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Teacher Questions: Do Cochlear Implants Work?

Pam Millett, PhD, Reg CASLPO

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In the last issue, I talked about [A History of Deaf Education \(And Why That Matters for Advocacy\)](#). Having a clear understanding of the educational and societal context in which we support deaf and hard-of-hearing students is important. However, many people in education and in the general public come to this conversation with a less nuanced understanding. Some may assume that all deaf children use ASL; others have seen a YouTube video of an early implanted child with perfect articulation and assume that hearing loss has been cured. Musing on the questions that my students come to our program with, has started me thinking about questions and misunderstandings that the average teacher or administrator has and why that matters for advocacy. Providers and funders of school services (e.g., administrators, Directors of school boards, Ministry of Education policy advisors) need to understand

who these students are today. And so, in these next few issues of *Canadian Audiologist*, I will address some of the common questions I hear from teachers. The first is one I often hear when I mention that I work with deaf and hard-of-hearing students: do cochlear implants work?

Another more complicated question people have is the question “do cochlear implants work” assumes a dichotomy - yes/no, pass/fail. I suggest to my students that the question “do cochlear implants work?” is not the best. They always “work” in the sense that their job is to take sound from the environment, and turn it into a form that can be delivered to the brain. Once the sound has been delivered, though, what a child’s brain does with it is out of the cochlear implant’s hands, so to speak.

For most of us, a working definition of CI success is likely something along the lines of spoken language and literacy outcomes commensurate with hearing peers. The question “are cochlear implants enough” is more nuanced. It allows us to consider whether CIs are enough to allow a particular child to develop typical spoken language, but leaves space for the possibility that cochlear implants can still be useful even when they are not enough for spoken language development and to think about what is needed in addition to cochlear implants.

When cochlear implants are enough

Recent research indicates that approximately two-thirds to three-quarters of children achieve outcomes within the typical range for literacy (Mayer & Trezek, 2018; Mayer et al., 2021; Trezek & Mayer, 2019; Wang et al., 2021). However, our work is not done when children exit an infant hearing program and enter school with typical language and pre-literacy skills. The problems of poor classroom acoustics remain unsolved in today’s classrooms, and access technology is still needed to enhance access to the auditory environment (Millett, 2023). Incidental learning and social interaction opportunities remain reduced even with CIs (for an example, see the wonderful video by the National Deaf Children’s Society entitled [The Lost Joke](#)). Now that many deaf students come to school with typical language, we can expand our view to issues of socialization, self-determination, identity, mental health and self-advocacy, important topics that are not receiving sufficient attention at school (Gordey et al., 2021).

For students with typical, or mildly delayed, spoken language, these gaps can often be filled through educational support, strategies, access technology and student advocacy. The key, however, is the involvement of educational audiologists and teachers of the deaf, who can anticipate and recognize these gaps early. The piece that administrators seem to miss is that these students have access to the curriculum because of their technology, and that they have little to no access to learning when their equipment goes down. A student whose cochlear implant batteries die in the middle of the day might

as well not be at school for all the learning that can happen for them. Educational audiologists in particular have the specialized knowledge to ensure that students have consistent access to sound through their personal amplification and their access technologies.

When cochlear implants are not “enough”

While we can celebrate the outcomes of cochlear implantation for most children, we cannot forget that the goal of typical spoken language and literacy may not be achieved for some children. There are several factors, some are within our control and some are not. At the end of the day, though, teachers are tasked with educating all children, so what is the best path forward for a child for whom cochlear implants are not enough?

Late identification and implantation

An example of where cochlear implants can be reliably predicted not to be enough for spoken language is late implantation; decades of research on age of implantation is crystal clear. Reasons for late implantation are many (Gordon et al., 2022) but in my experience, late implanted deaf children are often new immigrants to Canada who received cochlear implants in other parts of the world. While it seems impossible in 2023, I still encounter deaf students implanted late in other countries with no amplification or early intervention before implantation, and no follow up afterwards, who arrive in Canada as teenagers who have never been to school and have essentially no language. What is the best recommendation for these students? And before we say, “well, sign language”, it is important to remember that a discussion of sign language and cochlear implants is a complicated one, and needs to be grounded in questions of the roles of signed English (English language on the hands in conjunction with speech, speechreading and whatever access a student has through their CIs) and American Sign language (a language used without speech or audition).

Usage issues

The first question that should always be asked for a child who is not progressing is “how much are the devices being used?” We might assume that if parents have decided to pursue cochlear implantation, implants would be on their children’s heads all day long. In my experience, this is generally true, cochlear implant usage tends to be more consistent than hearing aid usage. However, despite the wonderful job that implant programs do in supporting parents, some still struggle. For example, families in remote communities struggle to maintain devices and ensure consistent use. It should never happen that device use is discontinued because families ran out of batteries and did not know how to

source more, but I have personally seen this happen. More support for students in under-resourced communities will help prevent these problems, while teachers of the deaf and educational audiologists can help support students and families if we know there are challenges.

Lack of resources for communication and literacy development for school-aged children

In most parts of Canada, families of deaf children have access to communication services that are closely integrated with newborn screening and diagnostic services, so “loss to follow-up” is relatively rare. However, what is not rare is situations where children continue to need communication services after they transition to school. Auditory verbal therapy, for example, is rarely, if ever, available at school because it is not deemed to be an educational intervention. Depending on the school board, students who need more intensive support because their cochlear implants are not quite enough may or may not have access to services.

In the past, deaf children often went to school much earlier than typically hearing children, in preschool programs funded by school boards. Early intervention services in the home or at a local centre can focus on language development in a quiet, one-on-one environment. School preschool programs, on the other hand, provide a full day experience with a teacher of the deaf who monitors equipment and supports language and early literacy development. Students interact with same age peers all day to develop play, social and pragmatic skills, but under the careful watch of the teacher of the deaf. Geography is a key factor in determining whether such programs are possible, we certainly do not want 3 year olds to be sitting on buses for extended periods. However, where such programs have been implemented, they are being cut or reduced, sometimes because of a perception by administrators that deaf children are doing so well that they don’t need services.

The availability of focused support from teachers of the deaf in self-contained classes or through withdrawal from a mainstream classroom for intensive direct instruction continues to decrease across school boards. There are very few school boards offering self-contained classes for any exceptionality, for reasons which include geographical, philosophical and financial considerations. Overall, there is less need for intensive educational support for many deaf students these days but it would be wrong to assume that there is no need. I also see a trend towards school boards cutting teacher of the deaf positions (sometimes quietly through attrition or sometimes through a “train the trainer” model whereby teachers of the deaf are expected to teach others to do their jobs). Teachers of the deaf often feel reduced to technicians, as their primary job increasingly becomes checking and fixing equipment, with little or no time allocated to direct service to students.

Other issues

Sometimes the fact that our expectations should be conservative and cautious is clear before implantation, for children with anatomical or cognitive differences, or for children with additional exceptionalities. However, some children struggle with spoken language and literacy development despite every facilitative factor being in place (early implantation, consistent use, knowledgeable and involved families, good early intervention), and it is not always clear why. Careful monitoring of development of auditory, language and literacy skills is crucial to identify early difficulties, but what to do then?

The question of how to support students for whom cochlear implants are not enough for typical spoken language development is a complicated one. Still, we cannot assume that there is an insignificant number of these students at school, or that school and Ministry staff understand their needs. As always, more work to be done.

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