



Cochlear Implants
and Sign Language:
Putting It All Together
(Identifying Effective Practices for
Educational Settings)

April 11-12, 2002
Conference Proceedings

edited by
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An Introduction to the Sharing Ideas Series

The Laurent Clerc National Deaf Education Center's "Sharing Ideas" series comprises working or occasional papers and videos of interest to parents and teachers of deaf and hard of hearing children, researchers, school administrators, support service personnel, and policy makers. Works in the series are often prepared for a specific 'occasion,' and include papers, presentations, or final reports that address a need in the field or contribute to the growing body of knowledge about educating deaf and hard of hearing children. The intent of the series is to act as a clearinghouse for sharing information from a number of sources.

These widely disseminated papers cover a broad range of timely topics, from describing innovative teaching strategies to reviewing the literature in an area of inquiry to summarizing the results of a research study. In every case, there is a common focus: improving the quality of education for children who are deaf or hard of hearing. The Clerc Center welcomes feedback about the concepts presented, particularly in the case of 'working papers,' which often represent works in progress or express the views or experiences of an author.

Researchers, graduate students, parents, and teachers are encouraged to send proposals for review and possible inclusion in the Sharing Ideas series. Submissions to the series are reviewed by content experts before acceptance for publication as Clerc Center products.

About the Editors

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Jennifer Hinger oversees and is a writer/editor for the Laurent Clerc National Deaf Education Center's KidsWorld Deaf Net Web site, which is sponsored by the AT&T Foundation.

Preface

The Cochlear Implant Education Center (CIEC) was established in 1999 as a unit within the Laurent Clerc National Deaf Education Center at Gallaudet University. The CIEC provides and evaluates on-site services for students with a cochlear implant and gathers and shares information at the national level related to effective educational strategies for working with children with a cochlear implant who use sign language. Soon after the CIEC opened its doors to share information and direct families and professionals to resources, it became apparent that similar issues and questions were repeatedly being raised regarding effective strategies for working with implanted students. It also became apparent that many professionals felt that they were “in it alone” regarding their planning for this population of students, and had a strong need to communicate with others regarding what to do to address the growing and varied population of students.

In our effort to “check the pulse” of the nation related to what’s happening with implanted children assimilating into schools, the CIEC decided to bring professionals from a range of educational settings together to discuss issues of mutual interest on the topic of cochlear implants and sign language. From this idea evolved a two-day “Cochlear Implants and Sign Language: Putting It All Together” meeting held April 11-12, 2002, at the Gallaudet University Kellogg Conference Center. The approximately 125 participants included representatives from 20 schools for the deaf and 16 regional/public schools. There were 30 administrators, 44 speech and hearing professionals, 30 teachers, and 16 consultants (four based in hospital settings whose role includes working with school programs). There were 17 deaf and hard of hearing participants.

In this “Sharing Ideas” paper, you will find a compilation of the issues, ideas, and strategies that emerged from the meeting. The presentation texts included here were captured as stated by the speakers via real-time captioning in order to represent what was “said” at the meetings rather than represent written papers from the included speakers.

You will also find a summary of the issues, ideas, and resources that surfaced during the discussion groups of the conference participants. More in-depth coverage of the conference proceedings, including links to the accompanying PowerPoint presentations, can be found online at: <http://clerccenter.gallaudet.edu/CIEC/>.

As you review the contents of these proceedings, keep in mind the following:

- The purpose of the conference was to provide an opportunity for professionals working in educational settings that include sign language to discuss issues and practices impacting effective programming for students with implants. The purpose was not to debate the appropriateness of various methodologies for implanted students.
- Information in this document represents a compilation of the opinions and ideas of individual professionals and programs. Information documented does not represent a consensus of the group or necessarily reflect the opinions of the Clerc Center (exclusive of information directly related to the sharing of Clerc Center programs).

This meeting was a productive “first step” in sharing the issues that appear to be on the minds of many professionals who are planning and implementing educational programs and services for children with implants. The CIEC looks forward to future initiatives to further define effective practices for this growing population of students.

Debra Nussbaum
Coordinator, Cochlear Implant Education Center

Welcome

By Dr. Jane K. Fernandes, Provost, Gallaudet University

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speaker's presentation. For more information, see the Preface.

Welcome to Gallaudet University. Today and tomorrow we will participate in a conference entitled "Cochlear Implants and Sign Language: Putting It All Together," focusing on how sign language can fit together with the technology of cochlear implants. This conference, sponsored by the Laurent Clerc National Deaf Education Center, is part of its mission to develop, evaluate, and disseminate innovative curricula, materials, and instructional strategies nationwide.

Cochlear implants are new for educators. The Clerc Center has a charge to work with other schools and programs to help educators provide the best possible teaching and learning opportunities for their students and their families. Cochlear implant technology is improving daily, and we expect to see more and more children with cochlear implants enter parent-infant programs and school programs. We must be ready to work effectively with these children.

Now we are experiencing just the beginning. We will certainly see more changes in the near future. Schools will want to examine their philosophies and their programs to determine what needs to be done in order to meet the needs of students with cochlear implants who want to attend their school. For some programs, it may take soul searching and a hard look at the school's philosophy, beliefs, and strategies related to communication. It would benefit us all to re-visit what factors parents take into consideration when they select a particular school for their deaf or hard of hearing child. What are they looking for and what do they expect?

The Clerc Center has started this process, but we are by no means finished! We believe that deaf children with implants can come here to Gallaudet, use their implants maximally, and at the same time interact with and be successful members of the deaf community. We believe this is very important for children.

I'm learning so much myself. What I continue to learn is that the results for children with implants are not 100 percent success stories. There are varying results. Children with implants are successful in a way that is unique to them. They learn differently and at different rates. We will see more diversity within this group of children than we have in the past, and we have to be prepared to teach them according to their wide range of academic and communication skills.

I'm reminded of a movie of about 10 years ago, *Back to the Future*. Now my twist to this movie title related to our current discussion is "Ahead to the Past." I suppose this is another way of saying that history repeats itself. Let me explain. We have a long history of deaf culture and the life of the deaf community. Throughout this history, social forces have had unique influences on us as a community and we have adapted. Cochlear implant technology is new, and it is the future. It is changing fast and will continue to develop. That's also the future. We as a community have changed to fit the larger society, and now we must and will change again. That's where we are

now. Change is happening. How do we keep our very cherished past? How do we keep what's important to us and at the same time adapt to the future? How do we use the future of technology and the past, our legacy of deaf culture? How do we bring these two forces together, comfortably, into one place?

I envisioned a small conference—a few programs getting together for a dialogue. I was pleasantly shocked when I heard how many people were going to be here. It clearly shows that you are ready to take on this challenge and move forward from here. You represent 20 schools for the deaf and 16 regional or public schools. Among you are 30 administrators, 44 speech and hearing professionals, 30 teachers, and 16 consultants (four of whom are based in hospital settings and whose role includes working with school programs). There are 17 people here who are deaf or hard of hearing. It's exciting to see this rich mixture of people, and I think it is the right mix of the right people to discuss this special challenge.

I must tell you that you're not here just to be a member of the audience! Each of you will help others through your active participation, and collectively we can begin to chart some directions for the country's agenda on this topic. I think we do know that we need to forget about the controversy that's been going on for many years regarding whether one should or should not have a cochlear implant. Talking about the discussion of deaf people being for or against cochlear implants—that discussion is in the past. Do we agree on that?

The really important question now is: How are we going to work most effectively with children in our schools who have cochlear implants? These children are in our schools and at our doorsteps. It doesn't matter who they are. We want children to have the best education, and we want to maximize their potential. Every child has a right to that. If we can agree on that, then we can discuss how to make that happen. Cochlear implants and sign language—is that a conflict? At Kendall Demonstration Elementary School, I see the philosophy working. I see that it's not a controversy. It's not a conflict. It is possible to put the two together comfortably.

We're very proud to be sponsors of this conference, and very glad that you've come to participate in this national dialogue. We wish you good thinking and good dialogue while you're here, and much success back home. Thank you all!

Conference Overview

By Debra Nussbaum, Coordinator, Cochlear Implant Education Center, Laurent Clerc National Deaf Education Center

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speaker's presentation. For more information, see the Preface.

There are a variety of participants in the audience. Some people have been working with implanted children for years and come to this meeting with much to share. There are some who are just getting started and are here to try and figure out what to do. Some are here to validate what they are thinking so they do not feel they are out there in isolation. Some are here just to ask questions. I am hoping that everyone is here to get on the same page. Each person may come with different ideas, points of view, and from a variety of programs. Hopefully by bringing this group together we can start getting people in the same place related to working with children with cochlear implants.

That brings me to, "Is there anything new under the sun?" Some of you are probably sitting here and asking, "What is different about working with children with cochlear implants?" I have to say that when I first started working with implanted children, I was asking the same thing. After many years as an audiologist working with deaf and hard of hearing children, I was familiar with all of the many auditory and speech curricula and strategies for working with this population of students. I said to myself, "Okay, now I'm working with children with cochlear implants. What do I have to do differently?" I read every book I could get my hands on and attended every workshop on cochlear implants. Yes, the technology is different and I needed to learn about that, but what about the training that comes after the implant? What did I need to do differently from what I had been doing for so many years?

As I continued to attend workshops, I was not hearing anything so new and different. Finally, I went to one meeting and had what I call my "ah-ha" moment. This is the moment when things start to click, when you finally "get it." Well, I was sitting in a meeting and the speaker was explaining strategies for working with students with cochlear implants. Finally, one brave soul asked the speaker, "Can you just explain to me what you are doing different for students with implants in comparison to what you are doing for other deaf and hard of hearing students?" The speaker became quiet, thought about it, and finally said, "Well, not really a lot." That was my "ah-ha" moment. So really what I had been doing for many years could be applied to this new population of children with cochlear implants. There is not that "something" out there that I have missed. While we may be doing the same things that we have been doing for 20 years, however, there is something different—the outcomes. The technology is truly providing an improved access to sound than what has been previously available to the deaf children we've been working with for years.

Before we get started, I want to explain what this meeting will not be about. First, it will not be about the technology of the cochlear implant. I do not even have a cochlear implant to show. Second, we're not going to debate whether or not cochlear implants are an appropriate choice.

Regardless of individual opinions, children are receiving implants and the numbers of children are growing quickly. Third, we're not going to debate whether or not cochlear implants truly improve speech perception or access to sound. The research is clearly indicating that it does. The technology of a cochlear implant does what it is supposed to do. It provides access to sound. It does improve speech perception. We won't debate that. Fourth, this conference will not be addressing methodologies that do not include the use of sign language. This is not discounting oral methodologies or saying that oral-based methodologies are not appropriate for a segment of the population of implanted children—just not all. The outcomes are different for each individual with an implant and there is significant diversity in the characteristics of children obtaining implants. That is what we will be addressing during the next two days. This is a conference to look at an area that I feel has not yet been addressed by professionals: how sign language and cochlear implants can work together.

A “one size fits all” approach will not meet the needs of all children with a cochlear implant. If you have 10 children with cochlear implants, you may see 10 different profiles. Some of these children may do fine without sign language to support their communication and learning and others may not. Our Cochlear Implant Education Center receives calls from frustrated families who are being told not to sign or their child will never develop spoken language. For example, I recently heard from a family related to their 4-year-old son who was implanted at age 2. Receptively, he's on age level, doing just fine. Expressively, he's at the 10-month-old level and his parents have been told not to include sign language. The recommendation to this family was most recently to use an augmentative communication message board to point to when he wants to communicate. Do anything, just don't use sign language.

Another situation relates to a little boy in the first grade. He's been implanted for four years. He has fairly good speech perception skills and speech production skills for single words in his therapy setting, but his language is delayed, he does not communicate readily, and he doesn't have any friends in the class. He is now ready to move from kindergarten to first grade and the school wants to hold him back. His kindergarten class in the mainstream just recently added a sign language interpreter for the student. He doesn't know sign language, but the recommendation to the school was to put a sign language interpreter into his mainstream classroom. What will happen to these kids down the road? Yes, they have improved speech perception, but how will they get their academics down at a fast enough pace to not fall further and further behind?

I have had the opportunity to attend numerous conferences hosting a panel of successful cochlear implant users. On these panels are the many children who, given the right ingredients, whatever these ingredients may be, are hard to discern from hearing children. As I sit in the back row of these meetings, however, I have had the occasion to sit near the families of the children who are not the “stars,” who are not for whatever reason achieving what many are defining as success with an implant. These families are often concerned that their children are not doing what was hoped. I have heard these families complain that professionals still strongly steer them away from sign language despite significant language delay and growing behavioral issues.

In February 2001, I went to the eighth symposium on cochlear implants and children in California. By the end of the meeting, I don't think there was one presenter who did not mention

the diversity in the children we serve. First it was just “the diversity.” Then it became the “truck load of diversity.” Then it became the “aircraft carrier of diversity.” If we’re all willing to admit extreme diversity in the population of children with cochlear implants, we have to adapt our educational programs to address this diversity. How are we going to meet a range of student needs? That is the purpose of this meeting.

During the next few days, we are going to be looking at what it takes to “put this all together.” This conference is a first step in the sharing of ideas and opinions on this topic. This is the first chance to get to know what people are thinking. It’s a chance to brainstorm. Do not feel that your participation in this conference indicates that you agree with all that is shared. Everything you see documented via real-time captioning will be posted on our Web site and condensed for publication. *Ideas documented do not indicate consensus of opinion of this group.* Please be respectful of the variety of opinions that may be shared during the next few days. Not everyone will agree and that is okay.

Presentations

Keynote Presentation: Cochlear Implants in Children: Ethics and Choices

By Dr. Irene W. Leigh, Professor, Department of Psychology, Gallaudet University, and
Dr. John Christiansen, Professor, Department of Sociology, Gallaudet University

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speakers' presentation. For more information, see the Preface.

Dr. Christiansen: Thank you very much for inviting us to talk about our book and to give you some ideas to think about in the next couple of days. Here are some of the things that we'll talk about. First of all, it's obvious that the number of children with cochlear implants has been increasing dramatically. We'll talk about the diverse needs of children with implants. We can accommodate their needs within signing programs. We can make recommendations about the best intervention practices for this group of kids. Today and tomorrow represent a beginning to discuss some of these issues. We'll also talk about the motivation for writing this book.

For more information about *Cochlear Implants in Children: Ethics and Choices* (the book), visit the Gallaudet University Press Web site:
<http://gupress.gallaudet.edu/bookpage/cIICbookpage.html>.

Although the purpose of this conference is not to talk about the technology of cochlear implants, we will talk about it for just a minute, just in case someone is not familiar with how it works. Next, we will discuss some statistics on cochlear implant use and some research findings regarding parent perspectives on pediatric cochlear implants. Most of the book deals with parent perspectives on implants.

Finally, we'll talk about the deaf community and how the deaf community has been changing. Dr. Fernandes mentioned in her remarks that clearly the view of the deaf community today is different than it was 10 years ago, particularly with regard to pediatric implants. As far as the motivation is concerned, I'm in the Department of Sociology at Gallaudet. One area I'm interested in is social conflict and conflict resolution. Obviously there's a lot of conflict related to cochlear implants, especially pediatric implants. One of the things I was interested in was what the nature of the conflict is, and if we can find agreement. If you're familiar with the literature, there's often a lack of balance in the discussion about the pros and cons of implants. One of the things we wanted to emphasize in the book was the common ground between those who oppose and support implants. We're looking for areas of agreement. If you read the book, I hope you agree that we found some.

Dr. Leigh: As for myself, I'm a psychologist. I wanted to understand why it is that many deaf people are so dead set against the cochlear implant. Why do they feel so threatened? Also, in my previous life in New York City, I worked as a consultant to a cochlear implant program in the early '90s. I met with many parents so I wanted to better understand where the parents were coming from, what was going through their minds, and what they saw as their children's future. If those parents felt like they were helping their children, how could educational programs adjust to meet the needs of those parents and their children? So that was really the underlying motivation for me to participate in this research project—to help parents understand what the process was like, to help deaf people understand what the process was like, and to help programs, audiologists, doctors, administrators, all those people, do the best that they can for these parents and their deaf children as well.

Dr. Christiansen: I'm just curious...How many of you have cochlear implants? Anyone here? Just one? Well, I have one, too, so that makes two of us. I got a cochlear implant about a year ago. It's interesting that on the very day I got my implant activated, Irene and I gave a presentation to a social work class here at Gallaudet. I'm sure she remembers; I was not the happiest camper after my first activation. There's a lot of hard work in making sure that implants work.

Anyway, if you're not familiar with a cochlear implant, basically the sound comes through the microphone and goes to the speech processor. The speech processor changes the sound to digital information and sends it back to the external transmitter. This digital information then goes through the skin via radio waves to the internal receiver. Finally, the electrodes stimulate the hair cells. Basically, the purpose of a cochlear implant is to replace the hair cells in the cochlea that are not working properly. In the cochlea, there are several thousand hair cells. For many deaf people, these hair cells are not functioning and don't stimulate the auditory nerve. Cochlear implants don't completely restore hearing. They just enable the recipient to receive sounds. My sounds the first day were basically nothing more than buzzes and beeps (as I'm sure you've heard from the kids you work with), but it has progressed beyond that, and I can pick up a lot of things on the radio now. Voices are still hollow and "echo-like" for me. Maybe that's similar to the complaints you hear from your kids, too. The benefits from an implant are not automatic. It depends to some extent on how much motivation you have, and it takes a long time and hard work.

A few brief statistics on implant use: In 1990, there were approximately 5,000 implant recipients around the world, and about 90 percent of them were adults. Today, there are roughly 45,000 implant recipients and about half are children. That number increased because the Food and Drug Administration approved pediatric implants in the 1990s. Obviously, we don't know how many people are still using their cochlear implant. The companies are quick to give you the figures on how many got the implant, but not how many have stopped. I can just say less than 45,000 people are currently using an implant, but we don't know how many less.

So, let's just briefly review some of the things that are in the book. First of all—how parents discovered their child was deaf. As you can imagine, a lot of parents were surprised and not particularly happy. How did they react to this unexpected news? One of the things we talk about in the book is the frustrations that so many parents have dealing with pediatricians who really

don't know very much about deafness. We also discuss parents' search for solutions. What do the parents do after realizing their child is deaf? How do parents learn about implants? What is the relationship between implant centers and surgical or insurance issues? You may be aware that many parents had a difficult time getting insurance companies to pay for the implants and especially the speech therapy after the implantation.

We also talk about how the child is doing with the implant, what type of school the child attends and how he or she has adjusted, services the child needs, and overall satisfaction. We can't hit everything, but we will try to highlight some things, especially related to education. Our data is from two sources—one is a Gallaudet Research Institute (GRI) study. It was a 12-page questionnaire sent to 1,841 parents with 439 returned. They were distributed to the schools. We don't know really how many parents actually saw the questionnaires. The schools could have just given them to the kids and maybe they never reached the parents. Also, we had interviews with 56 parents of 62 children with implants in 15 states and Australia. We'll talk about some of the solutions now.

Dr. Leigh: So, parents find out their child is deaf and wonder what they're going to do. We asked the parents, what did they decide, what was the most confusing information, and where did they go to find this information? Basically the parents said they just felt overwhelmed with so many choices, with all the options that were available to them. We found [out something] very interesting. One mother said that she had a distant cousin who had a graduate degree from Gallaudet University who said, "Don't trust anybody in the field, don't trust anybody." So the important issue here is, how do you all provide parents with information and support and, at the same time, gain their trust so that they know the advice you're giving them will truly benefit them?

The issues that were important to parents were obviously [related to] communication. They want to be able to communicate with their child. They want to be able to connect, to bond. But how is this done? There were so many choices—oral, sign language, etc. They didn't know what to do. Learning to sign was a very important first step for many parents, and that surprised us. A large percentage of parents were motivated to learn sign language and, of course, also to use the technology of a cochlear implant. They got advice from audiologists and doctors to get the implant. Parents were starving for information. The best resource for them was other parents. Parent groups and telephone trees were very important to them. The Alexander Graham Bell Association and the American Society for Deaf Children were vital organizations to these parents, as well as parent-infant programs. They saw those as very important support systems and felt lucky to be involved with these early intervention programs. These turned out to be good resources for parents.

Now, how do parents find out about cochlear implants? They find out from other parents, media, doctors, and audiologists. Interestingly, deaf people tend to think that parents are seeking out the cochlear implants when, in fact, that's not true. This is actually a very nerve-wracking decision for them. It makes them nervous. It is not an easy decision for many parents. Many issues in the book show these feelings. We asked parents why they had their child implanted. Twenty-five percent said for safety reasons. That was basically what a good implant center was telling them. The most they could expect were environmental noises and environmental awareness so it was for

safety purposes. Any more [hearing] than that would depend on the individual. So a quarter of the parents did it for safety reasons. Fifty-two percent wanted their child to potentially develop spoken language. Again, this is not 100 percent. Cochlear implant centers were warning parents not to set their expectations too high, so parents became more realistic. Also, many parents wanted more options for their child in the future. Without an implant and just relying solely on sign language lessened the options. With a cochlear implant, they had more choices. They could try it. They had nothing to lose.

