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Some Ethical Dimensions of Cochlear Implantation for Deaf Children and Their Families

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A major source of controversy between Deaf people and those who support a “social/cultural” view of Deafness as “a life to be lived” and those who see deafness within a “medical model” as a “condition to be cured” has been over the cochlear implantation of young deaf children. Recent research has shown that there are noticeable inequities in access to such procedures in western countries; inequities that give rise to the need for informed public policy discussions. It has also found that parents of newly diagnosed deaf children are not provided with access to all the possibilities for their children—including that of a “Deaf life.” How this information can be provided to parents and the public via widespread discussions in the media and elsewhere and involving Deaf people in the implantation counseling process is an issue that needs to be addressed by those responsible for implantation programs.

Ethical Dimensions of Cochlear Implantation for Deaf Children and Their Families

The fitting of prelingually deaf children with cochlear implants has grown apace over the last 10 years, particularly with the advent of neonatal hearing screening (Yoshinaga-Itano, 2004). In the United States about 10% of profoundly deaf children have been implanted (Stern, Yueh, Lewis, Norton, & Sie, in press; based on 2000 data), and the implantation may be between 50% and 60% (M. Marschark, personal communication, July 23, 2005). For the United Kingdom the implantation rate appears to be around 73% (calculated from Fortnum, Marshall, & Summerfield, 2002, Table 1, page 4 and www.ihr.mrc.ac.uk/research/prostheses/outcomes/numbers.php, www.statistics.gov.uk/instantfigures.asp, and www.statistics.gov.uk/census2001/default.asp).

The rate is believed to be even higher in Australia; 80% in recent years (Johnston, 2004). Preisler, Tvingstedt, and Ahlström (2002) also report an 80% fitting rate for profoundly deaf children in Sweden. It seems likely that the implantation rate is similarly high in most developed nations, though data are hard to obtain.

The publicity surrounding the purported benefits of cochlear implants (Power, 2005) and the crucial life-shaping decisions that have to be made by parents of newly diagnosed deaf children (often under time pressure and usually by parents who have not before been familiar with deafness and the possible lives of deaf people; Hintermair & Albertini, 2005; Power, in press) highlight many of the key elements of ethical consideration: informed consent, risk–benefit determination, participation in decision making, right of choice, and children’s rights. Choices made have present and future influences on the personal, social, community, and cultural lives of implantees and their families. Spencer and Marschark (2004) have reviewed the status of opinion and research about cochlear implants for young deaf children and conclude:

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Emerging data about psychological and social-emotional functioning, however, give no strong evidence that using a cochlear implant either significantly resolves or exacerbates the kinds of social and psychological [and we would add, educational] issues faced by hearing families of children who are deaf—or by the children themselves—as they interact with and participate in a largely hearing society. (p. 443)

Perspectives on implants vary according to whether one adopts a “medical/disability” or a “social/cultural” model of deafness (Balkany, Hodges, & Goodman, 1996, for a medical model; Power, in press, for a sociocultural one).

A strong form of the “deafness as disease” model has recently been presented on the Internet (Wheeler, 2000, ¶ 1).

What was once merely a thought, a dream, is now a reality: We can conquer deafness. The combination of implant technology, hearing aids, and strong parental and government support of universal newborn hearing screening can enable nearly every deaf baby to grow up self-identifying—and regarded by others—as a hearing person. ... Since ancient times, deafness has been part of the human condition, but no more.

Newspaper headlines also provide a flavor of the information that backgrounds in the popular press the attitudes and information that parents (and the public generally) are exposed to and may be influenced by:

Listen, This is a Miracle of Life
Prison of Silence has Ended for 149 Youngsters
Samantha Emerges from World of Silence
Toddler Lends an Ear to Life (quoted in Power, in press)

The largely “hearing” view of childhood deafness in these headlines is confirmed by examination of the text of articles. “[From a mother] The implant, along with the therapy, was ... a miracle ... the diagnosis of ... deafness was devastating news. Your mind races, I imagined a terrible, lonely life ahead for her” (Devlin, 2003, p. 33). In contrast, the policies of many Deaf associations express strong resentment that their way of life and linguistic and cultural values are belittled by such views and that no acknowledgment is made of the diversity of lives that Deaf people may lead.

In the remainder of this article, we review a number of ethical issues that are raised in the context of these opposing views and information available to parents via cochlear implant advocates and press stories of “miracle cures” and the like.

