

Summary

NIH R13 DC008750-01: *11th International Conference on Cochlear Implants in Children*

The 11th International Conference on Cochlear Implants (CI) in Children was held in Charlotte, NC on April 10-14, 2007. The meeting was hosted by the University of North Carolina, Department of Otolaryngology-Head and Neck Surgery (Drs Harold Pillsbury and Craig Buchman). The meeting consisted of 3 consecutive morning sessions (4 hours) that were highlighted by 3-4 featured speakers and followed by free papers. The afternoon sessions consisted of a wide variety of topics including: speech perception, production, and language development, audiological assessment, objective measures, programming, medical/surgical issues, combined electrical-acoustic stimulation, device reliability, plasticity, coding strategies, fiscal issues and program development. The conference was attended by nearly 1200 professionals, parents of CI children, and other interested parties from around the world. This was by far the largest conference of its kind with nearly double the attendance of previous meetings held in Dallas, Washington DC, and others. Based on the program assembled, the meeting provided significant continuing education credits for professionals. For physicians, the American College of Surgeons (ACS), as the accredited provider of CME for this meeting, assigned 19.25 AMA PRA Category 1 Credits^C to the activity. For audiologists and speech pathologists, The University of North Carolina at Chapel Hill, Division of Speech and Hearing Sciences, was approved by the Continuing Education Board of the American Speech-Language-Hearing Association (ASHA) to provide continuing education activities in speech-language pathology and audiology at 1.8 CEUs (intermediate level; professional area). Finally, the American Academy of Audiology also approved this activity for 1.8 CEUs.

Funding from the National Institutes of Health (NIH) (Office of Rare Diseases (ORD) and National Institutes on Deafness and Other Communication Disorders (NIDCD)) helped cover the costs of the various invited speakers from around the globe. These speaker's presentations provided the highlight materials for the conference. Moreover, funding from the Institutes provided partial support for a number of students to attend the conference from a variety of disciplines including audiology, speech pathology, otolaryngology and related scientific fields. Students sent the organizers letters requesting this funding opportunity. Students were granted funds in support if (1) they were actively enrolled in an educational program, (2) were not concomitantly actively employed in a full-time position, and (3) were presenting at the conference. Beyond this, where available, non-full time employed students were also supported if they provided a letter of interest in the field as well as a letter from a supporting mentor who would be attending the conference who also was active in the field and available for discussion and perspective during the conference.

The topics for the morning sessions were "cochlear implantation in very young children" (Thurs), "auditory nerve disorders" (Friday), and "bilateral cochlear implantation" (Sat). The featured speakers on each of the days gave talks of 15-20 minutes in duration were clearly a highlight of the conference. On the first days, Drs Patricia Roush, J. Thomas

Roland, Jean Moog, and John Niparko covered the spectrum of issues for very young children. Dr Roush discussed the various pearls and pitfalls of amplification in the pediatric population which are substantial. Tom Roland outlined his relatively extensive experience with surgery in children less than 1 year of age and both Drs Niparko and Moog discussed their research on development of speech perception, production and spoken language in children implanted under age 1. Particularly impressive was the early data that are emerging from the NIH-funded Childhood Development after Cochlear Implantation (CDaCI) Study presented by Dr Niparko and co-investigators who show the profound effects that cochlear implantation can have on the profoundly hearing-impaired infant. A variety of free papers followed this session that again covered the topic of CI in the very young. While a number of presentations were of interest, those looking at assessment of early speech and language development in hearing-impaired children were notable. Having a new group of tools available to assess hearing-impaired children during the very early stages following institution of amplification will allow for earlier identification of those children who may benefit from implantation or those that should continue with amplification alone. The afternoon sessions covered a wide range of topics including outcomes for speech perception, production, language, psychosocial as well as medical considerations and electric-acoustic stimulation. There were many notable presentations in these groups.

On Friday, auditory nerve assessment and disorders were discussed in detail by Fan-Gang Zeng, Gary Rance, and Craig Buchman. Both Zeng's and Rance's experience with amplification among children with auditory neuropathy/dys-synchrony (AN/AD) were impressive. Specifically, these investigators both showed that some children with AN/AD can definitely benefit from amplification. The findings by these investigators and others are in stark contrast to some commonly held beliefs that have existed within the field for years. Later in the morning, both Jennifer Weinstock and Carlton Zdanski and their co-workers from the University of North Carolina showed that while many children with AN/AD can benefit from cochlear implantation, some do not gain significant benefit from these devices. These presentations and others highlight the fact that AN/AD is a heterogeneous group of disorders with similar electrophysiological profile at presentation. Most importantly, these children need to be managed individually. It is hoped that future studies using novel imaging modalities such as fMRI or other electrophysiological measures will help clinicians determine better who can benefit from amplification or implantation. Other presentations in the morning on Friday also showed a variety of experiences in the diagnosis and management of children with AN/AD. The afternoon sessions on Friday covered issues such as surgical, fiscal, and program development as well as psychoacoustic and processing.

Finally, and a major theme of the conference was the various effects of bilateral stimulation of the auditory system among hearing-impaired children using either a full cochlear implant and a hearing aid, a partial cochlear implant and 2 hearing aids, or 2 cochlear implants alone. As the major advantages of binaural stimulation are improved hearing in noise as well as sound localization, many presentations reported on these outcome measures. Some general findings are that surgically, 2 implantations are safe. Moreover, hearing can be improved in children with any of the above-mentioned configurations and the degree of residual hearing abilities determines which configuration is probably best. Certainly the practical concerns regarding future

technologies and therapies have to be balanced against the medical risks and potential benefits. Ruth Litovsky pointed out that very young children can gain significant benefits with regard to sound localization using 2 implants rather than 1 but there appears to be a critical time window for the development of this binaural skill. Quentin Summerfield also pointed out a number of the issues regarding the medical economics of bilateral implants in the setting of the UK health system. Saturday morning concluded with a number of talks on outcomes in communication, implant reliability, habilitation, and plasticity.

All in all, the conference was very well-received. So much so that evaluations were overwhelmingly positive across all areas. Notably, the journal *Otology & Neurotology* has actively solicited the organizers to undertake publication of some of the highlighted talks of the meeting. The remaining NIH funds will go toward publication of these proceedings. As per an agreement with the journal, cost sharing between the journal and the organizers of the meeting will occur to make this publication possible. It is the plan of the organizers as well as the editors and board members of the journal to dedicate an entire issue to these proceedings. Invited submissions have been sent out to nearly 40 selected presenters from the meeting. The suggested submission length will be approximately 2000 words, with 25 references, 4 figures or fewer. These submissions are limited to new, unpublished works that will undergo the usual peer-review process by the editorial board of the journal. Thus, we expect a very high-quality publication to result.

In summary, the 11th International Conference on Cochlear Implants (CI) in Children was an enormous success. We have enclosed copies of the program for your review. We also plan to acknowledge the support of the NIH in the upcoming peer-reviewed proceedings publication later this year or early next year and we will forward a copy of this when it becomes available.

Thanks again for your support of this meeting. Should you have further inquiries, please don't hesitate to contact me at buchman@med.unc.edu or at 919-843-4820.

Warmest regards

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Enclosure