Dr. Christiansen: As far as education is concerned, parents involved their kids in many different types of educational programs both pre-implant and post-implant. I should mention that the average child in the families we talked with was about 4 or 5 years old and had used the implant for about four years. So we're talking about kids who have used implants for a while. Also, most of the parents we talked to and that were included in the GRI study were very supportive of implants. We need more research on kids who have implants but are not using them, and why they choose not to use them. Before and after the implant, however, parents had their kids in many different kinds of programs. Many [of the] kids are mainstreamed, but most of these kids still require services. Few kids can rely only on the implant without any additional services at all.

Parents often spent a lot of time and work to get the school to agree to provide the services they need because the schools have misconceptions, too, that the implant is a cure-all when it is not. The GRI study found that 59 percent of children are judged by their parents to be behind hearing peers in reading and 37 percent to be behind in math. So the parents are not happy with that and need services for their children. Also, in the GRI study, one question dealt with where the children currently are placed. Of the 439 that responded, 72 percent are in public schools and 28 percent are in private schools. On this slide related to current educational environment, you can see that 34 percent, about one third, are fully mainstreamed, and 24 percent are partially mainstreamed, meaning they're with hearing kids for part of the day, but not the entire day. Some of the kids we talked to, for example, were mainstreamed for art or physical education. There were 13 percent in self-contained classrooms, 15 percent in residential schools, and 14 percent in other placements, according to the GRI study. So, obviously, there is a variety.

Also from the GRI study, related to the classmate characteristics of the kids, about one third have only deaf classmates, one third have only hearing classmates, and one third have both. The current mode of communication they use with the implant—half of them sign, half of them speak (more than 40 percent do both). From the GRI study concerning support services that kids need in school, about 40 percent, almost half of the kids, still rely on sign language interpreting, teacher aide in the classroom 37 percent, resource room help 28 percent, and media captioning 24 percent. Services such as these are requested often in Individualized Education Programs (IEPs) from the parents. The total is clearly more than 100 percent here because many of the kids require more than one type of service in their school.

One question in the GRI study was about the extent to which the implanted child interacts with hearing children at school. About half of them interact with hearing children at all opportunities, and half of them interact something less than that. Another question that was asked on the GRI study was, "What were some of the greatest advantages of using a cochlear implant in the school or in another instructional setting?" There were hundreds of responses. We just picked out [a

couple] that seemed to come up quite often—awareness of sounds and hearing music. I must say, music is one of the things with my cochlear implant that I have not really enjoyed very much. I've heard that from others, too. Music does not sound as good to me as it did with a hearing aid. For me, that has not been an advantage. Better communication, better classroom participation, hearing the teacher more easily, et cetera, were some of the advantages the parents mentioned.

One of the frustrating things noted was a lack of understanding on the part of the teacher. This came up again and again. Teachers did not understand that the implant is not a cure-all. Background noise is a problem. For me, that's something that's better. Background noise is much less for me than it was with a hearing aid. Some other issues mentioned were related to how hard it is to hear in a big group, the issue of rechargeable batteries not lasting a full day, and the situation where other kids are heartless. I'm sure that's why many of the kids stop using the implant, especially when they're teenagers; they do not want to be teased about wires hanging out of their ears. And, also, sometimes the headpiece falls off. Those are some of the frustrating things.

Dr. Leigh: Now, moving from education to psychology—that's my field, obviously. I had asked some of the parents, "Do you feel that your child's personality changed after receiving an implant compared to pre-implant?" Most of the parents reported that they felt more positive about the change, but basically their child was the same. Of the parents who said that their child changed after the implant, most of them felt it was for the better because, pre-implant, the children were more introverted and quiet; they didn't participate in family discussions, they didn't participate in group play, they were isolated. With the implant they started participating more, so that was an interesting observation. Of course, I asked about any psychological issues.

Now, remember, this particular project involved parents who were satisfied with the implant, so we had a hard time getting parents who were not satisfied with the implant to participate. Who wants to talk about bad experiences? One would rather avoid those. I tried to find them, but parents reported few psychological issues except for adolescence, which of course is natural. That's a difficult time for anybody, especially perhaps for a child with an implant. The biggest problem they faced is if a parent really pushed the child to get the implant and the child was hesitant about it. If the child ended up getting one, they would report problems. But I interviewed some adolescents who were still motivated in getting and using their implant. And sometimes they decided to get an implant against their parents' wishes. These parents felt their children were already doing so well, why did they need an implant? The adolescent would say, "I want it. I see my friends having them and doing well so I want one, too." So, again, one has to think about the diversity of perspectives among children and adolescents. Not all of them respond to the technology in the same way.

I asked if parents were satisfied post-implant. Overall, most were satisfied. Most admitted if they had to do it over again, they would implant their child younger because then they felt their child would have better options and better potential. From the GRI study, 62 percent of parents wished they had gotten them earlier and 54 percent were satisfied a year later. And then looking beyond the first year, that number went from 54 to 67 percent at the time of filling out this study. Now what does this mean? You just heard John say that listening to music in the beginning and sounds in the first year is not very clear, that one has to learn how to listen. One has to learn how to

process language. It is frustrating. It requires a lot of work in that first year. So of course satisfaction is low during that time. Given more time, satisfaction increases after some truly hard work, but of course we didn't find 100 percent satisfaction. There were some parents who felt they were not satisfied because the cochlear implant center did not do a good job of warning them or helping them lower their expectations. Parents are told not to have high expectations, but sometimes internally they dream and perhaps as a result they become depressed. It depends on the individual situation. That's what Mary Koch [an auditory education consultant] has said to me in the past.

An important reason why I participated in this research for the book is related to the deaf community. Ten years ago, as Dr. Fernandes mentioned, the deaf community was very resistant to the idea, very much against it. They felt that deaf adults were old enough. They could make their own choices so implants were okay for adults, but this was not the same for children. Obviously they believed that the choice of an implant meant the parents were not accepting their child's deafness, that they were rejecting sign language, and that the kids would not be happy. The deaf community claimed to know what was best for deaf children. It became a big debate, but we do see a swing in the pendulum. The deaf community has become more accepting of cochlear implant technology.

A clear example of this is the National Association of the Deaf (NAD). They issued a position paper ten years ago. When John and I interviewed parents, many of those parents resented the old NAD position paper of 1991. They felt it was very much against the family, against the parents. Parents believed this position did not respect the parents for loving their child or for being involved in their child's life. The parents didn't understand the deaf community. They didn't like that the deaf community felt that they knew what was best for their child. These were the feelings brought out by this position paper. The NAD felt there wasn't enough good research to show the efficacy of the technology. In some ways they were right, but this is how parents saw this.

Just recently, the NAD issued a new position paper. They have changed. It has become more parent-friendly now. They've said that they should encourage all uses of technology that will help the child, including cochlear implants. And at the same time, parents must pay attention to the whole child. They must pay attention to the child's development of literacy, language, and life satisfaction.

To see the NAD's position paper, visit:
<http://www.nad.org/infocenter/newsroom/positions/CochlearImplants.html>

Here at Gallaudet University, back in 1992, I heard of a cochlear implant conference. There were protests being held and the conference was cancelled. The students thought this conference was awful. Yet here we are today. We have a Cochlear Implant Education Center and not one person has protested so times are changing. In our book, we reported on the survey of Gallaudet University's faculty, staff, students, and alumni on their perceptions of the cochlear implant. There were nine questions. We picked one to share with you, "Should Gallaudet University do more to encourage students with cochlear implants to attend?" Fifty-nine percent agreed, 23 percent disagreed, and 17 percent expressed no opinion. The percentages are less for deaf [people surveyed], but it still shows that a majority says, yes, we should accept these students. In the book, we emphasize the fact that the deaf community now has diverse types of deaf people, that

there are many different ways to be deaf, and that people with cochlear implants represent another way to be deaf. Now where did we end the book? We need to know how these kids are developing with the use of technology. There's no longitudinal research. There is no guarantee of benefits.

As Dr. Fernandes said and Debra Nussbaum has said, there are variables that have a tremendous impact. Tomorrow you'll hear from Dr. Pat Spencer [a professor in the Gallaudet University Department of Social Work], who will report on different language studies that do show that there are some fantastic achievements and then there are people who do not achieve anything, and all the colors in between. It may be due to the cause of deafness; it may be due to the person's learning style. It may be due to the intervention not matching the child's needs; it may have to do with brain processing problems. Who knows? The implant itself does not guarantee success. Parents, professionals, and teachers have to do the work with the children to get results. Parents report within the first year that the percentage of satisfaction is less than it is after that.

So, now, what is your role throughout this conference? Your role is to really work on maximizing the educational and psychosocial development of these children who have cochlear implants to the best extent possible and to help these parents develop trust in all of you and your competencies. I hope this conference will help us establish that foundation.

Mid-conference Presentation (Pre-discussion Groups): Considerations for Effectively Integrating Spoken Language and Sign Language for Students with Cochlear Implants

By Mary Koch, Auditory Education Consultant, Towson University, Towson, Maryland

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speaker's presentation. For more information, see the Preface.

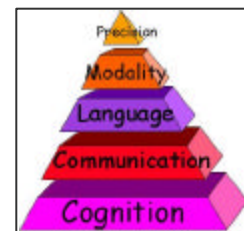
My presentation will set up what will be the most significant part of the conference: putting our heads together. I see us all as pioneers out there on the frontier. We're not even aware that there are other covered wagons on the frontier, but there are a bunch of them and many are in this room today. It's incredible. I'm thrilled to see this becoming a reality. We're focusing on communication, big "C" communication, in children and using whatever we have to make that happen. I'm going to set the stage for the eight discussion groups that you will be participating in this afternoon and put some key ideas in your mind about the paradigms in which we should be thinking, no matter what discussion group you may be in.

The first group will discuss the rationale or basic beliefs about language and communication for children with cochlear implants who use sign language. As I thought about that, I took it back a

step. Let's look at where it all begins—the point where a parent is making the decision to get a cochlear implant. Why are they doing that? It's not, "Why are *you* doing it?"; It's, "Why are *they* doing it?" It's an open opportunity with no promises. Is it denial of deafness? We have to be very, very cautious that it's not that. With Universal Newborn Hearing Screening, families are finding out that their child is deaf and, at the same time, may be finding out about cochlear implants. Families may not have the time to adjust to the fact that their child is deaf before they are being faced with information about an implant. We need to look at that and make sure a family has realistic expectations and that they are not looking for a cure. That goes hand in hand with denial. If we're not aware of that, we're not seeing the big picture. We need to see that and address it.

What are we really looking at in terms of expectations? There are predictors, but they're not infallible. I have a very simple definition of success. It is, "Is the child happier with the implant on than he or she is with the implant off?" That's success. Everything after that is a *degree* of success. And what about expectations? Are they jumping right into this? Is this a 12-year-old saying, "I want a cochlear implant because I saw somebody using the phone?" You have to counsel to that and the appropriateness or inappropriateness of expectations. I'm also talking about parents' motivation. Are they looking at it because they don't have a good feeling about sign language? Are they looking to say, "My child is no longer deaf?" That is not appropriate. The parent needs to be the center of our programming. Is the primary focus speech development? Is the primary focus language development? Cognitive development? Or social-emotional development? And how do we define those terms? We need to look at whole kids. We talked about literacy. We need to look at a communicating child. The way I try to set that up is in terms of developmental priorities.

I look at it as a pyramid. The very base block, the most important block, is cognition—the child's ability to process sensation and experience in their world. At this point, it's non-symbolic; it's just direct. When the light goes on, the sensory system processes light. There's still no name for that experience, but the brain is taking the sensory information in. We see babies sucking on everything—that's taste and touch. They're processing their world. That's a cognitive process.



The next block in the pyramid is big "C" communication. Again, we're not even at language yet. For example, I'm working with a baby and I pull out a toy. I know whether they like that toy because their whole body starts to shake—that's communication. It's the transfer of information from one person to another.

The next block is language. We're gradually refining our world from cognition to communication and then to language. And language means the encoding of information into mutually understood symbols—that's language.

The next one, where everybody gets bogged down in this field, is modality. Lots of times we come into programs and make decisions and everybody is completely fixated on modality. They forget language, cognition, and communication. What I think we're doing today, and what the common bond with all of us is today, is that we want those three primary building blocks to be appropriately established for these kids. Cochlear implants have changed access to sensory

information, and so we have other options, but we don't want to just abandon all of what we've known about educating children at the base of this pyramid to pursue only a limited part of the pyramid through a cochlear implant, to forget what we need to focus on—these three primary building blocks.

The last part of the pyramid is precision. That is an individual's ability to clearly articulate either with hands or with speech what he or she is trying to say. The story I use to illustrate this is about a little girl I was working with. When she was at about 10 months of age, she was making this little motion with her hand that I didn't really recognize. I finally realized that this was babble, sign babble. Her mother, father, and I were aware that she knew she was doing something, but we were not sure what it was. I pulled out a plastic cat from my bag of toys and she started doing that hand movement. We realized that was her baby sign for "cat." What she had done was like the tip of an iceberg. The sensory experience of "cat," the ability to receive that information and express it, to put it into a symbol that she had seen modeled, to use her hands because she didn't have hearing or the articulation of hearing, and to make it just precise enough so that we could figure out what she was linking that to. We knew that this sign was the tip of the iceberg breaking the surface. We knew everything that had to come before it, to arrive at the signing of this simple word. It was a defining moment in my career because with universal newborn screening, we're seeing the babies younger and we can get that good start.

Discussion Group 1: Rationale/basic beliefs about language/communication for implanted children who use sign language

What is the role of sign? I'm just tossing out a bunch of questions; I'm not answering any of them today. What sign system should be used? You have to think of that. When you say "sign," everybody is thinking something different. When should sign be used? All the time? Some of the time? In specific situations? With certain people? Should sign be stopped at some point? Some cochlear implant centers are saying to stop sign right away. I absolutely do not agree with that, but when and should it be? Who should sign? Again, I'm not even giving my opinion on some of these, but who should be the signers? I know a family, this was years ago in central New York, that even taught the mailman to sign. It was wonderful. This kid was totally surrounded with people she could access through language. What are the goals? To be bilingual? That's a question. Is that the ultimate goal? To use speech only? You may know what your goal is, but what's the goal of the parent? Are you on the same page with that? And who determines that goal? And do your goals change over time? Are you setting yourself up at the very beginning to say that the goal will be to have a student independently mainstreamed by third grade? Are you setting yourself, the family, and the child up prematurely to look at the "f-word" (failure)? Are you ready to adjust your goals as you see the child adjust to using the cochlear implant?

Discussion Group 2: Language/communication options and choices—when, how, why?

Why should sign be used? We need to answer that question. I feel that the pyramid addresses that issue. If the child can't hear a spoken language before [his or her] implant...and I'm doing a lot of work with babies where I'm preparing them for cochlear implants and making sure that there is not a language delay. Then you have the older, late-implanted kids. How should sign be used in that situation? How should it be used with babies? How should it be used with a child doing very

well with an implant? I'm not answering these questions; again, I'm just giving them to you to keep in mind for your discussions. There's plenty to talk about. Now, I'm the queen of metaphors, and I look at development of the sensory system as trees growing in the forest. Here, you have four trees. The size of the tree represents their developmental age, chronologically. The sensory systems have developed typically for each of the senses, but then along comes hearing. I see the cochlear implant like an acorn. It has every bit of *potential* to be a full-grown oak tree, but it's not an oak tree. You don't stick it in the ground and immediately expect it to respond as a full-grown tree. All the cochlear implant initially is, is pure potential.

So, what happens when there is limited hearing and, for a period of time, a child has a hit-or-miss approach to learning language? We can often see language and cognition delayed. Often there's late identification, there's a period of adjustment for the parent, the parent needs to learn sign, there's a learning curve, and in the meantime there's a delay. So, the goal we need to look at is to have the language and cognition be age-appropriate while we develop hearing, but we can't necessarily do that right away through hearing. We cannot do it in the early stages of cochlear implants. We might get there eventually, but we're not going to start there.

What are the program priorities? Again, these are questions. Is American Sign Language (ASL) truly valued in the program? Not just, is it *used*, but is it *valued*? Is speech truly valued in that program? Pardon the pun, but not just paying "lip service" to it? Is listening valued? Are individual needs considered? If you've ever seen more than one child in your life, you know that all children are different. And, again, what sign systems should be used? ASL? Sim-Com [Simultaneous Communication]? Do you use auditory only? If so, when? The language competence of kids will be dramatically different from one child to the next and so will the listening ability, not just with cochlear implants. They might have been decent hearing aid users, but they struggle to adjust to the cochlear implants.

I have two children of my own. My parenting/teaching/learning style with my two children is as different as day and night, and that will be as different as day and night in the classroom. How can we individualize appropriately? Again, does the role of sign language change over time with kids? Where do you start? And that can be starting when you see a two-month-old baby. It can be a 12-year-old. Where do you start and where is the role of sign language in that early phase? How does that change over time?

Discussion Group 3: Components of a comprehensive program for children with implants: Supports for students

Things to think about: Providing services...mapping—should it be offered in schools? What about FM systems? What does an appropriate rehab program look like? In the mainstream, what about interpreters? What are the expectations in the classroom? What are the expectations at home? Appropriate peers—ASL peers, spoken language peers? Those may be children with normal hearing or they could be children with a hearing loss, hard of hearing children, or [children with a] cochlear implant that are further developed.

Discussion Group 4: Components of a comprehensive program for children with implants: Supports for staff and families

It is key that families communicate with other families because, as parents, they want to hear other parents. Unless you have a deaf child, in many ways you're not qualified to talk about those feelings. You can talk about it, but a parent who is experiencing this needs another parent who is experiencing it. Instructional classes for families on the topic of implants have also been discussed. Regarding staff support, what should be included in the appropriate training of staff? Ongoing updates about technology? The longer I'm in this, the more I know what I don't know. I know when I need to talk to somebody in a related field who can have new eyes to look at the situation. And continuing education—this is very important. Get outside of your own walls. Team communication, parent/teacher consults, team meetings, family access to the program—there should be an open door to parents going into a classroom. When I hear classrooms say parents can't come in, that's nonsense. I can understand if it might be disruptive, but figure out a way for the parents to be there when they need to be. Not necessarily controlling, but that parent should have access to the classroom. A communication book is important.

Discussion Group 5: Early intervention: Planning and strategies for the emergent language learner with a cochlear implant

While you may all be in separate groups, you'll be talking about a lot of the same things. Early intervention may be covering many of the same issues as the other groups. Some things may be specific to working with younger children. Regarding home-based facilitation, I try to get away from the term "intervention" because we do not want to "come between." We want to "come along-side" and we want to facilitate. We never want to "come between" a parent and a child. And I think the term "intervention" by nature of the word implies that that's what we're doing, so I try to use "facilitation" wherever possible. The reality of life is that babies are in childcare, so you have two things: you have to get the childcare provider on the right page with you and you have to get the parents knowing what's going on. Also, include siblings. I have some families say, "Oh, so-and-so will baby-sit for the brother during our time together." I say, "No, no, no, the brother's a part of your life." Include the siblings and use the community as a classroom. Get out in the community and use it because that's where the child is living.

Discussion Group 6: Elementary/high school: Planning and strategies for implanted students who are established sign language users

How can you maintain academic goals while developing listening skills? This is a huge issue for school-age kids. What is the role of tutors, speech and language therapists, etc.? How do we make sure kids stay up with the school-based program while developing their listening skills? We go back to the tree metaphor. In the beginning, the primary avenue for learning language, cognition, and academics is vision because that's their access, but at the same time, we're developing auditory skills. For example, if you have a third or fifth grader who is in the early stages of developing spoken language and you are trying to teach him or her everything he or she needs to know in the classroom through the newly developing auditory system, it's like trying to push an elephant through a key hole. You can't do it. You have to open up the auditory mechanism before it becomes an efficient avenue for all the child needs to learn. As the hearing grows more and more, the academics and cognition can go through hearing.

Discussion Group 7: Addressing the needs of signing students with implants in the mainstream

What are the roles and responsibilities of the classroom teacher? I look at these kids who are in classrooms with, like, 30 kids and along comes a deaf child with a cochlear implant and all the needs that come with that child. What are you expecting a regular education teacher to do in response to that child's needs? How much can you realistically ask the classroom teacher to do? Think about that. In mainstreaming, it is important to define roles. What's the role of the itinerant teacher? They may come for half an hour every day. If that child is way behind in academics, are you really going to make it up in half an hour a day? What is the role of the speech-language therapist? Who does what? The rehabilitation person could be a speech language therapist, a hearing therapist, or an education audiologist. Different professionals are taking on the role of habilitation. You're all doing it. What is the role in terms of the academic goals for a child in the mainstream? For their auditory goals in the mainstream with an interpreter? In terms of the interpreter, what are the roles and responsibilities of the student related to the interpreter? Is co-existence between the teacher and the interpreter possible in the mainstream? If someone is interpreting, think about this—that child is looking at the interpreter, visual attention is there. How can the child possibly listen to the speaker while getting the information from the interpreter? How do you sell the idea to an interpreter that if he or she really does his or her job well in the mainstream setting, and that child with an implant gains more and more auditory dependence, they won't have a job? That's a tough sell. I mean, those are questions to ask.