Inequalities in Cochlear Implantation Access and Outcomes

One aspect of the impact of cochlear implantation in young children that has rarely been commented on is the inequality of access to implantation across various segments of the possible clientele. Evidence is emerging in the United States (Holden-Pitt, 1998; Stern et al., in press) and the United Kingdom (Fortnum, et al., 2002) that there are substantial differences in rates of implantation among groups of children who are potential implantees on the basis of race, presence of an additional disability, and socioeconomic status (SES).

For the United States, Stern et al. (in press) found that the “relative rate” of implantation of White and Asian American children was five times higher than expected on a population proportion basis than children of Hispanic origin and 10 times higher than African American children. This imbalance was observed both overall and in terms of the prevalence of profound sensorineural hearing loss in those groups. Further, significantly more implanted children lived in zip code postal areas with above-average median incomes than did the comparison group of children fitted with hearing aids. Earlier Holden-Pitt (1998) had found that in statistically equivalent derived comparison groups 56% of the children who wore hearing aids were White, whereas in the implanted group 83% of the children were White. For African American children, 16% wore hearing aids and 5% were implanted. Among children of Hispanic origin, 21% wore hearing aids and 8% had implants, and, unlike the later findings of Stern et al., for children of Asian American origin 3% had hearing aids and 2% had implants. Holden-Pitt also reported similar figures for lower implantation rates for children with additional disabilities as found elsewhere (15% vs.
20% for those with no additional disability). Thus it would appear that for almost a decade, and perhaps longer, there have been inequalities among ethnic and linguistic minority groups, SES groups, and deaf children with additional disabilities in the rate of implantation in the United States. White deaf children are considerably more likely to be implanted than those of other races, children from higher socioeconomic areas are more likely to receive implants than children from lower such areas, and deaf children without disabilities are than those with one or more additional disabilities.

For the United Kingdom, Fortnum et al. (2002) found that “there was a systematic and significant decrease in the percentage of profoundly impaired children as affluence decreased, that is, the lower the affluence level, the less likely were profoundly impaired children to have received an implant” (p. 175). A later study also found that children from higher status occupational groups were overrepresented in the implantation group. Ethnicity was also a variable in this second study, but no significant differences were found across ethnic groups (H. Fortnum, personal communication, September 14, 2004). Fortnum et al. also found significantly fewer children with additional disabilities among the implanted group than the comparison hearing aid group.

It is difficult to account for these discrepancies among ethnicity and SES level. It is possible that inequalities across SES and ethnicity in access to public and private insurance may account for some discrepancies. The lower rate of availability of insurance and public funding for implants in the United States may account for some of the discrepancy, but this is less likely in the United Kingdom with the National Health Scheme (NHS) available. H. Fortnum (personal communication, September 14, 2004) expressed the view that even with the NHS support for implantation, the differential rates could be due to the fact that more affluent families had more personal and financial resources to pursue the rather complex process of getting an implant for their child. Another possibility is the difference in attitude towards deafness and professional intervention that may differentially occur across these groups. Luterman (1991) has commented on what might be termed “middle class bias” towards these matters that may well be at work in the differential take-up of implantation.

It seems clear from these findings that there are important issues of public policy and access to educational provision that need to be addressed if all children who could gain the benefits claimed for cochlear implants are able to do so. Public policy needs to address the issue of the affordability of implants, parental access to comprehensive sources of information—pre- and postimplant—and the follow-up educational programs that ensure maximum benefit from the procedure and the technology. Funding from public and/or private sources needs to be made available for those whose means may not enable them to pursue implantation and education from their own resources. With the increasing availability of neonatal screening and early intervention programs (Yoshinaga-Itano, 2004) awareness of hearing loss sufficient to qualify for an implant can be obtained very early in life, and comprehensive support and educational programs need to be put in place to assist all eligible children and their families.

Cochlear implant providers also need to address the issue of the use of implants for children with multiple disabilities. We have seen previously that in both the United States and the United Kingdom the rate of implantation of children with multiple disabilities is lower than those without such disabilities (Fortnum et al., 2002; Holden-Pitt, 1998). Given the benefits claimed for many implantees, a case could be made that children with disabilities in addition to their deafness could benefit even more than children without them. Indeed Bertram (2004), while pointing out the complexity of implanting children with multiple disabilities and the need for “in-depth counselling and comprehensive information, especially about the limits and potential of this treatment option” concludes

The nature and degree of the multiple disabilities play a key role in determining the success of (re)habilitation, particularly with respect to speech acquisition. The implant enables these children to receive environmental stimuli that promote their development. They are able to use acoustic information to guide their own actions, react better to potential dangers, develop greater autonomy, and relate to others with more consistency. (p. 357)
Similarly, Hanzavi et al. (2000) found that implantation benefited the majority of children in their study who were intellectually impaired or behaviorally disturbed, especially if the program provided intensive support to both parents and child.

