets, position statements, or other information on cochlear implants are available from the following resources:

Alexander Graham Bell Association for the Deaf (AG Bell)
3417 Volta Place, NW
Washington, DC 20007
Voice/TTY: (202) 337-5220
Internet: http://www.agbell.org

Alexander Graham Bell Association for the Deaf (AG Bell) promotes communication of deaf and hard of hearing persons through maximizing hearing/listening potential, speechreading, speech, and language skills. The organization publishes journals, books, and other materials.

American Academy of Audiology
8201 Greensboro Drive, Suite 300
McLean, VA 22102
Voice/TTY: (800) 222-2336
Voice/TTY: (703) 610-9005
Internet: http://www.audiology.com/

The American Academy of Audiology is the largest professional organization of, for, and by audiologists.

American National Standards Institute
1819 L Street, NW
Suite 600
Washington DC 20036
Voice: (202)293-8020
Internet: http://www.ansi.org

For a copy of the ANSI *Standards on Classroom Acoustics,* please contact this organization. There is no cost for this publication.

American Society for Deaf Children
P.O. Box 3355
Gettysburg, PA 17325
Voice/TTY (717) 334-7922
Internet: http://www.deafchildren.org/

American Society for Deaf Children is an organization for parents and families. It advocates for deaf or hard of hearing children's total quality participation in education, the family, and the community. It holds an annual conference and sponsors a parent-to-parent network.

American Speech-Language-Hearing Association (ASHA)
10801 Rockville Pike
Rockville, MD 20852
Voice/TTY: (800) 638-8255
Internet: http://www.asha.org/

American Speech-Language-Hearing Association (ASHA) is the professional association for speech-language pathologists; audiologists; and speech, language, and hearing scientists. ASHA publishes journals and monographs.

Auditory-Verbal International, Inc.
1390 Chain Bridge Road, #100
McLean, VA 22101
Voice: (703) 739-1049
TDD: (703) 739-0874

Auditory-Verbal International is a nonprofit, independent corporation. Membership is open to anyone who is interested in learning about and promoting the auditory-verbal approach.

Central Institute for the Deaf
ATTN: Dianne Gushleff
CID Publications
4560 Clayton Avenue
St. Louis, MO 63110
Phone: (314) 977-0133
Fax: (314) 977-0016 fax
Internet: http://cid.edu/

Central Institute for the Deaf publishes test and classroom materials for professionals in deaf education. The school provides oral/aural deaf education.

Educational Audiology Association
13153 N Dale Mabry Highway, Suite 105
Tampa, FL 33618
Voice: (800) 460-7322
Internet: http://www.edaud.org/

The Educational Audiology Association is an international professional organization for audiologists who specialize in the management of hearing and hearing impairment within the educational environment.

Hearing Loss Association of America
7910 Woodmont Avenue, Suite 1200
Bethesda, MD 20814
Voice/TTY: (301) 657-2248
Fax: (301) 913-9413
Internet: http://www.hearingloss.org/

Cochlear Implant Association, Inc. (CIAI), formerly Cochlear Implant Club International, Inc., is currently in the process of becoming a division of the Hearing Loss Association of America (formerly Self Help for Hard of Hearing People).

House Ear Institute (HEI)
2100 West Third Street, Fifth Floor
Los Angeles, CA 90057
Voice (213) 483-4431
TTY: (213) 484-2643
Internet: http://www.hei.org/

The House Ear Institute (HEI) is a private, nonprofit organization dedicated to developing knowledge about hearing and related disorders. HEI improves hearing aids and auditory implants and develops innovative treatments and intervention methods. HEI has achieved an international reputation as a leader in its field through its applied otologic research and education programs.

John Tracy Clinic
806 West Adams Boulevard
Los Angeles, CA 90007
Voice: (213) 748-5481
TTY: (213) 747-2924
Internet: http://www.johntracyclinic.org/

John Tracy Clinic is an educational resource on early childhood deafness for parents and professionals. It has correspondence courses on cochlear implants, etc.

Laurent Clerc National Deaf Education Center
Gallaudet University
800 Florida Avenue, NE
Washington, DC 200002
Internet: http://clerccenter.gallaudet.edu/CIEC/

Laurent Clerc National Deaf Education Center, formerly the National Information Center on Deafness, provides information on deafness, hearing loss, and services for individuals from birth to age 21.

National Association of the Deaf (NAD)
814 Thayer Avenue
Silver Spring, MD 20910-4500
Voice: (301) 587-1788
TTY: (301) 587-1789
Internet: http://www.nad.org/

The National Association of the Deaf (NAD) is a nonprofit organization safeguarding the accessibility and civil rights of deaf and hard of hearing Americans in education, employment, health care, and telecommunications. Programs and activities include grassroots advocacy and empowerment, captioned media, certification of American Sign Language professionals, certification of sign language interpreters, deafness-related information and publications, legal

assistance, policy development and research, public awareness, and youth leadership development.

National Cued Speech Association
23970 Hermitage Road
Cleveland, OH 44122
Voice/TTY: (800) 459-3529
Internet: http://www.cuedspeech.org/

The National Cued Speech Association is a nonprofit membership organization founded in 1982 to promote and support the effective use of Cued Speech. It raises awareness of Cued Speech and its applications, provides educational services, assists local affiliate chapters, establishes standards for Cued Speech, and certifies Cued Speech instructors and transliterators.

National Institute on Deafness and Other Communication Disorders (NIDCD)

Office of Health Communication and Public Liaison
31 Center Drive, MSC 2320
Bethesda, MD 20892-2320
Voice: (301) 496-7243
TTY: (301) 402-0252
Fax: (301) 402-0018
Internet: http://www.nidcd.nih.gov/

The National Institute on Deafness and Other Communication Disorders (NIDCD) is one of the institutes that comprise the National Institutes of Health (NIH). NIDCD is mandated to conduct and support biomedical and behavioral research and research training in the normal and disordered processes of hearing, balance, smell, taste, voice, speech, and language. The Institute also conducts and supports research and research training related to disease prevention and health promotion, addresses special biomedical and behavioral problems associated with people who have communication impairments or disorders, and supports efforts to create devices that substitute for lost and impaired sensory and communication function.

Verbotonal Research Laboratory
528 S. Stadium Hill
University of Tennessee, Knoxville
Knoxville, TN 37996-0740
Voice: (423) 974-4775
Internet: http://web.utk.edu/~verbo/

The Verbotonal Research Laboratory was established by Professor Carl W. Asp in 1967, in the Department of Audiology and Speech Pathology at the University of Tennessee, Knoxville. On the Web page, you will find a list of school districts in the United States currently using this method.

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