Discussion Group 8: Language and communication assessment and training (for habilitation specialists)

What are the parameters of professional training? One of the acronyms that I use often is “KIDS.” The “K” in this is *professional knowledge*. There's a ton of stuff that we need to know. We need to know about infant development, language development, hearing and hearing loss, cochlear implants, sensory integration, family dynamics, and the list goes on and on and on of what we need to know. The “I” in this is *insight*. We need to be very sensitive to what the family is experiencing and how their relationships are functioning. What are the social-emotional factors to that child's adjustment to deafness, and what they believe the child can “hear” through a cochlear implant? I don't like the word *hear* because it's so confusing. It's like using the word *snow* for the Eskimos. *Snow* doesn't mean anything to the Eskimos. They have 13 different words to describe what we call *snow*. It is the same way with the word *hear*. Is it hearing and responding? Is it just hearing? Is it listening? I could use the word *hear*, but each of you could “hear” something different about what I'm saying with that word. And “D,” what are the *dynamics*? What are the dynamics between the parent and the child, the extended family, and the professionals? Be thinking about that when you get into your groups. And “S” is for *strategies*. Some people are knowledgeable and want to read books, some people are insight people and want to have counseling sessions, some people just want to chat, and some are strategy people who want to go to toy stores. If you come to a family from one point of view, you need to balance yourself out by doing the other three.

Regarding the dimensions of professional training, I look at three D's. The *diagnostics*—we are constantly asking ourselves, “Where are we with listening and language development? Where are

we in training [for] all of the different things that have to be developed?” We have to evaluate. Next, we look at *development*, and say, if we’re here, where are we going next? Development answers the question, “Where are we going?” And *demonstration*—“How are we going to get there?” It’s important that we demonstrate what we are doing, especially in the context of early intervention. We want to be demonstrating to others how they can get to the goals that we have.

I’m going to leave you with one thought...Going back to the tree. I heard this story years and years ago about two little boys who stood looking at a tree and they were asked, “Can you walk a straight line to that tree?” The first little boy said, “I can do it.” He looked right down at his feet, studied them every step of the way, and walked to the tree. When he looked back, there was a zigzag path where he had walked. The second boy said, “I can do it.” He set his eye on the tree and walked a straight line. So know your goal. Know it well. And then keep your eye on it and you’ll walk a straight path. What we’re doing in this room is different from anything that’s ever been done before. We’re in totally new territory. We’re all coming from different perspectives, but we have to have a sense of a common goal, and when we...set our eyes on it we can steer our course.

Closing Presentation: Considerations for the Future: Putting It All Together

By Dr. Patricia Spencer, Professor, Department of Social Work, Gallaudet University

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speaker’s presentation. For more information, see the Preface.

I would like to review information about the things we already know about cochlear implants to give us a basis for moving on to thinking about the future. We know from some pretty old studies at this point that children can hear more things with cochlear implants. Profoundly deaf children can hear more things with cochlear implants than they can with hearing aids—some of the first studies showed that. But even with a cochlear implant, the child isn’t hearing everything, isn’t hearing like a hearing person hears. There are gaps in the information that is available because what the cochlear implant does is take the sound that is out there and clump it in various ways. Software programs rearrange that sound and send it into the inner ear, which sends it to the brain. They don’t get all of the fine distinctions that a hearing person gets.

I’ll try to make a visual picture that relates to the way sound is heard by a child with a cochlear implant. Suppose that you have to identify a four-legged animal, and you’ve not seen that animal before but you have to figure out what it is. Maybe you have to draw it. Maybe you have to learn the name for it. Now that animal is standing in back of a bunch of trees. To see that animal, you have to look through tree trunks that are hiding big parts of that animal. Now, if you were looking through those trees with the equivalent of a hearing aid, you could probably only see the tail end

of that animal because you could only hear the low frequencies with that hearing aid. With a cochlear implant, though, you can see pieces of that animal's head, pieces of its neck, its legs, its body, pieces of its tail end, but you still are missing pieces in between each of those that you see. The reason I'm bringing this up for you to think about is because it's important for us to realize that children who are using cochlear implants still don't see the whole animal. They see more of a range of that animal but they have to use their brains. They have to use what they already know about the world. They have to use their cognitive abilities to fill in those gaps to be able to put together a picture of that whole animal. That's the kind of task that a child is facing using a cochlear implant.

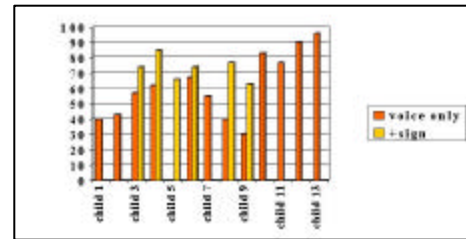
The next thing to keep in mind is that the technology of cochlear implants is improving fast. That's because they are computers. What we're looking at is software and new actual hardware that's improving, the same way our laptop computers are improving. What the cochlear implants are capable of giving people today may not be what [they will be] capable of giving them next year, two years, or, especially, 10 years from now. It's wrong for us to make an assumption that what they do today is what they're going to do in 10 years. It's even worse for us to look at information from children or even adults who got their cochlear implants five years ago and think that's how children today will function with an implant they received today. Because the equipment is better and the children are getting them earlier, those old pieces of research information aren't valid for the children getting the implants today, so don't trust old studies or old stories.

The next thing to just keep in mind, we all know this, is that in hearing, the perception comes first. A lot of people don't want to use the word "hearing" when talking about the information from a cochlear implant. It is different, but I can't think of a better word, so allow me to use "hearing." Hearing then gives you the ability to repeat some of these sounds in speech and eventually gives you a language. When you look at research studies, you'll see people first study hearing, then speech production, and then language. So the language studies are fairly new, which means that some of them are fairly weak because when you first start studying something, it's usually not exactly right. Keep that in mind when you read the literature.

The bottom line is that cochlear implants leave profoundly deaf children functioning like hard of hearing children. We've ignored hard of hearing children, I believe, in our educational systems. Now we're going to have to face it. We are going to have a larger group of functionally hard of hearing students. A lot of the children who would have been functioning as profoundly deaf now with an implant are going to function like hard of hearing children. One of the things we have to do is finally bite the bullet and figure out how we educate hard of hearing children.

Another thing we know from research is that there are enormous individual differences in the way kids react to a cochlear implant, in the way they use it. There's been a lot of work trying to predict that so you can help people decide whether or not to get a cochlear implant. The data isn't good enough for that. It's a philosophical decision today. If your interest is in oral language development for a deaf child, you need a cochlear implant. If you have no interest in oral language development for a deaf child, there's no reason to get a cochlear implant.

I'm going to show you some data now because I am a researcher as well as an old school teacher. This is just a little bitty study, not a grand study. I'm using it to demonstrate something. I tested 13 children in Australia. The kids with yellow bars were in Sim-Com programs, and the yellow bars show the scores on the tests when I used Sim-Com with them. One of the things I want to point out is that when they knew signs, they always scored better than when I was just speaking.



Signs helped. On the next slide are children in oral programs. The children in the oral programs were the best and the worst. Think about it. It actually makes some sense. They are either succeeding the most or they're not succeeding at all, and they had no other alternative. Keep that in mind when we look at these factors that influence the language outcomes: child, family, school. I thought what Mary Koch said yesterday was somehow perfect when she said that a cochlear implant is "potential." The goal is figuring out how you get to that potential.

Here are some factors effecting progress with an implant:

- **Age of implantation**—First of all, one of the factors that we find, that the research pretty consistently shows, is that the younger the age of implantation, the better the spoken language output. Younger tends to be better. This is not perfect. Nothing is perfect, but younger tends to be better. Below 4 years old, you can expect better outcomes. It's looking like before 2 you can expect even better outcomes than after 2. Why? Because the brain is more plastic and you have more time to learn. One thing to keep in mind with the group of children we have now is that many were born deaf and got the implants late. This creates a special situation for you in programming, but this group will diminish in time. Eight years from now, almost all of your implanted children will have gotten them early because there's a lot of pressure to get them early.
- **Cognitive and attention skills**—Other factors that, like it or not, seem to influence outcome are cognitive and attention skills. We see that children with cognitive attention disabilities don't do so well with cochlear implants. They don't do so well with sign language either. These problems complicate development for a deaf child, but it seems to particularly hit in the use of a cochlear implant. About 30 percent of our deaf student population has some kind of additional disability at this point. That may be a high number, but I think not. We have to think about how to identify these kids who will have extra problems. They need special kinds of programs. I haven't heard anything about that yet at this conference. Also, keep in mind that kids don't learn to use their implant right away. You hear that a lot. The catch-up period seems to be at least five years. That is the degree to which children use the implant and catch up with their age expectations. They may continue to get closer to age expectations a long time after they get the implant, so don't give up after a year or two.
- **Family factors**—Support for development helps. Children with cochlear implants have to have a lot of oral language experience to learn to use it. Remember, they're filling in the gaps that those trees covered up. They have to have more practice. One thing that helps is if they get oral language at home. One thing to look out for, which I haven't seen documented but I've seen in real life, is that more than I would expect, when there are two parents in the home, they may disagree about getting the cochlear implant. What I've seen

four or five times without looking for it is that one parent is devoted to deaf culture and ASL while the other parent wants the child to learn how to talk. It's popping up. In a small study I did and in my reading, I've not seen any relationship with the families' ethnic groups, or even parent education level, and the outcomes of the kids. It's other variables that seem to be influencing more. One of the things that surprised me when I interviewed parents was that the ones that took a long time to decide about the implant, the ones who got on the Web and looked for information, the ones who weren't satisfied with what one person told them, these parents were much more satisfied with the outcome, even when it wasn't very good, but, in addition, the outcome seemed to be better for these kids. I have no way to explain that, but I think parents struggling through a decision has some positive, instead of negative, outcomes.

- **School factors...language modality**—We seem to have the same darn argument going on that we've had for the last 200 years. I went to Australia and heard, if we let the kids sign, they won't learn to talk using the cochlear implant. Kids who see and hear can learn both sign language and oral language. To the extent the cochlear implant provides hearing, these children should be able to learn oral language and sign language without interfering. The problem is that the implants still aren't perfect. Instead of a natural language-learning situation, there appears to be a need for more structured, careful, and extensive oral language input for them to learn to use it. Most of the studies, however, do say that if your goal is oral language, the oral program kids do better. One reason is because some of the sign programs don't provide enough oral language exposure. If you're giving 30 minutes a week or 30 minutes a day of oral language exposure, that's not enough. Don't pretend it is. We need to figure out how to give enough oral language exposure without limiting other means of exposure.

Another important piece of information, and this comes from good Sim-Com programs, is that if the children get the implants earlier, the modality doesn't seem to make a difference. If we're running a program using sign language, we're probably happy to see the children get their implants early because that seems to maximize the potential for both languages.

Another thing is that you have to be careful how you read the results of any research, as there may be hidden problems with it. For example, in my study I was told that one child was oral, when in actuality she was really good at signing. When I interviewed the parent, I discovered she'd been in a bilingual program until the year before when she was switched to an oral program. Another child listed as being in a Total Communication program had been in an oral program until the previous semester, but wasn't learning in it so they switched him. So you have to be careful about how people are selecting their subjects for their studies and careful yourself about how you're attributing the impact of modality to the outcome of the implant. In fact, there are other things going on. Regardless of modality choice, you have to provide exposure to oral language or they're not going to get it. You can't make soup out of water.

- **Other school factors** —I taught a course on cochlear implants for the Social Work Department last year at Gallaudet, and a lot of my deaf students were saying, "I just can't think of a child getting a cochlear implant and sitting through all that speech therapy and auditory training because I remember how horrible it was for me. I just don't want anyone

else to experience that.” What I don’t think they understood was that, for most of the children with cochlear implants, it’s not that horrible. It was horrible for our previous students because they really couldn’t hear anything. What’s worse than sitting there trying to please people when there’s no way you can do it? The children with the cochlear implants, most of them can actually hear.

If you look at communication in the schools, you can see that what we are doing is not really anything different. We have our Sim-Com programs, also called Sign Supported Speech; we have oral programs and we have ASL programs. We seem to be taking all of the old methods and putting them together. Maybe children with cochlear implants, whose hearing is really different from those who are using hearing aids, need some kind of new approach to the oral training. Maybe we need to tweak the methods we’re using there. There may be some people in this audience who know about these newer approaches and know about ways to change them for these children, but if they know them, they need to tell us because we need to think about the possibility that it’s not the same old show we’ve always seen.

Also, think about Sign Supported Speech. In 1987, Erting, Johnson, and Liddell wrote *Unlocking the Curriculum*. It told us all the bad things about Sign Supported Speech. They said it wasn’t really simultaneous and often it isn’t even communication. What it is is speech, and signs support it. And I have learned to think of that as a very negative thing because it hasn’t worked. We know it hasn’t worked to build English skills, but perhaps this will be different for a child with a cochlear implant. When a child has a cochlear implant and can hear the speech, Sign Supported Speech may have a different value. In this case, if oral language is your goal and you use the signs to clarify the meaning until the child learns to hook up that meaning with what he or she is hearing, it may actually be a very positive approach. We need to look at that and learn how to use it carefully. I’m not saying to stop using ASL. I’m saying that for the English part of what you’re doing, Sign Supported Speech deserves more attention.

There’s a good study, but I can’t remember who did it. It looked at children in a good Sim-Com program that had cochlear implants and had them do expressive sentences and stories. It observed that the children were saying and signing the content words. You know what they were doing with those English grammar things like the plural and the past tense? They were saying them. This shows a couple of things. First of all, it shows they could hear them. Second, it shows that just like we hearing people do, when they were confronted with the Sim-Com, it helped clarify the meanings, but none of us do the signs for those grammatical endings. It doesn’t work. It doesn’t match the language, but the auditory matches the language. The degree to which you hear seems to have a positive impact on English grammar. We have evidence that children who can hear can actually combine modalities in a productive way.

We need to have multi-disciplinary and trans-disciplinary approaches. These children need so much input in a variety of realms that one person can’t know it all. We need teams of experts. We also need to keep up to date. I went to the library yesterday and looked through the past years of the educational journals and didn’t find many articles about cochlear implants. Then I looked at a journal called *Ear and Hearing* and there were hundreds of articles. If we want to keep up with what’s happening here, we have to be reading outside of our field.

We have to stop predicting the future based upon our own past. It's not productive. We have to realize our student population is changing so we have to focus on how you work with hard of hearing children and integrate oral language with sign language. We have to confess that what we know about deaf children is changing. It's a very exciting time, but also a very scary time. And it's just up to us to figure out how we're going to react to this. I think if we're not willing to do the things that we have to do to develop oral language, we shouldn't advertise that we will work with cochlear implanted children. We have to make up our minds. So, what I haven't mentioned here is academic skills, social-emotional skills, or abilities—all of that, we know, is really important. A lot of the research hasn't focused on that. It is beginning to be available. Where are these kids going to find a peer group? You know, they're not deaf; they're not hearing. Where do they fit? In Sydney, they have 80 kids in town with cochlear implants that are adolescents. They're their own peer group. That was a surprise to me. I never thought of it that way, but that tells you what's happening is that we really have to broaden what we're thinking about and the changes that are occurring.

About the future, let me summarize:

- **Expect characteristics of students to change**—We're going to have to expect the characteristics of our students to change because we're going to be getting more of the students who got cochlear implants early.
- **Focus on students with multiple disabilities**—We're going to have to focus on the kids with multiple disabilities as we always have had to. In Melbourne, they implant these children because they think they need everything they can get, so they want to give them some hearing if they can. But, frankly, those were the kids I didn't see using the implants very well so we need to think about those, especially.
- **Continuing education**—We need to think about continuing education for ourselves. We have to think of creative ways and maybe cooperate with other medical facilities so we can share information.
- **Language development**—We have to think about new approaches to encouraging language development. We need to know, "How does a natural language approach match with this structured need?" and "How do you balance that out, how often, and with what kind of input?"
- **Oral language exposure**—How much? Half a day? All day? Undoubtedly, it will be different for each child, but we need to get some information on that instead of just basing it on our own opinions.

Good luck for the future!

Program Sharing

Columbia Regional Program, Deaf/Hard of Hearing Services, Portland, Oregon

By Nancy Rushmer, M.A., CED Language Consultant, and
Arla Melum, M.S., CCC-A Pediatric Audiologist/Infant-Family Specialist

(Composite of handout and presentation)

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speakers' presentation. For more information, see the Preface.

Dual Language Learning in the Early Childhood Years (Birth to Age Eight)

*"For at least 200 years, since the time of l'Epee, there has been a dynamic tension in the purpose of deaf education: Is it to teach deaf people about the world or is it to make them part of the world? Is it to help them join the Deaf world or to help them join the hearing world? In the spirit of empowerment, I would like to suggest that deaf children have a right to all worlds, and the purpose of using sign language in the schools is to provide as much access as possible to the best of all possible worlds."*¹

Resiliency for deaf and hard of hearing children is closely tied to the content and quality of their early childhood experiences, in particular, to the relationship with their parents and the richness and effectiveness of the parent-child communication. When families become competent in providing unambiguous linguistic models to their children from the beginning, we are likely to see academically successful young adults later. When programs provide families with intensive emotional and educational support during their children's early years, parents are more effectively able to mobilize their own resources to assist their child throughout the entire educational process. The CRPDHH [Columbia Regional Program, Deaf/Hard of Hearing] family-centered early childhood model respects and supports families' individual communication choices and works to enhance families' skills, targeted toward their child's linguistic competence. Supporting families through home education, family support groups, sign language class, Shared Reading, auditory-oral learning, and frequent informal contact is central to the model.

¹ Susan Fischer, Ph.D. (1994). Critical periods: Critical issues. In B. Schick & M. P. Moeller (Eds.), *The use of sign language in instructional settings: Current concepts and controversies*. Proceedings of the Seventh Annual Conference on Issues in Language and Deafness, October 3-4, 1992, Omaha, NE: Boys Town National Research Hospital.

The Dual Language Program focuses primarily on American Sign Language (ASL) and English. English is modeled through Sign Supported Speech and through spoken English alone. (Some non-English-speaking families use ASL and their own spoken language.) The children who are primarily visual language learners tend to acquire ASL and those children with good access to the auditory characteristics of spoken English learn ASL and spoken English. The children's performance varies depending upon a variety of factors (see the *Learning to Listen and Understand Speech* handout online).

This family-centered, language-rich early childhood model is provided within a developmental framework: development is sequential with current learning providing a foundation for subsequent skill acquisition; individual children develop at different rates; children are active learners and they use a variety of experiences to construct knowledge; and play is an ideal learning milieu for children's development in all areas.

Text of Presentation

Rushmer: This morning we will present a brief overview of our Dual Language Program for Deaf and Hard of Hearing Children and Deaf Children with Cochlear Implants. You will see videotaped illustrations of program elements that are described in more detail in the handouts. Because cochlear implants begin with families who have deaf children, we will hear first from Dana and Scott Stamp, the parents of 7-year-old Samantha who is deaf.

Transcript of video:

Mother of Samantha: Do we think that she will develop more rapidly in her oral skills if we drop the sign language? That's not an option. In our eyes, that's not an option. That is her first language and will always be her first language. She's most comfortable with that, and we're fine with that as a family. And I think maybe she's an oddity, because cochlear implants work differently for different people. She happens to have responded very well. It's been a very smooth transition, for the most part, for her. She's gotten a lot of speech abilities that some other children really don't get, but she doesn't always have it on. She takes a bath. She plays soccer. She goes swimming. She plays in the grass and in the sandbox, things that she can't always have it on for or if the battery dies or whatever. Why should that be okay to let her be without language?

Father of Samantha: Everyone knows she has a bold spirit. She just grasped English and is learning it.

Mother: It's kind of a New Year's resolution—we've had to add a sign-only day to our life because she is so oral now. At least for me, it really came rapidly.

Father: It's like, well, how do we introduce the language? Who takes the lead? In our family, Samantha takes the lead. Sam has that personality where she kind of wants the world to revolve around her. So she will come up to us and she'll say, "Daddy, voice only." She won't even have her implant on and will tell me that. Or she'll tell me, "Why should I wear this?" And I say, "I have to sign, you don't have your implant on. How can I voice only?"

You can't hear." She'll go, "Oh, I was just joking." Then there's times she has her implant on and says, "Voice only," and I'll only voice or she'll say, "Sign only. There's a lot of noise around. I can't hear. I don't understand." I think one thing I'm adamant about is, don't take away a method of communication just because you want to improve another.