The life of both child and parent can be changed positively. . . . The possibility of learning to hear, better reacting to dangerous situations, hearing the voices of parents and strengthening emotional relationships are positive reasons to consider implanting this group of children. (p. 174)

Policymakers in cochlear implant programs may need to review their criteria for admission to implantation to ensure that children with disabilities in addition to their deafness also have access to the claimed best-possible listening for development and learning opportunities.

Informed Consent

In previous studies (Hyde, 1995; Hyde & Power, 2000; Power & Hyde, 1992) we examined approaches to informed consent adopted by professionals involved in cochlear implantation of deaf children. In a therapeutic setting, informed consent has its beginnings in the moral principle of respect for the autonomy of the person making the decision. The focus is on the individual’s right to authorize or to deny a particular intervention. The process must involve an appropriate level of understanding of the information presented. In Australia, and in other countries with similar legal systems, the law has translated this moral principle of informed consent into a legal duty to warn of the risks of having or not having the treatment. The process is considered to be more than risk management and the minimization of possible claims for negligence. The process of communication underpins informed consent and needs to be individualized to ensure that the decision maker is able to give valid and meaningful consent that is based on an understanding of the immediate and longer term outcomes that are possible consequences of the procedure.

Legally and ethically, it is accepted that parents can provide consent for the medical treatment of conditions involving their children. In many jurisdictions courts can override parental refusals to provide such interventions—particularly in the case for conditions that are of a life-threatening nature. Increasingly, however, parents are asked to provide informed consent for conditions that are not life threatening. Some providers suggest that in the case of cochlear implants, they are in a position of not really being able to say “no” to parents who believe they have informed themselves about the perceived benefits the implant may have for their deaf child. One representative of an Australian implant program wrote to us that, “An ethical problem occurs when all the informed advice has been given and a parent insists on going ahead [despite advice to the contrary]. If the child meets the audiological and neurological criteria (e.g., of degree of deafness) it may not be legally possible to deny the parents their right to make the decision on behalf of the child. However, is it also possible that we can’t say ‘no’, if the children don’t meet the criteria?” (Hyde & Power, 2000, p. 5).

Some commentators even question the right that parents have to say “no.” Tucker (1998) has suggested that if parents or legal guardians refuse potentially ameliorating treatments of disabilities (specifically in the case of deafness, refuse to have an implant fitted), it is possible that in the future, public funding support for the “treatment” of their deafness by special education or interpreters might not be made available. After reviewing a number of cases in which American courts have denied compensation to people with potentially alleviable disabilities who have refused to have procedures that would have alleviated that disability and citing the higher expense of special education, which she claims would not be necessary for implanted deaf children, she says

It seems possible that in the future more courts will hold that the law does not require that an individual with a physical impairment be provided with accommodations that would not be necessary if the individual would obtain reasonable medical treatment that would obviate the need for such accommodations. Members of the public, including politicians, are likely to ask: why should the public and private sectors be required to spend money to provide accommodations for a person
whose disability is correctable, when correcting the disability would in itself help to level the playing field for that person? (p. 12)

It may become crucial what “reasonable medical treatment” is (an implant?), how a disability is going to be defined as “correctable” (does an implant do so?), and who is going to be responsible for defining it as such. We are playing for very high stakes indeed in terms of personal and social ethical decisions and policy determination and implementation.

In any analysis of ethical dimensions of cochlear implantation for deaf children, it can be noted that the children have protection according to international human rights’ legislation, specifically in the United Nations’ Convention on the Rights of the Child (CROC; United Nations General Assembly, 1989). Under the provisions of CROC, children have a right to participate in all decisions, and their view must be taken into account. The degree of their involvement in the decision is considered to be relative to their age and maturity. Because most of the candidates are very young, this issue does not normally arise.

