Consensus on Cochlear Implants?

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A variety of important issues surround the use of cochlear implants as assistive devices for people who are deaf. Informal discussions of those issues are often emotional, particularly with regard to the appropriateness of cochlear implants for children. Regardless of the context and content of those informal discussions, the ultimate decisions about cochlear implants should depend on valid and reliable research findings concerning the cognitive, linguistic, social, medical, and psychological implications for the individuals who are implanted.

Although most of the publicity surrounding cochlear implants continues to come from their proponents, scholarly research is now providing more unbiased information in this regard. One summative source of information is a 1995 National Institutes of Health (NIH) Consensus Statement on Cochlear Implants in Adults and Children. Consensus statements of this sort come from panels of experts convened by NIH to evaluate available scientific information in a particular area of biomedical technology. The statements are intended to be useful to health professionals and the public at large. They are not intended as either policy statements of NIH or as primary sources of detailed technical information. Rather, they reflect the emergent view of a panel of thoughtful people who understand the issues before them and have carefully examined and discussed the scientific data available on an issue.

In May 1995, NIH organized such a meeting on cochlear implants. The following excerpts from the Consensus Statement from that meeting are intended to provide a balanced account of the panel's findings; for more complete information, readers should consult the original statement.1

Cochlear Implants in Adults and Children

Cochlear implantation has a profound impact on hearing and speech perception in postlingually deafened adults. Most individuals demonstrate significantly enhanced speechreading capabilities, attaining scores of 90–100 percent correct on everyday sentence materials. Speech recognition afforded by the cochlear implant effectively supplements the information least favorably cued through speechreading.

Prelingually deafened adults generally show little improvement in speech perception scores after cochlear implantation, but many of these individuals derive satisfaction from hearing environmental sounds and continue to use their implants.

Improvements in the speech perception and speech production of children following cochlear implantation are often reported as primary benefits. Variability across children is substantial. Fac-
tors such as age of onset, age of implantation, the nature and intensity of (re)habilitation, and mode of communication contribute to this variability.

Shortly after implantation, performance may be broadly comparable to that of some children with hearing aids and over time may improve to match that of children who are highly successful hearing aid users. Children implanted at younger ages are on average more accurate in their production of consonants, vowels, intonation, and rhythm. Speech produced by children with implants is more accurate than speech produced by children with comparable hearing losses using vibrotactile devices or hearing aids. Reports involving small numbers of children suggest that implantation in conjunction with education and habilitation leads to advances in oral language acquisition. Data on cognitive and academic development following implantation are not yet available. The nature and pace of language acquisition may be influenced by the age of onset, age at implantation, nature and intensity of habilitation, and mode of communication. Oral language development in deaf children, including those with cochlear implants, remains a slow, training-intensive process, and results typically are delayed in comparison with normally hearing peers.

Although psychological evaluation has been a part of the preimplant evaluation process, comparatively little research has been conducted on the long-term psychological and social effects of implantation. Still, the psychological and social impact for adults is generally positive, and there appears to be agreement between preimplantation expectations and later benefit. This benefit is expressed as a decline in loneliness, depression, and social isolation and an increase in self-esteem, independence, social integration, and vocational prospects.

Many adult implant recipients report being able to function socially or vocationally in ways comparable to those with moderate hearing loss. In some cases the experience of implantation becomes an integral part of the individual's identity, leading these implant users to participate and share experiences in support and advocacy groups. Negative psychological and social impact is less frequently observed and is often related to concerns about the maintenance and/or malfunction of the implant and external hardware. Other social insecurities may result from the difficulty of hearing amidst background noise, and from unreasonable expectations of aural-only benefit on the part of implant users or their family and friends.

The assessment of psychological impact in children with implants lags behind that for the adult population, in part because psychological outcome is a factor of audiological benefit, which is realized more slowly in children. Additionally, such assessment must consider the child's family setting. Because language acquisition is closely associated with identity, social development, and social integration, the impact of implantation on a child's development in these areas deserves more study to produce useful indicators that can bear upon the parental decision making processes.

Although a cochlear implant can provide dramatic augmentation of the auditory information perceived by deaf children and adults, training and educational intervention are fundamental for optimal postimplant benefit. Pediatric cochlear implantation requires a multidisciplinary team composed of physicians, audiologists, speech-language pathologists, rehabilitation specialists, and educators familiar with deafness and cochlear implants. These professionals must work together in a long-term relationship to support the child's auditory and oral development. Although the effects of communication mode in implantation habilitation have not been sufficiently documented, it is clear that the educational programs for deaf children with cochlear implants must include auditory and speech instruction using the auditory information offered by the implant.

Note

1. Available from NIH Consensus Program Information Service, P. O. Box 2577, Kensington, MD 20891; 1-800-NIH-OMAR.