Samantha: [Reading book] "Green Eggs and Ham. I am Sam. I am Sam. Sam I am. That Sam I am. That Sam I am. I do not like that. Sam I am. Do you like green eggs and ham? I do not like them. Sam I am."

[End of video transcript]

Rushmer: Sam is the oldest of the 10 children, ages 7 and younger, that we work with who have implants. She was implanted at 33 months, has age-appropriate language, reads above grade level, and is actually not so unusual from our perspective. The younger children implanted between 13 and 19 months with newer devices are showing quite rapid acquisition of audition and speech, particularly the 12-month-old we're working with. Our presentation will touch on some aspects of programming for these children. Check your handouts for details and the program's underpinnings in terms of the philosophy and basic elements. (For a complete set of handouts, see <http://clerccenter.gallaudet.edu/CIEC/>.)

We began calling our program a Dual Language Program a few years ago to describe the two languages used: ASL and English through Sign Supported Speech, speech, and written English. In Portland, we have strong private and public oral programs for children with cochlear implants. There is also a need for a program for parents like Sam's who want their children to learn both languages. The 10 children we're following display language and speech skills on a continuum from beginning sound awareness and babbling to some with age-level and above auditory comprehension of language and intelligible speech. We may have two children implanted for two years, one at a beginning babbling stage, the other with oral language understanding one year above chronological age level. The rate, growth, and level of these skills seem to be related to the factors listed in our handout on page six.

Next, we want to show you Myah. She is 3 1/2 years old and is one of the kids with above age-level sign and oral language. Her congenital profound deafness was identified at age 1, and she was implanted at 19 months. Myah was in our program for two years and is still in our study. We continue to follow the children if they move away. We also followed kids to the oral-only program to see how they continued their development.

For the last six months, Myah has attended Children's Village in Syracuse, New York, where each week she has three to four 45-minute oral language sessions, a weekly home visit for parent sign language, and a weekly home visit from an auditory-verbal therapist.

(A video of a therapy session was shown; the transcript was not sufficient to convey the information portrayed in the video. This information is provided for the reader to know the types of videos used in the presentation and the comments of the speakers related to the video.)

Rushmer: Next, I want to show you video clips from an adult-led preschool activity to give you an idea of the different ways language is used in this Dual Language Program. We note that at least half of the preschool day is developmental activities chosen by the children. Adults join the children in the different topic areas for informal conversation to support their play and to facilitate development in all areas including language. The first video clip shows dramatic play, the class taking an airplane trip to Hawaii. The last segment is an ASL story. (For the voice interpreter) This is the *Napping House* story where people and animals pile on top of each other to take a nap.

(A video of a classroom activity was shown; the transcript was not sufficient to convey the information portrayed in the video. This information is provided for the reader to know the types of videos used in the presentation and the comments of the speakers related to the video.)

Rushmer: I will conclude my portion of our presentation with a couple of key observations from the list in your handouts. We are seeing some trends in the ways children and families respond to cochlear implants. The first is a contrast with hard of hearing children. Hard of hearing children in the dual language model seem to acquire ASL and speech with less focused individualized auditory programming than do deaf children with cochlear implants, at least in the beginning years. What we have seen with the hard of hearing children in this model is that you couldn't suppress their developing speech, it happens so naturally. This does not seem to be the case with implanted children, at least with those implanted at age 17 months and later. They need to be alerted to attend to sound and to figure out its meaning through an individualized, focused, sequential auditory learning program.

A final observation is that it is important to ensure that those deaf children who learn visually and whose primary language is ASL have sufficient access to an ASL model and sufficient communication partners to acquire the language. At the same time, children with implants need significant linguistic experience with oral communication alone. We have noted that some children with implants turn out to be ASL users who are visual learners so this is complicated.

Melum: My role in the Columbia Regional Program is as an educational audiologist and speech consultant providing direct service to children ages 2 to 7 with a variety of hearing losses and amplification systems and functioning at different developmental levels.

Since I see one of my primary roles as a consultant to classroom teachers, I wanted to share a little about my philosophy as a consultant and why I think our team works so well together:

As you can see, we have a lot of fun together, which is important. I've heard teachers complain in the past about consultants who come in with the attitude that they are the experts in a particular area, and they will educate the teachers about what they think they need to know. This attitude may meet with anger, defensiveness, refusal to cooperate, and/or a general disdain for that professional. My feeling is that the classrooms do not belong to me, and I don't have primary responsibility for them. I want the teachers to be glad to see me! I want them to feel that I have information and knowledge that they may not have that I can share with them. Also, I believe that they have a wealth of information they can share with me. I have the utmost respect for teachers, and I really try to fit into their agenda. I'm always respectful about what they have planned and

try to fit what I want to do into their plans for the day. The collaborative model only works if there is mutual respect among professionals based on trust, sharing, compromises, and, sometimes, “agreeing to disagree.”

I stimulate speech and auditory skills in several ways:

- In the classroom setting, [I work] one on one with the child and parent present. This first videotaped segment shows Jeremiah and his mother working on supra-segmental features in the classroom. (A videotaped example was shown; the transcriptions were not sufficient to convey information present in the videos.)
- I work with children during the morning preschool session. The most critical scenario is to take advantage of situations as they occur during both child- and teacher-directed activities, stimulating, modeling, responding, and reinforcing the child’s communication. These next segments demonstrate this. (A videotaped example was shown.)
- Another way of stimulating the child is individually during preschool time in my tiny speech room or in an empty classroom as it is available. I find this time beneficial, as the environment is quieter and less distracting. This is ideal for performing assessments and working on specific skill areas where focus may be greater. (A videotaped example was shown.)
- I work with children during family program time with enrolled children, siblings, and friends present.
- I may see children during home visits as my schedule allows. Typically, these visits are shared among staff members with activity ideas tossed around prior to each visit.
- Lastly, at the elementary school level, I utilize the classroom teacher’s activities to reinforce and support the auditory, linguistic, speech, and literary elements of the child’s individual program.

I would like to present our caveat for working with children with hearing loss, whether or not they have a cochlear implant.

Our belief is that communication occurs constantly throughout the day. The trick is to recognize these opportunities and be familiar enough with the child’s levels to model skills at and slightly above where they are functioning, using activities that are fun and developmentally appropriate. The classroom teachers, consultants, and family members work together as a team to assess the child, develop goals and objectives, and determine when these goals are met.

As you know, assessment is one of the critical first steps in working with any child. The assessments we use are listed in the handout packet that was distributed. We found that the most critical data is gathered throughout the child’s day. We take lots of data during sessions, often talking with other staff members about what we observe as it happens. For example, I may have targeted the auditory skill for Sophia on the SPICE [Speech Perception Instructional Curriculum Evaluation] curriculum: “Can discriminate among a trochee vs. a spondee vs. a three-syllable word.” The teacher is engaging in play with the child with a dollhouse, furniture, and pretend food. The teacher notes that during this play, Sophia can identify the word “baby” from “bathtub” from “hamburger” through audition alone. The teacher lets me know so I can write it down right away. We may note a child’s vocalizations, use of speech at the word, phrase, or sentence level,

what the child understands through listening only and/or with varying amounts of information such as speechreading cues, use and understanding of ASL, awareness of environmental sounds, and so on. This information is also shared later during individual and team meetings with the teachers in order to adjust our goals and objectives for the child.

Now, I would like to briefly discuss techniques for providing auditory/oral stimulation with this population. I have developed my top 10 list, a la David Letterman. (For this list, see <http://clerccenter.gallaudet.edu/CIEC/handout-10tips.doc>.)

1. Provide fun, developmentally appropriate activities to stimulate the child.
2. Keep speech and audition goals in your mind while involved in play with the child. (I try to change the goals every few weeks and post them for the teacher's easy reference.)
3. Reinforce the child's current skills and model skills at a level slightly above where the child is functioning.
4. Present information through listening whenever possible to stimulate the auditory mode.
5. Provide sufficient time for the child to process what he [or she] has heard before adding a speechreading cue and/or sign. (Challenge the child a little bit.)
6. When promoting speech and audition skills for children who also use sign language, add signs as needed when new concepts are introduced or for clarification. Here the teacher changes her mode of communication to fit different children's needs. (A videotaped example was shown.)
7. Encourage the child to imitate the speech he [or she] has heard, accepting approximations when developing a new skill.
8. Provide frequent opportunities to hear new linguistic information. This next segment shows a newly implanted child with the teacher modeling sign language and vocal sounds. (A videotaped example was shown.)
9. Give the child an opportunity to be the "teacher" to practice the skills. In the next segment, you see Hope and Sophia taking turns being the "listener" and "teacher." (A videotaped example was shown.)
10. Take advantage of opportunities to stimulate speech and audition throughout the child's day.

I would like to end with a quote from Jeremiah's mother, which I think puts all this nicely into the proper perspective:

"I think it is so important to the deaf child that his parents accept him just as he is. My concern about cochlear implants now is that some parents of newly identified deaf infants are immediately advised to get the implant as soon as they can. I think kids can sense when they are totally accepted. When the implant is off, Jeremiah is still deaf. We don't put a tremendous amount of pressure on Jeremiah. I think that a 2-year-old can sense that. We accept him as he is and he has the freedom to develop at his own pace. Early on there wasn't an expectation that Jeremiah would be able to hear and talk so now, with every new listening and speaking skill he acquires, we are just thrilled!"

Finally, one of the most important gifts we can give Jeremiah is the sense that he is accepted for just who he is. Because we are willing to speak his natural language, we feel that this is the missing link for him."

Thank you very much!

Judy Harrison, Educational Consultant (Beth Israel Medical Center) New York, New York

By Judy Harrison, Coordinator, Educational Services

Harrison has been providing educational consulting services to schools for the deaf as they expand services and programs to meet the needs of students with cochlear implants.

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speaker's presentation. For more information, see the Preface.

I often refer to my role as requiring 10 percent knowledge (I need to know about hearing loss, cochlear implants, and auditory learning), 10 percent creativity (looking at a classroom and teacher's style and making suggestions), and 80 percent diplomacy.

Let's talk a little bit about the varying groups of children who use cochlear implants. Who is within this community? One group that we are not going to really address in this meeting is post-lingually deafened adults and children receiving cochlear implants. We're primarily going to be addressing the pre-lingually deaf children receiving cochlear implants. The most important thing we need to remember when we're looking at these groups and differentiating among them is that they all, for the most part, react differently and have different backgrounds coming into the experience of getting a cochlear implant. We can take adults' experience and learn from that and extrapolate some of them and apply it to some children but, for the most part, we need to remember that children, in my opinion, are brilliant, and they have the luxury of brain plasticity. Children are a lot more flexible than adults, especially when we look at the plasticity of the brain in regards to auditory skills. The younger the child is when [he or she] receives a cochlear implant, the less of a frustration [he or she is] going to experience.

Let's look at the younger child who is getting a cochlear implant. I refer to this age group as 4 and below. The longer I'm in this field and working with the families, the younger the age of implantation becomes. Quite honestly, I consider a 4-year-old fairly old by today's standards. We're working with much younger children. So I put it in terms of looking at young children under 4, but recognize this is really getting kind of old. Young children with cochlear implants tend to be in programs working in an auditory/oral environment or in the mainstream. Based on my experience and a good deal of published research, young children starting on the road to language development through audition do not require sign language. Therefore, my comments

today will focus on the needs of those children who receive their cochlear implants later, after they have an established language base in sign.

I consult with many schools for the deaf related to integrating children with cochlear implants into their schools. I would like to talk to you today about what I see as the challenges that I find again and again in programs that historically and philosophically support a signing environment, a visual-learning environment. What I want to talk to you about are the challenges in terms of creating a more auditory environment.

I would like to focus on the older child whose language is based in sign who then receives a cochlear implant. Typically, these children have a limited auditory experience and not a lot of auditory skills. They have limited speech, limited oral skills, and their primary mode of interacting with the world is through vision. Let's talk a little bit about opportunities that can present themselves for an older child receiving a cochlear implant. They have the opportunity for increased communication skills through audition. For the most part, children are, at the very least, able to get the suprasegmentals of communication when they receive a cochlear implant. The fact that they can understand the intonation and syllabic parts of speech, this is important to help a child's communication. They also have increased access to incidental learning, overhearing things that are not directed to them. This allows them to experience communication, vocabulary, linguistic structures, vernacular language, and idiomatic language. They have the opportunity to access that through audition. It can also enhance their visual communication. Many sign language users refer to one of their skills, or one of the benefits of having increased hearing is that it helps with their lip-reading skills. It also allows for the potential for more intelligible speech.

On my next slide, I'll talk about what we need to do specifically for teenagers and adolescents. It's very important that teenagers and older children receiving cochlear implants and their families are counseled to understand that "speech" is at the end of the road. The most important thing we're looking at is auditory potential. If that results in increased speech production, terrific, but we can't guarantee it. In looking at adolescents and teens, Dr. Leigh referred to that as an age group often having difficulty just on an everyday basis and, on top of that, making a decision that may well be in opposition to what his or her peers are thinking, to what his or her teachers and school personnel are supporting. This can be a very difficult time for teenagers so it's really crucial that we provide plenty of counseling—which means before and after implantation.

At our center, Beth Israel, we take a very slow and purposeful approach to our counseling and candidacy process for adolescents receiving cochlear implants. One child came in our center, sitting down with her hands folded, about 11 or 12 years old, a sign language user. The mother sat next to her and was saying, "I want a cochlear implant. When is the surgery?" This was a non-English speaking family as well so this was through an interpreter. The little girl just kept saying, "No, no, no, no" so we knew we had to go through this slowly and make sure everyone was informed. Most of the time when kids come in saying, "No, I don't want it," it's because they don't have enough information, have misinformation, or have been told that the surgery will result in brain damage. They have all of these myths and scary expectations so we make sure to build in plenty of time and make sure they have lots of visits, meetings with the doctor, etc. At the end of the six months, the little girl came in and said, "When can I get it?" This was from all the support she was getting from the cochlear implant center, as well as from the school.

I can't stress enough how important it is that the school provides accurate, up-to-date information. Now, things are changing, but I will tell you that most of the children who come to us when they're older (10, 12, 14 years old), the family often says to us, "You know, we would have gotten it when they were younger," or "We talked about getting it when they were younger, but the school convinced us that it was the wrong decision." I do believe those things are changing, but I think it's very much our challenge and our responsibility to provide accurate information and help families reach their potential, no matter what they choose.

We also need to help adolescents become sensitive to the evaluation process. Much of the testing that is done will indicate to children that they are not hearing well enough to perform on the tests. For example, when they're in the audiology booth listening for words, and have no lip reading or sign language support, they will fail the test for the most part. If the purpose of the test is explained to the children ahead of time, they can participate more comfortably. That's a really big thing for me. Teenagers are coming in thinking they need to do everything perfectly. No matter how many times we talk about expectations, we have to acknowledge that there will be fantasies and dreams. Truthfully, as a colleague of mine, Dr. Pat Chute, often says, teenagers don't get cochlear implants so they can learn to hear, they get them so they can talk better. We need to help them understand that it's a progression, that the hearing will come through the cochlear implant. The by-product of that is taking advantage of the auditory loop and hopefully getting speech from there, but, again, counseling on expectations is important.

At our center, we help students participate in the creation of their own maps. When they come to fine tune their speech processor, being very skilled computer users, they are able to watch the audiologist once or twice, and with their guidance, do very much of the mapping process themselves. We find that it results in a much more effective mapping. It's important to remember that we have to have support once the cochlear implant is activated.

If the expectations of a child are not met, what do we do? First of all, the teachers and family need to take a good, honest look at what kind of intervention they are providing for the student. Once everyone can agree that their auditory commitment and follow-through are appropriate, then they can move on to see where the student's expectations may be askew. We need to be there for them, help them understand, and point out what skills they are developing and encourage them to keep going and recognize that it is a process. Years ago, teenagers would get a cochlear implant and in the first three weeks say that it didn't work. It's not that it doesn't work; it's that the children don't have the patience, and the teachers, family, peers, etc., around them aren't willing to support them through that learning curve that has to happen early on.

When we're looking at the challenges that are faced by schools for the deaf, specifically by programs that support sign language and do not support audition, the most important thing to recognize is that once a child receives a cochlear implant, he or she needs access to sound. That access to sound has to be exploited. We need to change perspectives on how a child can learn, and that can be a difficult thing. I think the biggest challenge in terms of schools for the deaf and programs that support sign language is that the staff generally has a lack of training, experience, and knowledge regarding cochlear implants and auditory learning. It's not enough to say that it's important to learn about the technology of cochlear implants. It's very important to recognize

where our training is lacking. In speaking for myself, I have a master's in education. My program was very, very strongly focused on sign language and visual learning. I also have a degree in speech pathology. That came back to help me understand how important audition is. My master's in training education certainly did not prepare me in terms of oral education for deaf and hard of hearing children. I was sorely lacking in that information. It wasn't until I got into cochlear implants that I started learning about oralism and started learning about how to expect, encourage, and enhance auditory development in deaf and hard of hearing children. That's why I'm so passionate about this. It's crucial that professionals understand how to enhance auditory learning.

This leads into the second challenge, which is resistance to cochlear implant technology. There is much to be gained from using cochlear implants. This is for children who are completely oral communicators as well as for children who are getting a range of skills from their implant. Maybe they function primarily at the suprasegmental level of speech, but that can enhance their potential. Resistance to the technology will lead to a lowering of expectations and that child will not reach his or her particular maximum. It's important that we do the soul searching that Dr. Christiansen and Dr. Leigh referred to this morning, that we take a look at what our philosophy is and how that may be impacting on our teaching strategies so we keep expectations high. It was wonderful watching the teaching going on at the program in Oregon (referring to a video clip from an earlier presentation) in terms of recognizing, first, that you don't have to demand eye contact from these children to communicate with them. That's part of creating an auditory learning environment. There are ways to get a child's attention without waving and tapping (which is appropriate for some children). When a child has access to audition, you've just robbed him or her of an opportunity to practice what his or her name sounds like if you do not provide these situations, so it was wonderful to see those practices in action.

The other thing I have seen as a tremendous challenge is that there are what I call pockets of enthusiasm within the programs. I see small groups of teachers, speech pathologists, and audiologists that are enthusiastic, but without administrative support, where teachers are encouraged to attend workshops, where there are teachers hired who have a background in auditory education, etc., it is a challenge setting up effective programs. Without those things, a student may go from one classroom in the third grade with a teacher who is really exploiting his or her auditory learning into fourth grade into an atmosphere that really doesn't attend to language learning through listening. That child is going to get a very choppy program. There are many programs that I hear about that are struggling with their boards of directors. This is a real transition time in terms of what's happening with cochlear implants. While things are evolving, I think there are still challenges in many of these programs. In my opinion, professionals in the field of deaf education who do not understand that deaf children can learn through the auditory channel need to assess their commitment to the education of ALL deaf children.

So, what do we do to create an auditory learning environment? Or what are some of the challenges facing us when creating this environment? One, we have to recognize that talking and signing at the same time is not enough. I always hear teachers say, "Well, I always use my voice." That's not enough. There are auditory learning techniques that have to be employed on top of using your voice. There has to be attention to the acoustic environment. I work in the middle of New York City. While it may be difficult to get a quiet room, it's not difficult to close a window. Many times I'll walk into the class and say, "Please close the window. It will help tremendously."

It sounds like I'm nitpicking, but when I come in and see the classroom door open, a radio playing in the background during a lesson, that suggests that there hasn't been enough attention to creating an auditory learning environment. The important thing is having an audiologist in there to give recommendations.

I would also like to address the habits that are created from using a visual language system. I'm not calling these bad habits or ones that need to be eliminated across the board, but I'm talking about habits that can impinge on the auditory development of a child. Auditory language must be integrated skillfully for children that are having a more auditory component to their communication introduced or students who are perhaps transitioning from a sign language to an auditory language. It's very important that the people are skilled at balancing the two communication modes. We'll talk about that in a bit.

Balancing the continued need for sign language with the new need for auditory development—when do you drop the signs? If a child hands me a cup, there's no reason for me to get in his or her face and sign, "Do you want more juice?" It's obvious what he or she needs. This is a perfect opportunity to present obvious information in an auditory-only manner (that means without lipreading and without signs). So, when you have those contextual events and redundant events, you need to balance the expectations for auditory skills with the need for visual language. (By the same token, an older signing child who is a new listener should not be expected to learn a new science concept through audition alone.) Another thing that has to be included in creating an auditory learning environment is recognizing and acknowledging when a child can take advantage of mainstream education.

One of the issues that I get frustrated with again and again is that there really isn't a concerted effort to prepare a child to take advantage of mainstream opportunities. Sometimes, it's logistics or there isn't a school nearby, etc. Often times, I hear teachers say that they acknowledge that the goal may be mainstreaming, however, nothing is happening to prepare a children for the mainstream. For these children, part of the IEP's [Individualized Education Program's] daily goals and expectations need to be focused on this child's requirements and challenges in the mainstream and how we can help them achieve that while they're here in a more one-to-one setting with a smaller teacher-student ratio.