The principles to which signatories to CROC are bound define but also limit the roles of parents, guardians, states, authorities, and children themselves in decisions that affect the child. In the context of informed consent and the involvement of children in decisions that affect them, the “participation principle” (Articles 5 and 18) applies. The participation principle might arise if the parents of a (say) 12-year-old wished their child to have an implant. In this case it would seem appropriate for the issue to be discussed with the young person as well. Instances of the legal application of informed consent have often focused on cessation or maintenance of life-sustaining treatments for significantly disabled neonates. It has been argued that the decision to fit a cochlear implant is not parallel to these examples. Deafness is not life threatening, but the cochlear implant is claimed by many to be a prosthesis that produces a significant “benefit” for the recipient with negligible “risk.” It is this balance between benefit and risk that is at the heart of the informed consent debate about conditions for fitting cochlear implants and that needs to be addressed more than it traditionally has been by all those concerned with cochlear implant programs.

Risk/Benefit Analysis

The issue of the beneficence of implantation has become one in which active debate, at times acrimonious and emotive, has been evident. Balkany et al. (1996) described the views of some leaders of the U.S. Deaf community (which, early on, suggested that implantation of young deaf children was “child abuse”) as being internally inconsistent from an ethical perspective. These authors argue that the presentations of some deaf community leaders represent an attempt at “horizontal acculturation” (p. 749) where a level of responsibility is assumed by the Deaf community for all deaf children, denying the rights of parents to engage in the “vertical” acculturation across generations that is considered normal and appropriate by courts and legislators. Balkany et al. claim that the Deaf community has no right to assume such a position and that such an attempt is at odds with ethical principles such as “well-being” and “self-determination” (p. 750). They conclude that only parents can provide a clear locus of responsibility and bear the consequences of their decisions, are financially responsible, and can do the best job of raising their children. In contrast, Lane and Grodin (1997) argued that implantation had a eugenics perspective that threatened the culture of Deaf people and that parents do not have unlimited moral or legal authority. They suggested that in considering the best interests of their deaf child and their own responsibility, parents should take cognizance of the view of Deaf people and of a culture that is potentially more connected with their child than with them. The parents need also to understand that their child may later, as an adult, seek to reverse some of the expected outcomes of implantation. This may entail identification with the Deaf community, nonuse of the implant, and even some sense of parental blame from the child.

In the view of the authors of this article and other commentators (e.g., Hyde, Power, & Lloyd, submitted; Johnston, 2004), there would seem to be no question that the culture of Deaf people is indeed affected not only by the increasing rates of fitting of implants in
many countries but also by the influences of the parental and social expectations and postimplant education programs that precede and follow the surgical procedure. The question would seem to be not the “either/or” one (will the implant make the child a hearing person or the nonfitting make them a Deaf person?) but a question that results in the best ethical appreciation of the risks involved and the benefits that eventuate. The best outcome for the individual may be competence and affiliations with both hearing and Deaf communities that are in his/her best interests (what we may describe as a “both-ways” outcome).

The projected impact of a cochlear implant is as much symbolic of an attitude to deafness (a “condition to be cured”) for parents, deaf children, deaf people, and workers in various professions to do with deafness as it is real, perhaps even more symbolic than real for many observers. The symbolic benefit is often assumed; that is, being able to hear is perceived as a “good,” and therefore what really is the risk? Examination of documents explaining the conditions for candidature from two of Australia’s implant programs (the only ones who replied to our request for documents) reveals that their “informed consent” documents provided to parents focused almost exclusively on issues of risk from a medical point of view. It is evident from analysis of these documents that the issue of risk is defined by criteria that may be covered by insurers to protect the medical practitioners involved in case of accident, negligence, or unsatisfactory outcomes during or following the procedure.

It would seem however that there are other less recognized elements of risk. These concern the “burden” (Crouch, 1997) for parents and even for children themselves that may be associated with the fitting of cochlear implants. The burden could stem from the conflict between the very high levels of parental expectation (Hyde & Power, 2000) and the actual degrees of “satisfaction” with their child’s communicative, educational, social and later vocational development experienced by parents. High levels of expectation have also been reported by other researchers (Christiansen & Leigh, 2002; Spahn, Richter, Zschocke, Burger, Lohle, & Wirschling, 2001). The burden may be found eventually in unrealized expectations and the conflicts associated with them. Indeed in the authors’ recent experience, some parents and educators now are asking, “What do we do when the implant does not work?” This seems to mean, “What can be done if the implant does not deliver the anticipated optimal outcomes?” The asking of such a question is perhaps indicative of the symbolism of anticipated outcomes regarding implantation in the minds of some parents and professionals and how any experience of less than optimal outcomes may be responded to. Many implant program informed consent protocols do, however, now have at least a limited disclaimer in this regard; for example in the document provided to parents by one program: “PLEASE NOTE that we cannot accurately predict, nor guarantee, the level of speech recognition that an individual will gain from the cochlear implant procedure (emphases in original).”