Here are some of the successful strategies I've seen in my work that work through these challenges. We have ongoing consultation; staff in-service, student in-service, and student progress meetings; schedules that prioritize speech and language; and administrative support. Here's more information about each of these strategies:

Ongoing consultation—I provide classroom and therapy observations. I observe the students and the teacher in the classroom. I take a look at where it might be feasible to increase the auditory opportunities in the classroom and balance those things we're talking about. That same day, I meet with the individual teacher or therapist. It's important to have a contact person at the school. I have a contact person at each of the schools where I work who sets up my daily schedule so that he or she can look at the teacher schedule and make sure I have time afterwards to meet with each of them. This has been very successful, and it has been one of the scariest things I ask teachers to do, that is to videotape themselves when I'm not there, and then the two of us sit together and

watch it and talk about where the teachable moments were missed. We come up with strategies for the next time they'll be with those students. All of the teachers I've done this with have survived, but when I first present it to them, all the color drains from their faces. They always say apologetically, "It really wasn't a very good lesson." We are here to find the strengths and the areas of need. I make written recommendations as well.

Staff in-service—I deal with what I call "Cochlear Implants 101." There are still many teachers in the field not familiar with the technologies that still operate under a lot of myths regarding cochlear implants. It's been really encouraging over the past few years to see how enthusiastic people are to learn this technology. I feel it's very important to deal with staff anxiety and/or resistance. If we can't break through the anxiety, it will be difficult for people to learn. For administrators and supervisors, etc., make sure that there is a forum and an opportunity, a place for people to express their concerns. A lot of times their concern goes back to the notion that a lot of folks just don't have the training and experience. We need to dispel the myths and help people have realistic and challenging expectations. It's important to continue challenging the auditory skills.

Student in-service—It's important to help students with implants and their peers understand what's happening. For students who do not have implants, it's important that they have more information so they can be more supportive of their peers with implants. We need to address anxiety, discuss realistic expectations, and dispel the myths related to implants.

Family involvement—Make sure families have an opportunity to meet with their child's teachers, with the administration who will be responsible for educating their child if they get a cochlear implant. It's also important that they get to meet with other children or other families who are already using cochlear implants.

Coordination with hospital centers—Believe it or not, there are doctors out there who like to go to schools and will be happy to come talk about the technology and their role as the medical facilitators of this technology. One of the schools I work with does quarterly meetings throughout the school year. A representative from the cochlear implant center, as well as the family, the educational team, and the child if they're old enough to participate in the meeting, get together and talk about what is going on with their auditory skills and language skills—are we balancing them? Is the school getting enough technical information from the cochlear implant center? It's important to maintain that communication.

Habilitation—I think it's crucial that children with cochlear implants receive individual sessions in a way that has the least impact on their academic scheduling. All the administrators will throw things at me at this point. Whenever possible, they want large groups of children or classes to receive their speech therapy sessions at the same time so they're not getting pulled out individually. I know this is an old argument, but I believe that it's crucial that students with implants get individual listening/auditory lessons. That doesn't mean that this is the only place it should happen. Teachers have to be responsible for that throughout the day as well. New listeners require daily individual sessions, as far as I'm concerned. These daily schedules should continue for quite some time, especially if this is an older child receiving an implant.

Administrative support—Professional release time is crucial for attending workshops on auditory learning. School professionals should attend things sponsored by other professionals sharing auditory learning techniques. Registration fees for graduate courses need to be financially supported by school boards. We also need to hire teachers trained in auditory learning, even though they may not have a background in sign language. I think it's important that these types of professionals be a part of the staff at schools for the deaf. We need to have our audiologists in schools for the deaf supported so they can provide support.

In closing, I would just like us to remember that this is an exciting time to be in the field of education for deaf and hard of hearing children. There's a lot happening. There's a lot to be learned. And we need to remember this from John Dewey, educator and philosopher: *If we teach today like we taught yesterday, we rob our children of tomorrow.*

St. Mary's School for the Deaf Buffalo, New York

By Kathy Wilson-Ward, Audiologist

Wilson-Ward has worked as an audiologist at St. Mary's for the past 15 years, and has been working in the field for 26 years.

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speaker's presentation. For more information, see the Preface.

It's heartening to know we're not all alone and that we're all experiencing the same thing. In trying to discuss what we're doing, we need to go through the basic components of our program, as well as give a historical perspective.

In our program, we had the first two pre-lingually deaf children implanted at the House Institute. At that time, about 1981 or 1982 according to our archives, St. Mary's itself, the deaf community, the hearing community, the local Ear, Nose, and Throat (ENT) community, etc., decried what was happening. They did not support cochlear implants at all. However, regardless of their policy, St. Mary's School for the Deaf allowed the speech therapist to continue to work with these students and provide them with what they needed. Unfortunately, the tracking of the students was not good. They are no longer with us, and we have no idea now if they're still using the devices or how they eventually ended up fairing with them.

In 1989, when the FDA approval came through, we had several students receive implants—some with local ENT physicians and some at research facilities. At that point, we really had a very fragmented program. It got to be very preachy as we tried to impress upon the administration, as well as the individuals working with these children, that this was not going to go away, that this was not something that we could turn our backs on. We had a sign in front of the building that said "School for the Deaf." That means it was our philosophy to provide education for children

who are deaf and to use and stay current with different technologies. We felt it was important to embrace the technology and be a leader as opposed to being on the tail end of it. We have occupational therapists, physical therapists, psychologists, social workers, teachers, all on-site, a wonderful support staff, a parent education program that knew about deafness and hearing loss—who was better equipped to embrace this new technology and try to support and direct where it was going? So that was the perspective that we took in the audiology department and with some of the speech therapists.

I have to say that although the administrative support was sort of in the background, not out there formally, they provided ongoing staff development for us for the last 12 years. We were able to leave campus to attend training sessions. We were able to go to conferences to meet with other people. While they supported it and allowed it to occur, at the same time they were not ready to announce it in the newspaper. They were not ready to step out and say, “Well, we’re signing, but we’re also doing cochlear implants,” so we’ve struggled with that a little bit.

In 1999, someone got brave and said, “We really should put this down on paper and say we have a cochlear implant program. We should begin to invite more exploration of what we have to offer.” The availability of cochlear implant surgery in western New York was very fragmented as well. There was an otolaryngology group in the city that did do implant surgery in the mid-’80s. At one point, some of the ENT physicians thought it was not lucrative enough for the group to continue doing it so, while they did continue to do minimal mapping, we didn’t have any place in Buffalo for our people to go for the surgery. In ‘99, there was a physician attached to a research facility that approached a local hearing and speech center as a more neutral site than a doctor’s office to do the evaluations and mapping for the surgeons. Once that happened, we were then able to be more collaborative with the physicians and the map sites.

I should also add that at one point in time in the early ‘90s, we did purchase mapping equipment. It was a disaster. We did not have enough children. The children were aligned with surgeons and their offices. As anyone who is an audiologist will tell you, while our craft is a science, it’s also an art. You can’t effectively map children when you’re seeing them fleetingly. So we then donated the equipment we had to the speech and hearing center that was taking on the responsibility at this point. So our students had really good, solid mapping sessions, and when they walked away, they had something that was good and not just someone who was occasionally playing at mapping. That’s really not fair. I see a need for having mapping equipment if your population grows to that point. I think it’s great to be able to offer it in-house, but I really think it’s something that requires an incredible amount of skill and I think we shortchange our children thinking we can map when they need it. We don’t want to dabble with that because it’s such an important thing to get right for the children.

I won’t go through what makes a person a good candidate. We develop in-house protocol for tracking where the children are with the outside agency and with the surgeon. We keep track of the surgeon’s office and the speech and hearing center that is used in our area. They always contact us to let us know when one of our students or a student who is interested in looking at our program has contacted them. Then we communicate back and forth as to when the audiograms are done, when the speech evaluations are done, if a psych evaluation is done, if they’re seeing a social worker, etc. So when they get to the point that they decide the child looks like a good

candidate and the surgeons decide that they think the individual is a good candidate, we then meet with them (if they're our students) and we talk about some of the things that we may have concerns about, some of the issues they have concerns about, and we try to make sure we're on the money in terms of where they are in the process.

In the past, we would get a telephone call on a Monday morning saying, "Suzy won't be in this week because she's getting an implant." I was always sort of surprised by the fact that the elementary school secretary was letting me know that a child on my caseload was having a cochlear implant and that the parents, who knew me to be accessible, would not have willingly provided me with the information. I guess they thought they would proceed with the implant and then drop their child off at school and everything would proceed as before. Now we're very happy that we're able to have a wonderful collaborative relationship in our community involved in the candidacy process. The surgeon and the site are handling it and we acknowledge it's a parent decision, but we're happy to be asked for our feelings on how we see the child as doing and where we think they may be able to go with this.

Once a surgical date has been set, we bring the parents in—both parents. A lot of times I will have Mom, Dad, Stepmom, and Stepdad meeting with us and that's great. If there's extended family, they all need to be involved. So they come in and meet with me and the speech therapist that will work with the child. We have a parent packet and we go through it and talk about all the responsibilities that the parents are going to have. We talk about the expectations that we have for their child. We talk about how they need to alter the expectations that they've had for this child up to this point, particularly in the auditory realm. We don't press the speech issue at the beginning because we don't want any of our parents to think that this fixes things. That's not what this is about. As everyone keeps saying, it's about providing auditory access and then developing that access to see where we're going to go with each particular child. We provide that packet and send it with the parents, also understanding that if there is support needed on the day of the surgery, for whatever reason, or if the parent is thinking he or she would somehow down the road like us involved with mapping, these are all things we can discuss with the map site and the surgeon. All of us work very well together to make things as comfortable for these families as we can.

Many of our students did not have preparation for the training needed with their implant. We established a procedure to get the child ready for this new device. We document specific skills related to phonetics, breathing and voice, suprasegmental development, etc. A therapist starts to work with the child. The child is conditioned to use the acoustic hoop and conditioned to all of the signals we'll be using with him or her for listening or whatever else we might be using for therapy or for the classroom. Depending on the child's age, there is appropriate familiarization with what will be happening at the hospital, the device itself, and the mapping to come after the surgery. The hospital center takes it to one level and we take it a little further and go into depth with it because we have the time and the child in-house to do that. We also establish a system for maintaining good contact with the parents, whether that's through e-mail, phone, or a communication book that goes back and forth. Family support is crucial. If I could take one or two reasons where I see children not do as well as I had originally thought they might, it is related to lack of family support or inconsistent encouragement to use the device.

The initial therapy sessions at St. Mary's when a child comes into the program with an implant are individual sessions. The sessions are 30 to 40 minutes in duration. They are daily. If we feel that it's necessary, we provide additional support through our auditory skills therapist on an as-needed basis as often as we think it's necessary in coordination with classroom personnel. We're really not there to tell the teacher how to do what they know how to do well. What we're there to do is to teach the teacher what it is we know about what works with this device and how to transfer that to the classroom. I would like to be able to stand here and tell you that this is working great. It's not. The teachers are trying. I don't think it's an us/them situation, but for whatever reason, we seem to be breaking down in our ability to be able to get spoken language consistently integrated into the classroom. I don't think it's for lack of trying on anyone's part. The longer we do this, the less fear there is out there. Teacher education has to be ongoing. I think we even have to have an in-house class for teachers of the deaf with one of the local colleges. We are in the process of trying to develop a class that's for training professors at the post-secondary level to then train student teachers to work with implanted students. That's not happened yet. We have to be better at providing in-service training and figure out how to bridge the gap. We also have to make sure we get to the education programs and provide them with the kinds of information that we're tacking onto the teachers that are already out there.

We use a team approach when working with implanted children. We have a speech-language pathologist or therapist, auditory skills therapist, school psychologist, school social worker, and, of course, the classroom teacher. In the beginning, we may not be as involved when things are happening in the medical realm outside of our control. That's a point we try to make with the teachers. A lot of times if they have real concerns about why a child is being implanted, it's not related to the school. We can provide input as asked for by the site, the surgeon, and the parent, but we don't control whether or not that decision is made.

Our people are all NECCI [Network of Educators of Children with Cochlear Implants] trained and many are in the process of getting their AVT [Auditory Verbal Therapy] training. We will certainly have a consultant who will come in and monitor that in hopes of having members with certification. Our administration is very committed to ongoing staff development. Even when we were not an official implant program, speech and hearing professionals were given funds, time, and the opportunity to go learn about what we needed to know. While speech and hearing professionals became involved, I can't remember a time when administratively it was sanctioned for the teachers. This is still a need area.

We do get involved in some mainstreaming for our children. When we begin mainstreaming, we initially look at it from the perspective of providing auditory interaction. We're not looking for an academic placement experience. Because our environment is limited in providing ongoing auditory experiences because of what the research tells us, we feel responsible to put children in an auditory-enriched environment. This often means our children have to leave the campus. We do the placement initially for a limited time, maybe for a class or two. The placement is picked so that it is not a content area, for example, art, music, and gym classes. We place the child without an interpreter. The child understands that he or she is not there to get academic content and that he or she is not going to be tested. The students are aware that they are in this environment to challenge their implant, to channel use of auditory access, and to provide auditory enrichment. We have not worked out a way in-house to do that effectively and consistently.

Typically, if a child is mainstreamed for that purpose, he or she comes to us in the morning. Before his or her day even begins, he or she does therapies that are necessary. [Then the child does his or her] content classes and leaves for whatever class is mainstreamed at the end of the day. So far, that's worked successfully for us. It may take a couple of years, but then the child is mainstreamed into whatever school on a full-time basis, but will still come to St. Mary's for all of the support services needed since the schools we've dealt with in the past have felt that their therapists aren't trained specifically to work with implanted children. The classrooms at St. Mary's do have sound field equipment

We would love to have a universal preschool. We would love to have a program that provided a preschool environment that was very auditory-enriched for children with a range of hearing levels. Currently, children with milder losses are receiving some therapies in agencies that only periodically deal with hearing loss and deafness. They don't bring to it the expertise that our staff has. Our thought for the future is: Is there a way to have this universal program in-house so someone is preparing them to use the device well, and to go out and have confidence? We want that to be our program because we think we can do that better than programs that are directed to children with global speech and language delay problems.

Parents talk to us about what we see down the road. Many come to us with the goal of district placement. They want their child in the district. That's why they got an implant. It is our role to get this preparation going. On the other side of that, if we then have a child who isn't going to get to that level and needs to have continued sign language and all of the resources that a school for the deaf can offer, then we need to hope that the parents will have built up a substantial amount of trust with us to say that they understand these educational decisions or placement decisions. That's our dream.

We are also addressing testing modifications in-house. That goes back to: How does the classroom teacher modify what he or she is doing? It's the same thing. Our students are involved in on-going evaluation and we need to work closely with the individuals providing these evaluations. When the child is implanted and beginning to use the auditory avenue more effectively, these support service professionals need to modify the ways they approach their assessments. When the assessments are forwarded to whomever or wherever, it is important that the person get a good picture of who this child is and what he or she can do, using both sign language (if it's still being used) and oral language.

We need to have more responsibility in enhanced parent education. I think that a lot of times the parents' expectations were minimal prior to the implant. They are not prepared for the child's potential after the implant and not sure what they are observing after the implant. They have to have a change in their expectations related to what they can ask of the child. I think we need to have the parents know this as well, and have their expectations parallel with what we're now doing with the child.

Schools for the deaf need to recognize that the face of deaf education is changing and that the change is dramatic. We cannot underestimate the success that the research describes for recipients or we will seriously compromise our ability to be part of the future. I'm not sure how we

successfully convey this to our administrators or to teaching personnel. I'm encouraged today, personally, to know that I am not alone in the struggle to impart effective audiological information. I have spent 12 years trying to guide our program in the area of cochlear implants and often feel that, for whatever reasons, it is not well received. The fear of change can cripple us and our ability to be effective with our students. Fear and not using new technology will render us dinosaurs if we are not careful.

Cochlear Implant Education Center, Laurent Clerc National Deaf Education Center, Washington, D.C.

By Debra Nussbaum, Coordinator, and
Bettie Waddy-Smith, Speech-Language Pathologist

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speakers' presentation. For more information, see the Preface.

Nussbaum: I would like to share a little bit of what's been happening at the Clerc Center. I'm going to be speaking for a few minutes about what we've been doing globally to change our programs. Then I'm going to invite Bettie Waddy-Smith, who is the speech-language pathologist coordinating services to our students with implants, to share what more specific things we are doing to provide resources to our students.

First, a little bit about our program. The Clerc Center is a federally funded program set up to investigate, share, and disseminate information related to effective practices for deaf and hard of hearing children throughout the country. We have two demonstration schools on Gallaudet's campus, Kendall Demonstration Elementary School (KDES) and the Model Secondary School for the Deaf (MSSD), that are part of the Clerc Center. Our on-site programs include a wide range of children from diverse cultures and hearing levels. We do not serve a homogenous population. Even the students with cochlear implants are not homogenous. Our role at the Clerc Center as a national center and in our demonstration schools is to implement and evaluate programs, services, and activities within our own programs, but also to find out what is happening "out there" and to help share this information with others. While we may not have all the answers, we have the mechanisms to gather and share information with others. This forum is hopefully the beginning of getting people together to discuss this issue. It will also be of utmost importance to get this information infused in graduate training programs to move effective practices for the next generation of professionals.

In terms of our numbers, in 1999 we didn't have any children in our program with cochlear implants. At KDES, we now have 10 and seven more in the candidacy process. At MSSD in 1999 we had one student with an implant; now there are five (however, there is only minimal implant use in this group for a variety of reasons). Some of the non-use may be related to adolescence

itself. Some may be related to students having older technology that does not provide as much benefit. Some may be related to students only having the body unit and parents not being able to afford the change to an ear-level unit. Some may be related to students receiving their implants at an older age and only actualizing minimal perceived benefit from the implants. We have a wide range of students, ages, educational needs, and support service needs. These are the things we need to think about in terms of planning.

We've been addressing spoken language development in an environment that has supported the use and development of American Sign Language for many years. As I said before, the premise of our auditory and speech-training programs may not be changing so significantly with implanted children. What will be changing, however, are the outcomes or expectations we will have for implanted children. To meet the needs of students with implants, we will need to expand what we are doing.

One of the things we have been expanding at the Clerc Center is family education opportunity. We provide annual workshops to provide general information on implant technology, factors impacting success, considerations for candidacy, other decision-making considerations, and services provided through our programs. Panels are important components of these workshops. For families seeking further information about implants, counseling is offered on an individual basis. Regarding habilitation, we encourage our families to participate in sessions so strategies can be carried over into the home. When families cannot attend school, we actively utilize videotaped sessions and home-school communication books to include them in the process. These communication books are also helpful to share among professionals when a student is attending therapy in more than one place.

Staff development related to cochlear implants has been another area of expansion for our program. Our approach has been to start small and attend to the learning needs of small groups. Change of attitude is slow. If you come to an environment where there is a lack of information or misinformation, it is not realistic to expect change from everyone overnight. We've been finding it most effective to work with small groups, finding out the information needs of each group and providing smaller group training.

A faculty and staff survey was also completed this year to determine attitudes and knowledge of cochlear implant technology in a historically deaf environment. While the complete results have not been compiled, the results compiled to date suggest that few are opposed to the technology and most can separate their personal bias in the work environment (if they do have a bias against the technology).

Just a note: we do have two staff members at KDES who have obtained cochlear implants within the past year. We have had school-wide professional development on this topic. In addition to having a range of speakers, it has been effective to utilize media-developed documentaries or videos to stimulate small group discussions following the viewing. It has also been effective for us to host an open house for our faculty and staff to visit, observe, and interact with the resources within our Cochlear Implant Education Center. Monies have also been allotted to send our staff for off-site training and workshops. Our audiologists have received, and will continue to receive, training related to mapping. Our communication specialists have attended, and will continue to

attend, workshops on auditory habilitation techniques. Last year, many of our mental health professionals attended a conference sponsored by the Cochlear Implant Association. Both deaf and hearing staff members attended. All of these activities have set foundations for inclusion of effective programs for children with implants within our center.

We have faced challenges in setting up programs in-house for the wide range of students we serve. Based on resources and attention to building an effective program, we decided to start small. We started with a demonstration classroom to look at effective practices for developing both spoken language and sign language for young students during the emerging language years. Our intention was to move forward with classrooms incorporating these practices at each level through our early childhood program (kindergarten). While the demonstration classroom has been effective in implementing a program for one group of implanted students, we have encountered a larger group of implanted students who have totally different needs. These are our students who are obtaining implants after they are already established ASL users. Many of these students come to their implant with minimal spoken language skills so this is a totally different population of needs that we must address.

In our demonstration classroom we're looking at a variety of strategies to promote both spoken and signed language. We are looking at how and when to integrate structured versus natural opportunities to stimulate spoken language. We are looking at how to best integrate hearing peer language models into the picture. Having a program that incorporates expanded opportunities to use and develop spoken language in an environment that includes side-by-side programs that involve ASL has been working out fine. I envision that we will continue developing programs incorporating this model. Where we are being challenged is establishing programs for the later implanted students. These students need to get their academic information in the most efficient and effective way possible. At the same time, we need to stimulate spoken language development. Use of voice along with signing is not the answer to developing spoken language for this group of students. The students need structured opportunities to develop skills starting from the basics so that sound becomes meaningful to them. For this group of students we are using a support services model as opposed to special classroom placement to provide the additional supports.

We do have on-site mapping. We are just starting with that. I know Kathy (at St. Mary's School) felt that if you're not seeing large numbers of students that you can perhaps do a disservice when providing on-site mapping. It does take a lot of training. We don't see ourselves as doing primary mapping. We want the hospital centers to maintain this role. Our service is to provide troubleshooting or small changes made in collaboration with the hospital implant center. We do not want to step on toes. It has to be a collaborative endeavor to help the families in not having to run back and forth to the implant center and having students perhaps miss full days of school. We are cautious in assuring ongoing communication with the hospital implant centers that serve our students, but as more and more students are implanted, and on-site mapping issues pop up, we are happy that we will be able to address this issue on-site.

An exciting program that we initiated this year is an orientation for students on cochlear implants. As more students with implants have integrated into our program, other students have indicated many questions about the technology and often many misconceptions. We provided our first

weeklong series on this topic to our middle school students. We will be modifying it for use with our elementary-age students soon. Our audiologists, speech pathologists, and counselors (both deaf and hearing) have been actively involved with planning and implementing these workshops. We want the students to have a safe environment to discuss this.

Coordination with local hospital implant centers has been important in establishing effective services for our students. If the perception that schools for the deaf cannot meet the needs of implanted students is going to change, schools need to establish their programs and services and invite hospital implant staff to come and observe what is happening. At the same time, school personnel need to observe therapy and services provided by the hospital implant team. Establishing programs and changing perceptions take time and mutual understanding. We spend time at the hospital. We invite therapists to come spend time with us.

Again, these were a few of the planning features we have taken into consideration in our program. Bettie Waddy-Smith, our speech-language pathologist who monitors services for our students with implants, will now share what our resources are for providing support to our students.

Waddy-Smith: I am going to discuss what is happening at the Clerc Center in relation to providing spoken language support resources to our students. My job this year, which is a new role for me, is responsibility for the service and placement monitoring of our students with cochlear implants. Previous to this, I have worked for a long time providing speech services to our preschool students. I work very closely with the speech pathologist, audiologist, counselors, and teachers to facilitate comprehensive service provisions to our students. Outside of my role of working with families prior to, during, and after the implantation process, I also work with student services in a variety of capacities. It may mean working with a teacher, going in and doing a short demonstration lesson. It may mean setting up listening stations to provide students with independent or teacher-monitored opportunities to develop spoken language skills in the classroom. It may mean teaming with a teacher to teach a lesson and incorporate spoken language skill development. There are a variety of options we're providing to teachers so they can get to know the technology and feel comfortable with it.

My services include developing listening centers with computers for use in the classroom. We're evaluating software specific to working on auditory and speech skills. We're trying to find the best software for the students to work independently in the classroom. I also provide direct service to the students. We aim for our students to have either direct service or resource assistance for speech five days a week. In our program, as service coordinator, I work in conjunction with each department's speech specialist to complement their services. My provision of direct service provides additional individual or small group time for the students and keeps me in touch with their speech and listening development to assist in classroom planning.

I provide resource assistance to teachers to facilitate understanding of strategies to incorporate spoken language into the classroom. We discuss how to integrate sound into the classroom, how to link spoken and signed language, how to modify challenge factors in the environment that change the complexity and access to auditory information. We work on phoneme perception. We also have a daily time for read-aloud where we incorporate storytelling using a combination of spoken language and/or sign language.

In the demonstration classroom, we encourage a variety of strategies to integrate sound. We expect the students with implants to attend to sound in their environment and have opportunities to use their spoken language. We encourage use of vocalization during play. We utilize a combination of structured and natural listening opportunities. During structured listening/speech time, we incorporate vocabulary and language to support activities of the classroom. We've also started to use sounds for transitional time, like playing music for the students to know it's time to clean or setting timers to indicate that it is time to stop. It's a natural way of keeping them attending to sound in the environment. Music and dance are also an integral part of the program. To link spoken and signed language, we're using the "sandwich technique." Using this approach, we either "say it," then "sign it," and then "say it again" or we "sign it," then "say it," and then "sign it again." This provides opportunities to present both spoken and signed vocabulary specific to a child's communication development level and goals.

We provide opportunities for "vocabulary expansion." For signs a child knows, we will provide a range of corresponding spoken language vocabulary. For example, for the sign *mother*, we will provide the expanded spoken language words for this sign such as "Mom" and "Mommy." For the older students, we'll also tie that to print words. We also integrate "language expansion" techniques into natural communication. If the child signs a concept, we expand on the concept using spoken language. For example, the child signs dog hungry and the adult models back, "Yes, that black dog is very hungry." While our communication specialists are using these techniques, it is now our challenge to provide training opportunities for our teachers to feel comfortable incorporating strategies and expanding these goals into the classroom.

There are various ways to promote a child's success and facilitate opportunities for skill development in spoken language by controlling variables in the child's environment. As we mentioned before, we call these variables "challenge factors" as described by Mary Koch. The factors that can be controlled to make a listening opportunity easy or challenging are related to such things as the familiarity with the content, the number of items in a choice set, the acoustic contrast of the information being presented, and/or the number of critical details in a message. The difficulty of a listening task can also be impacted by how a message is presented. Are certain words highlighted? Is the rate of presentation fast or slow? Is a message coming from a close distance or from far away? Is it a quiet or a noisy environment?

We are using a variety of activities and curricula to address phoneme perception and production. In addition to the SPICE [Speech Perception Instructional Curriculum Evaluation] and WASP [Word Association for Syllable Perception] that have already been mentioned, we are also using a program called Phonographix. This is a reading program, but it teaches children how to segment and blend sounds. It helps with reading, pronunciation, and spelling. We also use a program called "See The Sound-Visual Phonics" (see the Resource List), a program that helps students with speech, reading, and spelling. There's a hand movement that mimics what the articulators do in the production of the sound and it gives the child a multi-sensory approach to phonemes and print. We also include a series of read-aloud strategies to provide opportunities for a child to experience a story in both signed and/or spoken language.

In closing, I would like to summarize our continuing challenges. One is documenting and clarifying the value of sign language as a component of educational programming for implanted children. It's been a challenge for us to help families and the medical community understand that an environment that includes signing may be a good option for some students with implants, that such an environment can support, rather than inhibit, spoken language development, and may be in the best interest of a child's social-emotional development. Our second challenge is building bridges between the medical community and the deaf community. We're doing that in a variety of ways. We've gone to hospitals and done presentations. The medical community has been open to these presentations, and presentations such as this are paving the way for increased understanding of the comprehensive needs of implanted students after the surgery. Our last challenge is implementing new programs at a quick enough pace to keep up with our growing population of implanted students. We look forward to working with programs throughout the country to continue to identify and implement effective programs.

The Learning Center for Deaf Children Framingham and Randolph, Massachusetts

By Nancy Maguire, Director, Randolph Campus,
Stephanie Angelini, Speech-Language Pathologist, Randolph Campus, and
Wende Grass, Coordinator, Parent-Infant Program, Randolph Campus

A reminder: The following is not a formal, written paper; it is a capture from the real-time captioning of the speakers' presentation. For more information, see the Preface.

Maguire: Let me tell you a little bit about our school. We have three distinct school facilities, a main campus in Framingham, Massachusetts, with preschool through high school. This school has a long bilingual/ bicultural history, about 32 years. We have a satellite campus in Randolph, Massachusetts, which includes preschool through elementary, and Walden School, which is a therapeutic, residential program. The school was established in 1970 and was the first school in Massachusetts to provide education through sign language. Massachusetts has traditionally been an oral state. The Learning Center was one of the first to offer formal learning in a bilingual/bicultural setting. We have an active parent-infant program. We also have the Language Access Program for those students who are not deaf but who benefit from greater access to the curriculum through sign language. We have had enrolled students with cochlear implants since 1994.

Helping a school that is known for a strong bilingual/bicultural philosophy move along this journey towards also educating students with cochlear implants has been a slow and intentional process, but one that we're very excited about. We're going to share with you some of what we have been doing to prepare for and implement these changes. I should mention that in our school, we have 70 deaf staff. We support and respect their contribution to this process.

Here are the students with implants that we are seeing:

1. We have children in our parent-infant program whose parents are considering an implant. We have children in that program who have already been implanted.
2. We have children with implants that are in the process of acquiring language for the first time.
3. We have children whose first language is already established in ASL, and who are receiving their implants at older ages.

With these older students, of course, the process is very different than from the younger students. For the older students, we're helping them to become more aware of audition, begin to learn through this avenue, and maintain their academic base through ASL. We're also seeing a growing number of students who have transferred into our school from oral or mainstream programs, students implanted around age 2, but whose families felt that despite a quality oral or mainstream program, they were not thriving academically in that particular environment. Now, Wende will discuss how our program became ready to address the needs of students with implants.

Grass: When the cochlear implant technology first started, our staff wasn't sure what to do. We all had to learn. We initiated in-house trainings. We brought in experts from the outside to talk about what's involved with the technology pre-implantation, during, and post. We gave the staff an opportunity, deaf and hearing, to come together to have discussions related to each person's role in this whole process (for example, speech professionals, occupational therapists, physical therapists, teachers, deaf professionals, audiologists—everyone that was involved). It was going to be a collaborative effort to facilitate students in achieving their potential. We also wanted to help the deaf and hearing staff understand what their roles were, how they were going to work together, and how important all team members are to these students.

We have a group called the Deaf Advisory Council, the DAC. Deaf staff members were brought together from both campuses to talk about how they could help get through the emotional process, the emotional impact of what has been occurring now that cochlear implantation has been happening to students in deaf education. Once we were able to set those initial reactions and emotions aside and study the issues from an educational perspective, we were able to talk about how we could work together. We now better understand how we can continue to act as role models and how we can continue to work with hearing staff in the education of these children.

As I said before, we support students with cochlear implants as they learn how to interact in both hearing and deaf environments. We're now in the middle of the process of going to each department and talking with the students, explaining to them what a cochlear implant is, what the process is, what kind of support they will need in the classroom so that once the students with cochlear implants come in, they will be able to interact well. In the New England area, we wanted to take advantage of the close proximity of all different sorts of people serving deaf children—schools for the deaf, public school-oral collaboratives, hospitals, mapping centers, different programs that offer sign language, Cued Speech, Total Communication, private therapists—and have an on-going conversation about what they were doing. Were they offering similar or different services? How were they supporting their students with cochlear implants within their own educational setting? We wanted to know how to help students if, over time, they needed to transition to a more oral/auditory environment. These large meetings occur three times per year.

We also attended conferences and networked with people with experience in the same field, specific to students with cochlear implants. We would find out what they're doing and bring back those ideas to share with our staff.

In-house, we have set up a Cochlear Implant Task Force. We've brought deaf and hearing people together, staff members at all levels of the school, from direct service staff to supervisors to top level administrators, and we come together and talk about designing and improving services for this particular population. What are the important concepts that need to be presented so that these students have full access to the academic program (real-time captioning services, for example)? We need to think about their auditory needs as well as their visual needs and balance. We collaborate with the occupational therapist and the physical therapist, the reading specialist, and the speech pathologist in terms of how we all work together not only with the children, but also with the family so they can navigate the school year successfully. This is not a situation where we work in isolation; we work together to plan the best routes to helping deaf children learn through sign and learn through audition.

Angelini: I will discuss the types of services we offer to students with cochlear implants. We utilize a collaborative model. At Randolph, we have a small program, and our team individualizes our services to each of our kids. We see a varied response from our students to their cochlear implants in relation to how they receive and utilize spoken English, how they understand sign language, and how they express themselves. There is a wide and varied spectrum. We feel that a team approach really does ensure that we have quality services for each child, one at a time. Our teams, which include deaf and hearing teachers and a range of specialists, have been to medical- and educational-oriented trainings to discuss ramifications of cochlear implant use in the classroom.

Our language model is varied. We sometimes have ASL, sometimes Sign Supported Speech, and then we have opportunities for speaking only. These are tailored to each child's need. What we find is that as the child moves on in his or her auditory skill development, or maybe for a particular child not moving on, we stay at a certain level longer or we can move on more quickly. We found a correlation between our students implanted younger and sensory needs. We have definitely seen that they have some difficulty taking in sensory input. That means auditory input, visual input, the way their muscles react to touch. So of course when they get auditory input, it may not always be processed correctly. Our occupational therapist plays a huge part in screening for sensory needs and also addressing them therapeutically.

We provide speech pathology services one on one or in small group settings. We take what is learned in the classroom and bring it to the therapy session. We build on vocabulary. One popular activity is taking an ASL phrase without an English equivalent and asking, "What does it mean? Pick some words." We often take field trips. When the students go to Friendly's and order an ice cream, they have the opportunity to rely on their audition to hear what it costs, what flavor they want, etc. This type of activity is motivating. Motivation is definitely the key to success.

We have developed a system of technology checks to assure functioning of the cochlear implant technology when the students arrive in the morning. We've started a daily vocal warm-up time. I never realized how challenging it would be to teach the song "When the Saints Go Marching In"

to a classroom with hard of hearing students, deaf students, and students with cochlear implants. There are definitely some common cultural references that the kids are missing. I want them to be able to hear and pick up on the idioms, translate them, and know what they mean.

Our students are integrated and learn together; cochlear implant students are in the same classrooms with other deaf and hard of hearing students. They're not segregated. They have opportunities to develop language through peer interaction, through seeing it modeled with deaf staff, hearing staff, and also, they get a chance to get corrected by peers. We have some hard of hearing students who are very good spoken English models. One thing that we didn't put up here, basically because it's implied, is language development and really encouraging the children to give us the best of what they can—if it's speech, if it's Total Communication, if it's ASL. Whatever way they are giving us language, we help them to internalize it and respond in a way that will challenge their comprehension and cognitive skills as well as auditory skills. It is critical to the students that they have continued opportunities to develop abstract reasoning and cognition in their academics. We want these kids, like everybody does, to be on grade level.

To document progress for families and teachers, we use ongoing quarterly progress reports. We also use videotaping. It is a good tool for me to watch what I am doing and, at the same time, parents can see what is happening. When parents say that their child is not progressing or does not possess a specific skill, I take them back to a year ago or six months ago and have them look at the video of what the child is doing now and what he or she was doing six months ago.

We have ASL classes at no charge by certified deaf instructors. Students with cochlear implants have one-on-one time with deaf staff to develop their ASL foundations. I work in coordination with our educational psychologist for developing social skills in groups. Sometimes the social skills of an 8-year-old aren't great so we want to smooth out the rough edges where we can. We develop reading process for phonemic development, playground exercises for working with their peers.

Maguire: The definition of success is really a big question. It varies from child to child. As we all acknowledge, each child has a different set of needs and uses the technology differently. That is okay. Some will remain in our school, many will move on to mainstream opportunities. We've already seen that, but we certainly have common goals. We want students to have meta-linguistic flexibility; that they not be children that, although they develop speech, can't play with language. That's important to us. We want them to have English comprehension as well as ASL comprehension. Also, we want them to have effective speech skills if at all possible. I'll come back to that in a minute.

We also want to help the child become comfortable with their identity—that's a concern for us. Older children are slated for time with our counselors when they are first implanted. Families work closely with us to tailor their child's learning style. And we all want relaxed, successful students.

What is cochlear implant success? The spectrum of response is varied. From our perspective and from the personal outcomes we've seen, some children appear to thrive with this technology. Some students obtain the technology and run with it and may no longer depend as much on sign

language to communicate. Some may even phase out sign language. We've also seen many children who do not seem to be able to maximize this technology and do not thrive on oral language alone. That's why I'm really glad that quality signing schools will be here for those students, offering quality education that's not dependent only on their implants. For some of the children, we've seen them develop effective audition. One of our students loves to hear. He loves music. He can use speech readily and it's quite good, but he doesn't have a desire to speak. He loves the input. He loves to listen, but he prefers to sign expressively.

We have another student, several in fact, who develop very nice, effective speech, but they have other ongoing factors that really impact the development of complex language and comprehension in a classroom. For another one of our students, who could only be partially implanted, it's been two years and she is only now acknowledging the detection of sound. It's not because she hasn't been followed by a fabulous center and the parents weren't supportive. She uses ASL well. For some, the cochlear implant seems to be an effective tool for speech and social language, but it does not provide academic language. If these students do not pass our rigorous state exams, they will not graduate from high school; they don't get a diploma. There's no second chance so we feel an obligation that these students lose no academic time at all. We want to see speech and language growth.

Our challenge, and what we're hoping to help doctors and pediatricians understand, is that just as we all embrace this technology, we must also embrace the dialogue and admit that responses to this technology vary just as response to any surgery or adaptive equipment varies. Can we admit it's not magical for all children? It's a tool. It may require many tools in that child's toolbox in order to get his or her house built. And just as we can embrace that, can we also embrace bringing everybody together to commit to talking about those students for whom oral language may not be the only avenue that they can pursue to succeed? For many children who are mainstreamed, we're seeing now as they reach the age for state testing that they are not at grade level and the schools are very concerned. Can we now begin a dialogue with the students using cochlear implants already out there in the mainstream, that maybe they need another avenue as well? That's really the big question for us: How do we get that dialogue happening in an honest fashion in our state? So, in defining success, we want all the doors to be open for our students so they can use all the avenues that are available to them.

We really love this quote at our campus. We have it hanging all over our school:

"We owe it to these children not to let the doors be closed before they're even old enough to know how many rooms there are, or how many other doors there are beyond the one or two that they can see."—Jonathan Kozol

Our school has been adapting, as I said, slowly and intentionally from a curriculum that was extremely and solely bi-bi for all to a much more varied curriculum for different students. We have new directions we're taking at our main campus as well.

Grass: Previously, we saw students who were receiving their cochlear implants at an older age. That age is decreasing. We're seeing more and more children in the parent-infant program who have cochlear implants. Parents want extensive spoken language and audition services added to

our bi-bi approach. We need to support families as to how to help their child develop in all ways, especially in spoken language and signed language—both. Parents want both as options. As these children approach age 3 and we're deciding how to plan for these children, should we provide auditory and visual stimuli in the preschool curriculum and integrate those? This fall we will set up a classroom using a dual language approach.

We already serve students with cochlear implants on the Randolph campus, but this program will be going back to the main campus preschool in Framingham (which has been bi-bi). The dual language approach will provide opportunities for both auditory and visual stimuli of language. We want to encourage the children to interact with both deaf and hearing staff, as well as with deaf, hard of hearing, and hearing peers, so that they can be exposed to as much as possible to help them develop different competencies in all areas. I think someone this morning asked, "What do you actually do in the classroom?" Music and listening practice, opportunities for auditory exposure—all of that will be incorporated as well into this particular approach.

A Summary of the Discussion Groups

As part of the conference, participants were divided into 10 groups to participate in a focused, two-hour discussion and brainstorming session on selected topics. The groups were provided with discussion guidelines, specific questions to address, and a variety of handouts related to the specific topics.

The goal of each discussion group was for the members to identify issues and recommendations related to designing and implementing educational programs for students with cochlear implants in educational environments utilizing sign language. Notes taken at the brainstorming sessions were compiled and presented in a general session to all conference participants.

For the purpose of this document, discussion points have been categorized and summarized to reflect the ideas and issues that emerged throughout the discussion groups. These categories include:

- rationale and beliefs related to the use of sign language for implanted children;
- issues of concern regarding language and communication use for implanted children;
- general considerations for developing educational programs for implanted students;
- considerations, including:
 - ❖ working with families,
 - ❖ professional training,
 - ❖ collaboration with medical settings,
 - ❖ including implanted students in signing environments,
 - ❖ addressing the needs of signing students in the mainstream,
 - ❖ the early childhood years,
 - ❖ later implanted students who are established sign language users, and
 - ❖ habilitation services; and
- resources.

Rationale/Beliefs Related to the Use of Sign Language for Implanted Children

About language:

- Early sign language use provides immediate exposure to visual language for deaf infants and toddlers to facilitate language and cognitive development at age-appropriate levels.
- Use of sign language promotes language development through a child's strong sense, vision, while the sense of audition becomes functional and broad enough to shoulder the responsibility of facilitating spoken language.
- Children have a right to acquire language naturally and comfortably.
- Two languages are better than one; keep languages (ASL/English as a spoken language) consistent and ongoing—an additive rather than subtractive model.