Another perspective on the choice that parents face is that a “Deaf life” is a viable and satisfactory one without a cochlear implant, and the promises of “normalization” made by its proponents would be considered unnecessary by many observers. It is reasonable to suggest therefore that the risk/benefit model of informed consent for parents of deaf children should be broadened to include the social, linguistic, and cultural characteristics associated with being Deaf; namely that, in contrast to the perception that there is disadvantage in being deaf, the “viable Deaf life” alternative should be presented to parents. Some have argued that there is a disadvantage to young deaf children in their being directed into a (likely imperfectly accessible) hearing world through implantation and thus not be able to access the rich personal, social, cultural, and linguistic context that membership of the Deaf community could provide. It is argued that parents of deaf children should have such information available if they are truly to be informed about the various futures available to their child (Hintermair & Albertini, 2005; Hyde & Power, 2000).

In neither of the informed consent procedures that we analyzed was this issue canvassed. The procedures were determined by the medical provider, administered by the medical provider, and final authorization for fitting was managed by the medical provider and, as described above, included only the medical parameters of benefit and risk, not the personal, social, or educational ones. Whereas some implant programs are
now including some input from Deaf adults as models of what is possible as a “Deaf” person, it cannot be assumed that parents would change their decision or expectations. Such is the power of the persuasiveness of the cochlear implant proponents and the medical view of deafness as a “condition to be cured.”

In summary, the present debate would seem to rest at a point where there are high medical, public/media, political, and hence parental expectations of the normalizing possibilities of cochlear implantation of very young deaf children, associated with high perceptions of benefit to the child’s speech, learning, and personal/social development; that is, their normalization as hearing children (Power, in press). It would also seem that the notion of informed consent is not a broadly enough defined one. The current practice of informing the parents of the child patient operates within a medical model and is indicative of the way in which clinical practice may at times not fully include wider social, cultural, and developmental issues. The information provided for parents does not typically contain comprehensive descriptions of the advantages and disadvantages that may occur through the subsequent lifespan of a deaf child and adult as a result of a parental decision to have or not have a cochlear implant fitted.

As stated earlier, it is not possible legally or ethically to deny parents their right to make such a decision. The issue needs to focus on the information base upon which they make it and the pressure they are under to come to an early decision. The particular question that needs to be answered is, “How do we know that the parent or the guardian is fully informed?” The answer to this is important, as we do have information (Spencer, 2004) that shows that higher child language achievement is associated with parents who engaged in lengthy, in-depth processes to decide about implantation, but it would appear that time for these processes is often not available. Parents tell of the pressure they were under to make a quick decision (Power, in press). As Hintermair and Albertini (2005) have observed

Pressure on parents to make quick and early decisions and lack of adequate information about alternatives often leave them unprepared for the consequences of these decisions. To allow deaf individuals and their families to make better informed decisions about their lives and futures, we argue . . . that professionals who interact with these families adopt inclusive and individualising ethics. (p. 184)

In the context of universal newborn hearing screening, where some additional time between diagnosis and decision is made available, we need to use this time effectively and not squander its potential for better informed and supported choices.

Mode of Communication

Researchers in the United Kingdom and the United States have studied correlations between reported benefits from the use of the implant and the communication mode used at home and/or school. Easterbrooks and Mordica (2000) conducted studies where teachers rated their students’ functional use of the implant. Analysis of data showed recipients were less likely to use their implant for communication purposes if they used a signed language at school or home. However, there were no objective measurements to provide support for teacher judgments and Easterbrooks and Mordica indicate that there may have been bias due to the “Pygmalion effect” of teacher expectations of the outcomes of implantation. Geers et al. (2000) found children educated in programs with an oral emphasis achieved better auditory benefit than those in Total Communication programs. Geers and her colleagues also found that when other variables such as age of onset, age at implantation, family SES, IQ and implant function were partialled out of their results, the advantage of oral emphasis in programs remained a significant variable.