- It is important for educators to understand the difference between speech and language development.
- Some implanted children (similar to some hard of hearing children) may be efficient oral communicators for social situations. However, sign language is a necessary support for critical or abstract thinking, problem solving, and assimilating new information in an academic environment.
- There doesn't have to be an "either/or" decision between auditory and visual language; it is possible to effectively utilize both.
- Known research in brain development and critical years of language learning should be taken into consideration in communication planning.
- Many students with implants function similarly to hard of hearing students and demonstrate inconsistent outcomes related to spoken language development and use, underscoring the importance of and need for additional communication supports, including the use of sign language.
- Communication through sign language can facilitate a child's ability to use auditory information.

About social-emotional development:

- Deaf role models from an early age are important to a child's development of identity.
- Family involvement in learning sign language promotes involvement in the deaf community and the "demystification" of deafness.
- Sign language use has long-range implications for a child's sense of being accepted by family members and for developing identity and self-esteem.

About educational programs:

- There should not be a mindset that a "one-size-fits-all" approach for children is necessary for each child with an implant.
- Communication choices and educational placement choices should be individualized and include family input.
- Ongoing assessment is critical to monitoring progress and programming/placement as modality preferences may change.
- There must be variety in educational placement recommendations regardless of individual professional beliefs and preferences.
- Communication approaches should be child-centered with the child providing the lead in demonstrating which language is most effective for communication and learning.
- Providing sufficient time for attention to spoken language development in a signing environment is critical for students with cochlear implants, and is possible to accomplish.
- For successful integration of implanted students into signing environments, there must be a philosophical and administrative commitment on the part of the educational setting.

About families:

As decisions regarding implantation and communication choices are made, families have the right to full access of information regarding deafness, research on cochlear implants and the use of sign language, and deaf role models.

For more information about this topic, see the National Association of the Deaf position paper:

<http://www.nad.org/infocenter/newsroom/positions/CochlearImplants.html>

Issues of Concern Regarding Language and Communication Use for Implanted Children

- There is the assumption made by many families and professionals that all children with implants will be able to use spoken language as their primary avenue for learning. Observations suggest that this is not the outcome for all implanted children.
- Some implanted children may be demonstrating possible stress and/or anger, feeling they cannot live up to family/professional expectations with their implant.
- The possible relationship between some students discontinuing implant use and communication decisions needs to be considered.
- Families are being provided with conflicting information on communication and language development, which impacts on their ability to make informed educational and communication choices.
- Some implanted children are being permitted to fall behind developmentally and academically at the expense of focusing on spoken language development.
- Communication and placement decisions inclusive of sign language are being disregarded or devalued when they could be the most appropriate recommendation.
- Some medical professionals are providing education/communication recommendations to families without collaboration with the child's educational program and sometimes with minimal background and knowledge of where the implant fits into the child's overall educational planning.
- Continuing professional education is limited regarding implant technology, attitudes, educational program modifications, and expectations.
- School professionals may have bias or lack of understanding related to cochlear implants that will negatively impact on effectively including implanted children into programs designed for deaf children.
- There are insufficient guidelines regarding determination of a child's first language: ASL or English. There is a need to look at all of the impacting factors.
- There is insufficient clarification of the terms "dual language" and "bilingual" as these terms are related to programming for students with cochlear implants.
- There is an inconsistent definition of the term "sign language." Does it mean ASL? Does it mean using signs to support English?
- There is inconsistent understanding on the part of families and professionals related to how spoken language and sign language are utilized in varied signing environments—Total Communication, dual language, bilingual, etc.

General Considerations for Developing Educational Programs for Implanted Students

Provide an environment that:

- is driven by individual communication goals/strengths/style;
- is flexible in communication use;
- addresses development of spoken language and communication skills while safeguarding access to information for learning;
- focuses on a child's communication strengths to facilitate cognitive and academic development;
- does not promote language confusion by mixed usages;
- prevents watered-down language models (incomplete usage, inaccurate);
- provides sufficient amounts of time to promote spoken language development;
- promotes the importance and value of both spoken language and sign language;
- is sensitive to planning for the needs of two distinct populations of implant users—those who obtain implants before language has been established and those who obtain implants at later stages of language development;
- addresses the needs of adolescents obtaining implants;
- includes early student exposure to all forms/modalities of communication to determine areas of strength, learning style, and preferences in communication modality;
- acknowledges that language modality may change for students;
- acknowledges that student skills and preferences are important in making placement and communication decisions;
- is structured to facilitate language/communication development and, at the same time, takes into consideration a child's overall educational and psycho-social needs; and
- is sensitive to additional learning issues/disabilities that may impact development in all areas, not only progress with the implant (these issues may not be apparent at the time of the implant for young children).

For considerations in specific areas related to developing educational programs for implanted students, see the discussion summaries related to strategies for:

- working with families,
- professional training,
- collaboration with medical settings,
- including implanted students in signing environments,
- early intervention,
- later implanted students, and
- habilitation services.

Considerations: Working with Families

General recommendations:

- Present information multiple times and in multiple formats.
- Be sensitive to varying learning styles.
- Be conscious of bias when providing information.
- Utilize a team that includes educational and medical personnel; include deaf professionals.
- Provide opportunities for families to process information and follow-up time to obtain further information as needed.
- Encourage specialists from a child's educational program to accompany families to surgery and mapping sessions.
- Tape meetings to share information with those who are not able to attend.
- Involve fathers.
- Involve siblings and extended family members.
- Utilize panels for information sharing (include panelists from a variety of perspectives).
- Help parents collect and/or analyze information regarding implants.
- Facilitate a parent-to-parent network of families of children with implants.
- Provide access to unbiased information.
- Facilitate interaction with unbiased specialists/families regarding various communication options available.
- Provide families with sufficient information to empower them to be advocates for their child's needs.
- Provide parents with a binder/book that includes information on cochlear implants, the implantation process, communication choices, realistic expectations, etc., so they may read/digest the information at their own pace and then return for questions/answers at a later time.
- Develop a comprehensive set of materials on the topic of cochlear implants for repeated use (books, Web sites, manufacturers' resources, videos, etc.). See the resource list in the Appendix.
- Utilize questionnaires to determine family knowledge and expectations.
- Provide families with a flow chart of the steps in the implantation process and roles and responsibilities of the school/hospital.

Some recommendations to assure that families who use English as a second language have access to information in their first language:

- Have interpreters available for every appointment, preferably professional interpreters, not family members or friends.
- Provide interpreted information from cochlear implant manufacturers (check with manufacturers for translated information).
- Direct Spanish-speaking families to Web sites that include Spanish translations (i.e., John Tracy Clinic, Boys Town, National Institute on Deafness and Other Communication Disorders).

- Compile a list of area physicians, social workers, and other professionals in the community who can communicate in various spoken languages.

Topics and issues for family education:

- Communication and language development, including:
 - ❖ deafness and the communication needs of young children
 - ❖ the impact of solid language foundations on the facilitation of educational and psycho-social development
 - ❖ the difference between “speech” and “language”
 - ❖ the importance of early language development regardless of modality
 - ❖ the varying roles of using sign language, pre-implant and beyond
 - ❖ a variety of strategies to facilitate communication development (eye contact, sound, visual cues, smiling, crying, etc.)
 - ❖ the benefits of sign language for both hearing and deaf children
- Understanding the implantation process, including:
 - ❖ the process to obtain an implant
 - ❖ realistic communication expectations (implants as a tool, not a cure)
 - ❖ What is an implant and how does it work?
 - ❖ What makes a child a good candidate?
 - ❖ What’s involved in the surgery?
 - ❖ What happens after surgery, after getting hooked up?
 - ❖ myths and realities
 - ❖ language and communication choices
 - ❖ placement decisions
- What happens after the implant, including:
 - ❖ expectations related to spoken language development post-surgery
 - ❖ considerations for social-emotional development
 - ❖ What’s involved in therapy?
 - ❖ What can parents and families do at home?
 - ❖ training on “what to do” and “what to expect”
 - ❖ support from other families with children who have cochlear implants
 - ❖ strategies on when to sign/talk/Sim-Com (demonstrate sensitivity to parents’ individual abilities and preferences)

Considerations: Professional Training

- Survey the involved faculty and staff regarding their knowledge and biases related to cochlear implants. Use this as a starting point for developing in-service training.
- Provide training related to implants to everyone involved with an implanted child—teachers, counselors, administrators, deaf mentors, speech therapists, dorm staff, etc.
- Utilize a variety of formats for presenting information to faculty and staff, including:

- ❖ providing opportunities for faculty and staff to view commercial videos on the topic of implants. (Contact implant manufacturers for complimentary resource materials—see resource list in the Appendix.)
- ❖ providing opportunities for facilitated discussion groups on selected topics related to implants.
- ❖ providing a combination of large group presentations for general faculty and staff, as well as small group information sharing sessions with those directly involved with implanted children.
- ❖ including speakers and readings that represent the deaf cultural perspective.
- ❖ providing diverse panels. Include panelists demonstrating a range of success with implantation, implantation at a variety of ages, and those who would not consider implantation.
- ❖ including answers to a “question of the day” or “question of the week” in faculty and staff e-mails, newsletters, or other regular communications.
- Provide a mechanism for staff to express their concerns and biases related to implants.
- Provide training that includes understanding of and strategies to work with varied populations of implanted students, including:
 - ❖ young children implanted while language is emerging,
 - ❖ children implanted beyond the language learning years with a range of language use,
 - ❖ students with ASL as their first language, and
 - ❖ students moving into a signing environment following lack of success in an oral environment.
- Provide faculty and staff training on the following topics:
 - ❖ addressing social-emotional and identity issues related to implantation,
 - ❖ establishing a program to incorporate and value both spoken and sign language,
 - ❖ effective strategies for working with families (see discussion summaries about working with families),
 - ❖ effective strategies for working with families from varied cultures and who use languages other than English (see discussion summaries about working with families),
 - ❖ strategies for including spoken language into traditionally signing classrooms, and
 - ❖ strategies for balancing curriculum content and auditory development.
- Utilize national resources for staff development activities (see the resource list in the Appendix), such as the two-day training program from the Network of Educators of Children with Cochlear Implants, Ski-HI for deaf mentor training, Web sites, and manufacturer information.
- Encourage professionals to advocate and provide awareness within their professional organizations related to the role of sign and spoken language for implanted children.
- Encourage university training programs to provide training related to understanding the scope of needs of children with implants and how to provide this information to families in an unbiased fashion, understanding the improved outcomes for students with implants in comparison to traditional hearing aids, and facilitating spoken language development for implanted children.

- There is a shortage of speech-language pathologists and professionals trained in the development of spoken language with deaf and hard of hearing students. Encourage training programs to include this focus in their programs.

Considerations: Collaboration with Medical Settings

The importance of ongoing collaboration between hospital implant centers and educational programs emerged as a repeated theme throughout all discussion groups. The following issues and recommendations were discussed:

- Designate a member of the educational program to become a liaison with medical settings to promote open communication between settings.
- Disseminate information to medical settings regarding services for implanted children provided through your educational setting (handouts, Web sites, newsletters, etc.).
- Offer to provide in-service training to medical professionals related to education and communication considerations for children with implants.
- Invite medical professionals to visit your educational facility to observe offered programs and services.
- Involve professionals from the medical implant center in the Individualized Family Service Plan (IFSP)/Individualized Education Program (IEP) process to facilitate collaborative planning related to the components of recommended educational programs and support.
- During the candidacy process, offer supports from the school program to the hospital candidacy team (i.e., have a school psychologist skilled in evaluating deaf children and their families provide this evaluation and then include this psychologist in candidacy decisions).
- Have professionals from the educational setting offer to attend medical facility appointments with families.
- Develop a working group of representatives from the educational and medical community to build bridges and facilitate open communication and collaborations between the two settings.

Considerations: Including Implanted Students in Signing Environments

Incorporate strategies to develop spoken language skills that are similar to those used with all deaf and hard of hearing students.

General considerations:

- Incorporate assistive listening technologies into the environment (personal/sound-field FM systems, direct input to computers, etc.).

- Provide individual and small group habilitation sessions using both pull-out and classroom inclusion models.
- Provide adult and/or student speech models in the classroom.
- Team deaf teachers with hearing teachers or staff in the classroom.
- Provide opportunities for hearing peers to join activities with deaf peers and include hearing siblings when appropriate.
- Establish specific times for spoken language and listening experiences (speech, music, free time, read-alouds).
- Establish learning centers in classrooms for experiences with a variety of communication modalities—speech, listening, writing, reading, etc.
- Include dramatic play opportunities in a variety of communication modalities.

Strategies for incorporating sign and spoken language:

- Determine when to utilize sign language only, spoken language only, and sign and speech together (simultaneous communication).
- Determine how to incorporate the “sandwich technique” of saying a message, signing a message, then saying it again.
- Use flexibility in determining the most appropriate communication modality for the communication situation.
- Use repetition of spoken language to make language familiar and then slowly reduce use of signs and increase use of speech.
- Once students experience familiarity with spoken language in a structured environment, expand opportunities to experiment with use of spoken language.
- Provide opportunities to utilize child’s spoken language skills in social situations (i.e., hallway, lunchroom).
- Use spoken language for highly redundant and contextual information and use sign language for new information with little context.
- Determine how varied situations lend themselves to either oral or visual emphasis.
- Alert child to modality use (i.e., “Now we are going to listen.”).

Considerations for students in ASL environments:

- Establish committed time for each language: ASL and spoken English.
- Utilize each language during predictable times/places (i.e., “circle time” is always in English, or using an “ASL chair” and an “English chair” for expressive tasks).
- Use child’s stronger language to obtain content information.
- Accept students with cochlear implants into the program only when appropriate classroom and support service modifications are made to accommodate spoken language development and use.
- Determine guidelines for use of spoken language in the presence of signers, including establishment of specific times and environments to use spoken language only or simultaneous communication.
- Include older students in establishing communication standards (when to use each language).

- Look at other bilingual language models used for developing English as a second language. Is it best to establish half of the day in spoken English and half of the day in ASL?
- Provide opportunities for implanted students to interact with hearing peers as part of their educational experience.
- Look at equity in language use—English and ASL—when developing programs.

Considerations: Addressing the Needs of Signing Students in the Mainstream

Mainstream placement options that include sign language include:

- typical neighborhood educational programs with no additional supports within the school,
- typical neighborhood educational programs with supplemental support services integrated into the program (interpreters, auditory and speech training, etc.), and
- early education classrooms specially designed to include both deaf and hearing children who use both spoken and signed language.

Ideas for planning for inclusion:

- Look at student characteristics related to current communication use, not only long-term hopes, when determining if a mainstream placement best serves the needs of a student.
- Take into consideration the diverse communication profiles of students with cochlear implants enrolled in mainstream environments (i.e., oral, Cued Speech, ASL, Sim-Com, etc.). Don't assume that all students with implants will be oral communicators.
- While some professionals support immersion into a mainstream environment with no additional supports, look at all student characteristics in determining if this is the appropriate approach.
- Assure that administrators, school systems, teaching teams, etc., receive sufficient training on the following topics: facilitating communication, troubleshooting cochlear implant equipment, incorporating needed support services, and developing realistic expectations for implanted students.
- When more than one deaf student is enrolled, look at the possibility of scheduling/grouping students based on use of sign language for their education for part of the day.

Possible supports needed include:

- auditory and speech training to facilitate development of specific skills that may not emerge without focused attention—may include the use of Auditory Verbal Therapy,
- sign instruction for students new to sign language,
- the use of a language facilitator in the classroom,
- an interpreter,
- notetaking assistance, and

- real-time captioning (for older students who are skilled readers).

Recommendations related to IEPs:

- Assure that necessary assessments are performed by qualified professionals knowledgeable about deafness and cochlear implants.
- Obtain consensus from the IFSP/IEP team when deciding on related services; make sure all services and other necessary adaptations are documented through the IFSP/IEP process.
- Assure that professionals balance their role between being an agent of the school system versus an advocate for the family.
- Educate parents on how to be advocates for their child in relation to service and placement needs.
- Meet three to four times per year to discuss progress, successful strategies, need for extra supports, etc.

Roles and responsibilities—administrators and placement teams:

- Become knowledgeable about cochlear implants and expected outcomes.
- Consider the level of communication functioning of each student individually when making classroom placement decisions. Do not place deaf students together based on resources alone (i.e., existing interpreter in another class).

Roles and responsibilities—audiologists/speech-language pathologists:

- Coordinate services with hospitals.
- Monitor functioning of implant equipment and settings.
- Monitor operation of FM systems, desktop speakers, sound field systems, etc.
- Train staff on the use of implants and other assistive equipment.
- Provide auditory/oral therapy (based on IFSP/IEP).
- Provide in-class consultation to teachers related to facilitation of listening and speech skills in the classroom.
- Provide resource assistance to teachers regarding “low-tech” adaptations to facilitate classroom communication (seating, hand raising of speaker, seating away from noise sources, etc.).
- Provide workshops to hearing peers related to cochlear implants and facilitating communication.

Roles and responsibilities—classroom teachers:

- Incorporate all adaptations listed on the IEP.
- Make sure child feels comfortable responding to teacher, other students, and in group discussions (in either sign language or spoken language).
- Facilitate coordination with interpreter (provide lesson plans, inform of new vocabulary, etc.).

- Adjust listening environment in the classroom to facilitate optimal listening conditions (ask for resource assistance from audiologist).

Roles and responsibilities—paraprofessionals:

- Utilize aide as specified for specific student, rather than general use in the classroom.
- Use notetakers or real-time captioning; take student reading levels into consideration.

Roles and responsibilities—interpreters:

- Be included on the IEP team.
- Make sure the interpreter role is documented in the IEP.
- Advocate for the child and for yourself.
- Explain and provide written guidelines regarding your role.
- Obtain lesson plans from the teacher.
- Follow the child's lead regarding need for sign support.
- Have the teacher slow down when new vocabulary is introduced.
- Team with other interpreters in the school to facilitate possible coverage in case of interpreter absence.
- Use an FM system to provide voice support in addition to signing.

Roles and responsibilities—counselors:

- Provide support groups for cochlear implant users.
- Discuss strategies for facilitating communication interactions with hearing peers.
- Provide social-emotional support.
- Give presentations to classmates regarding implants (team with other professionals knowledgeable on this topic).

Roles and responsibilities—parents:

- Know your rights.
- Advocate for additional services if needed.
- Obtain additional services after school or during the summer.
- Carry over therapy goals in the home environment.

Roles and responsibilities—students:

- Learn the importance of, and practice, self-advocacy.
- If age appropriate, participate in the development of the IEP.
- Inform your teachers of necessary classroom modifications.
- Understand the interpreter's role.

Miscellaneous roles and responsibilities:

- Clearly delineate the type of diploma and standards being utilized.

- Determine how student performance will be measured. Will the student with an implant be compared to standards similar to all students?
- Does the school system provide support to transition students beyond high school?

Considerations: The Early Childhood Years

Who should be involved:

- A strong early education program for young deaf children, including those with implants, should involve a team including families, teachers trained in early education for deaf children, language specialists knowledgeable about both sign language and spoken language development, audiologists, counselors, psychologists, and occupational and physical therapists.
- Specialists prefer the title of early education facilitator instead of early intervention specialist. The term intervention connotes coming between, intervening, and taking over for families instead of facilitating and empowering families.
- The decision-making process related to obtaining a cochlear implant should involve a child's early education service provider in collaboration with a hospital implant center.
- When the family is in the candidacy process it is helpful to have a designated case manager from the educational program to support the family in the process, attend appointments, meetings, and provide feedback.

About modality:

- Help families understand the importance of taking into consideration the comprehensive needs the child has, not only having them talk.
- Help families understand the importance of evaluating and re-evaluating choices that are made.

About multiple disabilities:

- Additional disabilities may not be apparent at the time of implanting young children.
- There's a need for professionals to be cautious, yet observant, related to identifying and addressing behaviors that place a child outside of typical development.
- Help families understand that an implant will not ameliorate additional special needs that a child may have separate from hearing loss.

About early diagnosis and early implantation:

- Children are being identified very young and immediately referred to hospital implant centers without the benefit of a comprehensive early education program.
- Children are being identified young and implanted young; this impacts on a family being able to understand and accept the needs of a deaf child and they possibly look to the implant as a cure.

- There are still many gaps in national newborn screening programs related to referring families to adequate early education programs. Families may be obtaining insufficient information to make decisions related to implantation.

About amplification management:

- Help families pursue fitting appropriate hearing aids and/or FM systems as early as possible. If families are to pursue an implant, it is necessary to keep the auditory channels stimulated.
- Purchase of hearing aids is often expensive. If families are considering implantation early on, try to seek loaner hearing aids from hospital centers or loaner banks set up through newborn hearing screening programs or early intervention programs.

Considerations: Later Implanted Students

General considerations:

- Establish programs for students that facilitate access to academic information, yet provide opportunities to utilize and develop spoken language skills.
- Balance academic goals and auditory goals.
- Have students come for individual speech and auditory training sessions prior to the start of the school day.
- Integrate the classroom curriculum and vocabulary into individual training sessions.
- Integrate spoken language activities into language arts activities in the classroom.
- Establish a daily “communication” class to address communication training in a variety of areas.
- Increase the number of professionals in the program who are skilled in habilitation to allow for increased services in the area of spoken language development.
- Include listening stations in the classroom to provide opportunities to integrate spoken language into the classroom.
- Demonstrate positive attitudes and an atmosphere of respect for students and families deciding on implantation.

Related to family expectations:

- Help families in the decision-making process understand the varied outcomes for older students with implants; repeated family counseling in a variety of formats is necessary (see “Considerations: Working with Families” on page 67).
- Help families understand that the rate of spoken language skill development varies and is often slow for older implanted children.
- Help families understand the many variables that may impact on their child’s spoken language growth.
- Help families understand that their goals and hopes for implantation may not match the goals and desires of their child.

Related to including students:

- Include older students in the candidacy process. Make sure they are clear on expectations with the implant and the degree of motivation and involvement needed to make the implant effective.
- Provide individual counseling services regarding expectations during the surgery.
- After implantation, provide opportunities for the student to share feelings regarding his or her cochlear implant in a safe environment.
- Provide in-service information sharing sessions on cochlear implants for peers.
- Provide students with strategies to access spoken language in the classroom when communication breakdowns occur (ask for repetition, rewording, to move closer, etc.).
- For students in schools for the deaf, acknowledge that there is peer pressure and that there may be a lack of peer understanding regarding implants.

Considerations: Language and Communication Assessment and Training

Assessment

General considerations:

- Determination of which group of students to use for comparison populations (other cochlear implant students, comparison to self, other deaf students, hard of hearing students, hearing students) depends on the purpose of the evaluation.
- Assessment tools need to be standardized for implanted children.
- There's a need to be eclectic in choosing evaluation tools and modifying available tools to obtain necessary data.
- It is helpful to create a "Communication Profile" reflecting a child's communication skills to share information with professionals and families.
- Documentation of informal classroom and home behaviors is an important component of assessment.
- It is beneficial to videotape evaluation sessions to document performance at various stages pre- and post-implantation.
- There are insufficient tools related to evaluating American Sign Language.

When to evaluate:

- admission to the school program,
- preparation for IFSP/IEP,
- determination of placement change,
- documentation of changes in student performance,
- documentation of performance prior to implantation,
- documentation of performance at specified times following implantation,
- following school breaks,

- on the anniversary date of activation,
- upon recommendation from student review teams (to determine functioning level, strengths and weaknesses, identify intervention strategies),
- to demonstrate a child's performance with new technology to families, and
- routine triennial evaluation.

Purpose of assessment:

- documentation of functioning levels in both spoken language and sign language,
- to obtain sufficient information to make recommendations related to planning auditory and speech habilitation strategies,
- to guide program placement, and
- to make recommendations related to communication modality use.

Areas for evaluation:

- general communication skills (eye contact, turn taking, etc.),
- speechreading,
- receptive and expressive vocabulary,
- language (content, form, and use),
- expressive language (language sample),
- articulation skill,
- auditory functioning skills,
- oral-motor skills,
- phonemic awareness skills,
- features of speech (i.e., voicing, suprasegmentals),
- written language,
- reading, and
- ASL.

Training:

- Utilize a variety of service provision models based on the needs of the students and the program (pull out, teacher resource, activities with the whole class, individual sessions).
- Students with implants require extensive training from speech and hearing habilitation specialists. This is impacting on caseload growth and finding sufficient time to see the students in school as much as recommended.
- Training should be completed in both structured and naturalistic environments.
- See the resource list in the Appendix for recommended assessment tools and training materials.

Conference Highlights: Emerging Issues

The following issues emerged repeatedly throughout the presentations, program sharings, and discussion groups of this conference. (This is not a comprehensive summary of all the issues covered in the conference.)

1. Meeting the needs of students with cochlear implants cannot be accomplished using a “one-size-fits-all” approach.
 - Individual communication goals/strengths/style should drive educational placement and services.
 - Outcomes vary among students with cochlear implants, as do outcomes for all deaf students.
 - “Success” with a cochlear implant varies for each cochlear implant user.
 - A student should not be defined/placed/planned for based solely on the cochlear implant.
2. Sign language and spoken language development are compatible and can support each other in the learning process.
 - Sign language and spoken language can be nurtured within the same environment.
 - Use of sign language does not have to be interpreted to mean exclusion of spoken language development.
 - The role of sign language may vary for each child with an implant based on a variety of factors.
3. Providing opportunities to develop and utilize spoken language is essential to student progress with a cochlear implant.
 - The improved access to sound available to implanted children can be maximized only through consistent training and stimulation.
 - Programs that incorporate sign language must design, incorporate, and ensure, in proper amounts, opportunities to develop the use of audition and spoken language.
 - Provision of services to facilitate and utilize spoken language development must be an ongoing program commitment if an educational placement that utilizes sign language is going to include students with implants.
4. Many characteristics of the population of students with cochlear implants appear to be similar to hard of hearing students.
 - It appears that many students with cochlear implants are functioning more as hard of hearing children rather than hearing children. As hard of hearing students have traditionally been overlooked and underserved in the educational system, it is important that those children with implants do not fall into a similar situation.

- There is a history of inconsistent outcomes related to spoken language development, social/emotional adjustment, and academic success for hard of hearing students. This underscores the importance of and need for additional supports within the educational system for students with cochlear implants in all educational settings.
5. We have the expertise and skills to work with implanted children; we need to modify our expectations.
 - Many of the techniques, programs, and strategies that have been used to address development of spoken language skills for the general population of deaf students are applicable to students with implants. What's changing are the outcomes with these strategies related to increased access to sound through the implant. The challenge for educational settings is to adapt programs to incorporate and capitalize on this increased auditory potential.
 - Many effective strategies and techniques used throughout deaf educational programs are also beneficial for the population of students with implants.
 6. A collaborative relationship between hospital implant centers and educational settings is integral to successful planning for students with implants.
 - It was repeatedly noted that some implant centers will not consider a signing environment for students following implantation. Ongoing collaboration (i.e., observations between centers, workshops, teaming) between the implant centers and educational settings is integral to promoting cohesive planning for students with implants.

Closing Comments

By Dr. Katherine A. Jankowski, Interim Dean, Laurent Clerc National Deaf Education Center

The theme of this conference, “Cochlear Implants and Sign Language: Putting It All Together,” really represents a whole new approach. Historically, people have viewed these two as separate entities. However, this conference has shown that this need not be the case. Even though we have a small number here—and we had to limit the number—we still had good representation. Obviously people are here because there is a need for a conference of this type.

As Dr. Leigh and Dr. Christiansen pointed out, there has been a tremendous increase in the numbers of people with cochlear implants in recent years. If you look at the numbers, in 1990 there were 5,000 people with implants and 90 percent of those were adults. Today, in the year 2002, there are more than 45,000 people with cochlear implants and half of them are under the age of 18. This represents a tremendous change. Obviously this conference was needed for action.

We also heard about various programs and how they are approaching working with children with a cochlear implant. We heard from numerous presenters, from different perspectives. We had an exchange of ideas, presented strategies for effective practices. It has given us all a lot of food for thought that will definitely lead to further dialogue about implementing new approaches and programs and the evaluation of these strategies.

As this conference comes to a close, it is clear that there is still much more to be done. This is only the beginning. However, as you know now, you are not alone. There are others like you to network with and for collaboration. The Clerc Center also is available to you as a resource and as a collaborative partner. Our goal is to ensure that the increasing numbers of students getting cochlear implants get the best possible services.

I would like to thank each of the participants for their contributions to this conference and for the work that you have been doing and will continue to do with children and families. So, on behalf of children and families from all over, thank you for your involvement and commitment.

Appendix: Resources

This list reflects helpful resources that emerged throughout the two-day conference, “Cochlear Implants and Sign Language: Putting It All Together.” It is not a comprehensive list of all effective resources for working with implanted students. For handouts provided during the conference, see the full conference proceedings at: <http://clerccenter.gallaudet.edu/CIEC/>.

Agencies/Organizations

The following organizations have handouts on cochlear implants that can be downloaded from their Web sites.

Alexander Graham Bell Association
3417 Volta Place, NW
Washington, DC 20007
Phone: (202) 337-5220 (V)
(202) 337-5221 (TTY)
E-mail: agbell2@aol.com
Web: <http://www.agbell.org/>

American Society for Deaf Children
P.O. Box 3355
Gettysburg, PA 17325
Phone: (717) 334-7922 (V/TTY)
Fax: (717) 334-8808
E-mail: asdc@deafchildren.org
Web: <http://deafchildren.org/>

American Speech-Language and Hearing
Association (ASHA)
10801 Rockville Pike
Rockville, MD 20852
Phone: (800) 638-8255 (V/TTY,
available 8:30 a.m. to 5 p.m. ET)
E-mail: actioncenter@asha.org
Web: <http://www.asha.org/>

Cochlear Implant Association, Inc. (CIAI)
5335 Wisconsin Avenue, NW Suite 440
Washington, DC 20015-2003
Phone: (202) 895-2781
Fax: (202) 895-2782
E-mail: lasinger@mindspring.com
Web: <http://www.cici.org/>

Cochlear Implant Education Center
Laurent Clerc National Deaf Education
Center
Gallaudet University
800 Florida Avenue, NE
Washington, DC 20002-3695
Phone: (202) 651-5638 (V/TTY)
E-mail: debra.nussbaum@gallaudet.edu
Web:
<http://clerccenter.gallaudet.edu/CIEC/index.html>

John Tracy Clinic
806 West Adams Boulevard
Los Angeles, CA 90007-2505
Phone: (213) 748-5481
Web: <http://www.johntracyclinic.org/>

National Association of the Deaf
814 Thayer Avenue
Silver Spring, MD 20910
Phone: (301) 587-1788
E-mail: nadinfo@nad.org
Web: <http://www.nad.org/>

National Institute on Deafness and Other
Communication Disorders (NIDCD)
1 Communication Avenue
Bethesda, MD 20892
Phone: (800) 241-1044 (V)
(800) 241-1055 (TTY)

E-mail: nidcdinfo@nidcd.nih.gov
Web: <http://www.nidcd.nih.gov>

Network of Educators of Children with
Cochlear Implants (NECCI)
Dr. Mary Ellen Nevins
Cochlear Implant Center

Lenox Hill Hospital
186 East 76th Street
New York, NY 10021
Phone: (212) 434-6650 (V)
Web:
<http://www.childrenshearing.org/programs/necci.html>

Assessment Tools

Auditory Assessments/Curricula

Bringing Sound to Life: Principles and Practices of Cochlear Implant Rehabilitation [including the WASP (Word Association for Syllable Perception)]
York Press
P.O. Box 504
Timonium, MD 21094
Phone: (800) 962-2763
Web: <http://www.yorkpress.com/>

Cottage Acquisition Scales for Listening, Language & Speech (CASLLS)
Sunshine Cottage School for Deaf Children
103 Tuleta Drive
San Antonio, TX 78212-3196
Phone: (210) 824-0579
E-mail: info@sunshinecottage.org

DASL II – Developmental Approach to Successful Listening II
By Gayle Goldberg Stout and Jill Van Ert Windle
Houston School for Deaf Children, Houston, TX, and available through the Cochlear Corporation (see page 89)

Early Speech Perception Test (ESP)
Central Institute for the Deaf Publications
4560 Clayton Avenue

St. Louis, MO 63110
Phone: (314) 977-0000 (V)
(314) 977-0001 (TTY)
Web: <http://www.cid.wustl.edu/>

Oral and Written Language Scale (OWLS) [includes Listening Comprehension Scale (LCS), Oral Expression Scale (OES), Written Expression Scale (WES)]
Super Duper Publications
Dept. SD 2002
P.O. Box 24997
Greenville, SC 29616-2497
E-mail: custserv@superduperinc.com
Web: <http://www.superduperinc.com>

SPICE (Speech Perception Instructional Curriculum Evaluation)
Central Institute for the Deaf
4560 Clayton Avenue
St. Louis, MO 63110
Phone: (314) 977-0000 (V)
(314) 977-0001 (TTY)
Web: <http://www.cid.wustl.edu/>

Test of Auditory Perception Skills (TAPS-R)
Academic Communication Associates
Phone: (888) 758-9593
Web: <http://www.acadcom.com>

Language Assessment Tools

American Sign Language Developmental Sequences and the Kendall Communicative Proficiency Scale
The Toolkit from Starting With Assessment: A Developmental Approach to Deaf Children's Literacy (1999) by Martha French
Distributed by the Office of Publications and Information Dissemination
Laurent Clerc National Deaf Education Center
Gallaudet University
800 Florida Avenue, NE
Washington, DC 20002-3695
E-mail: products.clerccenter@gallaudet.edu
Web: <http://clerccenter.gallaudet.edu/products/B598.html>

Central Institute for the Deaf
4560 Clayton Avenue
St. Louis, MO 63110
Phone: (314) 977-0000 (V)
(314) 977-0001 (TTY)
Web: <http://www.cid.wustl.edu/>

Clinical Evaluation of Language Fundamental (CELF-Preschool, CELF-3)
Psychological Corporation
19500 Bulverde Road
San Antonio, TX 78259
Phone: (800) 872-1726

Grammatical Analysis of Elicited Language (GAEL-P, GAEL-S, GAEL-C)
Super Duper Publications
Dept. SD 2002
P.O. Box 24997
Greenville, SC 29616-2497
E-mail: custserv@superduperinc.com
Web: <http://www.superduperinc.com>

MacArthur Communicative Development Inventory: Words and Gestures (1993)
Singular Publishing Group, Inc.
San Diego, CA
Phone: (800) 521-8545

Reynell Developmental Language Scales
Super Duper Publications
(see above)

*SKI*HI Language Development Scale* (1979)
SKI*HI Institute
Logan, UT
Phone: (435) 752-9533

Structured Photographic Expressive Language Test- Preschool (SPELT-P)
Super Duper Publications
Test of Auditory Comprehension Language (TACL)
Test of Language Development-Primary: 3 (TOLD-P3)
Test of Language Development-Intermediate (TOLD-I:3), Super Duper Publications

Phonemic Awareness: Assessment and Training

Phono-Graphix
Read America
Phone: (352) 735-9292
Web: <http://www.readamerica.net/>

See-the-Sound Visual Phonics
International Communication Learning Institute
See the Sound Visual Phonics
10712 308th Avenue
Princeton, MN 55371

Phone: (763) 389-4875
E-mail: riggsll@msn.com

Test of Phonological Awareness (TOPA)
Super Duper Publications

Dept. SD 2002
P.O. Box 24997
Greenville, SC 29616-2497
E-mail: custserv@superduperinc.com
Web: <http://www.superduperinc.com>

Speech Production

Arizona-3
Western Psychological Services
1203 Wilshire Boulevard
Los Angeles, CA 90025
Phone: (800) 222-2670

CID Phonetic Inventory
Central Institute for the Deaf
4560 Clayton Avenue
St. Louis, MO 63110
Phone: (314) 977-0000 (V)
(314) 977-0001 (TTY)
Web: <http://www.cid.wustl.edu/>

*Daniel Ling Phonetic Level Speech
Evaluation*
Available through the Alexander Graham
Bell Association (see page 85)

*Goldman-Fristoe Test of Articulation
(GFTA2)*
Super Duper Publications
Dept. SD 2002
P.O. Box 24997
Greenville, SC 29616-2497
E-mail: custserv@superduperinc.com
Web: <http://www.superduperinc.com>

Photo Articulation Test (PAT-3)
Super Duper Publications
(see above)

PLS-4: Articulation Screener
Psychological Corporation
19500 Bulverde Road
San Antonio, TX 78259
Phone: (800) 872-1726

Vocabulary Evaluations

*Expressive One Word Picture Vocabulary
Test (EOWPVT)*
Super Duper Publications
Dept. SD 2002
P.O. Box 24997
Greenville, SC 29616-2497
E-mail: custserv@superduperinc.com
Web: <http://www.superduperinc.com>

Peabody Picture Vocabulary Test (PPVT-R)

American Guidance Service
4201 Woodland Road
Circle Pines, MN 55014
Phone: (800) 328-2560
Web: <http://www.agsnet.com/>

*Receptive One Word Picture Vocabulary
Test (ROWPVT) (2000)*
Super Duper Publications
(see above)

Cochlear Implant Manufacturers

The following manufacturers provide extensive complementary general information on cochlear implants as well as information specific to their products. Ask about resources in various languages.

Advanced Bionics/Clarion System
12740 San Fernando Road
Sylmar, CA 91342
Phone: (800) 678-2575 (V)
(800) 678-3575 (TTY)
E-mail: info@advancedbionics.com
Web: <http://www.cochlearimplant.com/>

Cochlear Corporation/Nucleus System
61 Inverness Drive East
Suite 200
Englewood, CO 80112
Phone: (800) 523-5798 (V/TTY)

Fax: (303) 792-9025
E-mail: info@cochlear.com
Web: <http://www.cochlear.com/>

Med-El Corporation/Combi System
P.O. Box 14183
Research Triangle Park
Durham, NC 27709
Phone: (919) 572-2222 (V/TTY)
Fax: (617) 484-9229
E-mail: admin@medel.com
Web: <http://www.medel.com>

Computer Software for Developing Spoken Language Skills

Earobics (Step 1, Step 2, Adolescent/Adult version)
Technology for Education, Inc
1870 50th Street East
Suite 7
Inver Grove Heights, MN 55077
Phone: (651) 457-1917
Web: <http://www.tfeinc.com/>

Exploring First Words (I and II)
Laureate Learning Systems
Special Needs Software
110 East Spring Street
Winooski, VT 05404-1898
Phone: (800) 562-6801
Web: <http://www.laureatelearning.com/>

The Great Action Adventure
Super Duper Publications
Dept. SD 2002
P.O. Box 24997
Greenville, SC 29616-2497
E-mail: custserv@superduperinc.com

Web: <http://www.superduperinc.com/>

IBM SpeechViewer III
Edmark
P.O. Box 97021
Redmond, WA 98073-9721
Phone: (800) 362-2890
Web: <http://www.riverdeep.net/>

Intelli-TalkII
Intellitools, Inc.
1720 Corporate Circle
Petaluma, CA 94954
Phone: (800) 899-6687
Web: <http://www.intellitools.com/>

Listen-Hear
Avaaz Innovations Inc.
P.O. Box 8040
1225 Wonderland Road North
London, Ontario N6G 2B0
Canada
Phone: (519) 472-7944

Web: <http://www.avaaz.com/>

Locu-Tour Literacy CD-Rom: Phonemic Awareness (pre-K to adult)
Super Duper Publications
(see above)

Nouns and Sounds
Laureate Learning Systems
(see above)

Open Book for Literacy
Phone: (770) 226-5300
Web: <http://www.openbooklearning.com/>

Psychological Corporation

Phone: (800) 872-1726

Web:
<http://www.psychcorp.com/catalogs/index.html>

Talk Time with Tucker
Laureate Learning Systems
(see above)

Visual Voice Tools
Edmark
(see above)

Words Around Me
Laureate Learning Systems
(see above)

Web Resources

The following Web sites were found to be useful by conference participants:

The Listen-Up Web: <http://www.listen-up.org/>

“Sound and the Fury”: <http://www.pbs.org/wnet/soundandfury/index.html>

Web sites that simulate listening through a cochlear implant:

<http://www.bsos.umd.edu/hesp/zeng/simulations.html>

<http://www.utdallas.edu/~loizou/cimplants/>

Additional Training Resources

Listening Games for Littles

By Dave Sindrey, Cert. AVT

WordPlay Publications

P.O. Box 8048

London, Ontario N6G 4X1 Canada

Web: <http://www.execulink.com/~wordplay/Listen.HTM>

Also available through the Alexander Graham Bell Association (see page 85).

Troll in a Bowl

By Dave Sindrey, Cert. AVT

WordPlay Publications

P.O. Box 8048

London, Ontario N6G 4X1

Canada

Also available through the Alexander Graham Bell Association (see page 85).

The Laurent Clerc National Deaf Education Center's "Sharing Ideas" series includes a variety of short papers of interest to parents and teachers of deaf children, researchers, school administrators, support service personnel and policy makers. These widely disseminated works cover a broad range of timely topics—from the results of research to descriptions of innovative teaching strategies—with a focus on improving the quality of education for children who are deaf or hard of hearing.

Readers are encouraged to copy and disseminate this paper! You may also download the entire paper from the World Wide Web. (See title page for details.)

The Laurent Clerc National Deaf Education Center is comprised of two federally mandated demonstration schools for students from birth through age 21 who are deaf. Located on the campus of Gallaudet University, these schools work in collaboration with a national network of exemplary programs and professionals to identify, research, develop, evaluate, and disseminate innovative curricula, materials, educational strategies, and technologies for students who are deaf or hard of hearing. The Clerc Center also provides training and technical assistance to families and programs throughout the United States, and serves as a model individualized educational program, working in close partnership with its students and their families.

Gallaudet University



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Throughout the United States

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