Similarly, 60% of teachers of the deaf surveyed in the United Kingdom believed that an oral/aural communication approach was the most effective for children with a cochlear implant, whereas 35% percent indicated Total Communication and 2% reported that British Sign Language was effective for implantees (Archbold, Robinson & Hartley, 1998).

Poorer oral-auditory results for students with cochlear implants in Total Communication programs may be attributed to the fact that it is common for those not achieving in oral-aural education, particularly in mainstreamed settings, to be transferred
to signing or sign-supported programs (Rose, Vernon, & Poole, 1996). However, two other variables which might affect such placements could be proposed from the evidence presently available. First, it could be proposed that to receive the greatest level of support from auditory-oral communication approaches, implantees should be placed in such programs if they were not already so located. Second, it could be proposed that children with an implant in programs using signed communication should be able to move to more orally communicating educational settings, either in special education or regular schools due to the greater communication benefit received from their implant. That is, a trend could be predicted that showed movement of implantees to less segregated and less sign-supported educational placements.

In relation to the first proposition, a recent case in Australia is possibly illustrative. Two young deaf children were implanted with strong family support but neither child was admitted to a local postimplant auditory-verbal program—the parents’ choice of program as they felt it would give their children the “oral” advantage they sought—because in both families there was a deaf parent who used Auslan. This approach to sign language exposure as a “contaminant” would seem to contravene both legal and ethical guidelines. Ethically, it would seem to contravene the principle of observing the “best interests” (UN CROC) of the child as there is sufficient research now available to suggest that, rather than a disadvantage, there may indeed be an advantage for the child to have had experience and competence in both spoken and signed communication, if implanted before the age of five years (Connor, Hieber, Arts, & Zwolan, 2000; Preisler et al., 2002). Further, if the range of communication and linguistic outcomes of implant fitting remains as variable as it appears to be across school-age children, having some proficiency in a sign language from an early age may indeed be a subsequent asset for the student’s cognitive, personal, social and educational development.

In this context there is little or no support for an “either/or” (Hintermair & Albertini, 2005, p. 190) approach to consideration of the best communication modes for deaf children with an implant. Alternatively, there is a growing body of evidence ethically and in terms of communication outcomes, that the best approach might be a both-ways strategy that respects and values access to a sign language and to the best auditory-oral conditions that can be provided for young deaf children developing communication competence with an implant.

Conclusion

Given the issues we have canvassed above, it seems to us that there are many issues surrounding early childhood cochlear implantation that raise ethical questions, especially for those operating such programs. In particular, ensuring equity of access for all children who potentially could benefit from an implant needs to be seriously considered by public and private agencies, more detailed and elaborate procedures for informed consent and provision of all alternatives for deaf children’s lives beyond the focus on the surgery and its outcomes need to be built into the everyday practice of programs, and more detailed examination of the outcomes of implantation for personal, social and educational development of implantees undertaken.

Procedures to initiate these changes might include

• Provision of unbiased, comprehensive and detailed informed consent procedures to support parents’ decisions about implantation and subsequent choices about communication and education conditions for their children.

• Use of independent advisors (including a d/Deaf person) to provide balanced information to further reduce conflicts of interest among personnel involved in program delivery.

• Consideration of the rights of the child (including adherence to CROC principles), and where appropriate and possible, consultation with the child.

• Broader considerations of risk beyond medical and specific communicative parameters, to more fully inform parental expectations that linguistic, educational and communicate personal outcomes may be variable over time and that no sense of failure or guilt need be attributed to student or parent in such cases (for example, a case in which a child who has
experienced their development and education in auditory/oral environments, later seeking to identify socially with Deaf people and the use of a sign language).

As well as consideration of these matters by implant program providers and parents, there are a number of public policy equity and resource access issues that need to be considered at a broader level. These include issues of access to implants for children of less affluent families, for many non-White children, and children with disabilities additional to their deafness.

In conclusion, the development and increasing availability of technologically more sophisticated cochlear implants can be generally seen as a social good, as it potentially opens up more options for families and individuals experiencing deafness. However, there are a number of important ethical issues that continue to need to be addressed. These include development of more elaborate protocols for initial informed consent processes, the development of more informed and shared professional, parental, Deaf and community understandings, so that some of the impact of current oppositional symbolisms is reduced and finally that the conceptions of risk and benefit are broadened to include personal, social and educational dimensions.

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