

Letter from the ENT Director



Most hearing professionals would recognize a hard of hearing patient by his or her “deaf accent”. It is almost uniformly present even in situations where the patient had been adequately managed through amplification since early childhood.

In English, it sounds like an unusual version of British accent. This issue is very important to the hearing impaired and does play a huge role in their ability to integrate socially. Somehow, Cochlear implants

seem to be changing that aspect of the patient’s life as well. There are also early indications that bilateral implants seem to have an added impact on this issue. It is truly amazing to see how the CI technology transformed the quality of life of the deaf population.

Dr. Muaz Tarabichi

ENT Director at the American Hospital Dubai

Fitting Hearing Aids Using ABR Measurements

Lubaina Sharafally, M.A. , CCC-A Clinical Audiologist

Any Early Hearing Detection and Intervention program is to identify permanent hearing loss in children by 3 months of age as per JCIH 2007.

Thus in the assessment of young infants hearing, ABR is a clinically feasible part of a comprehensive test battery that includes, immittance measures with a high freq probe tone and diagnostic otoacoustic emission testing.

The use of ABR also helps us to fulfill the second goal of EHDI program – to initiate intervention by 6 months of age. Intervention with personal amplification can proceed by using threshold estimates obtained from ABR procedure. However use of these threshold estimates for hearing aid fitting requires an understanding of the differences between behavioral and electrophysiological tests of hearing.

Frequency specific ABR thresholds (in decibel normal hearing level **db n HL**) are not directly equivalent of behavioral threshold (in decibel hearing level **HL**) measured using VRA techniques.

Depending on the frequency, patients with sensorineural hearing loss have been shown to have ABR threshold estimates that are 5 db to 30 dB higher than their VRA thresholds. (Stapells 2000a). Reasons for this disparity include differences in calibration procedures, the part of the auditory system where the response is elicited and the duration of signals being used such as pure tones for VRA and tone bursts for ABR (Bagatto, 2008). This disparity between behavioral and electrophysiologi-

cal thresholds should be accounted for, when using prescriptive fitting formulas for hearing aids, which uses behavioral thresholds.

It is important to apply appropriate correction factors and the resulting thresholds are often referred to as “**estimated hearing level**”(eHL) thresholds. These correction factors are based on studies of the relationship between frequency specific ABR thresholds and subsequent behavioral thresholds Stapells, 2000a. The correction values are frequency specific and are generally larger in the low frequencies than in the higher frequencies (Stapells, 2000b)

It is critical to ensure protocols are in place to ensure that testing parameters are closely tied to the values use to calibrate the ABR system so that appropriate correction values are applied once to prevent over or under amplification.

Marlene Bagatto, AuD, research audiologist in the Child Amplification Lab at the Univ of Western Ontario in London, Ontario. ASHA leader June 8,2010. Vol 15. No. 7

Stapells, D.R. (2000a) (2000b) Threshold estimation by the tone evoked auditory brainstem response: a literature meta-analysis. Journal of Speech –Lanugage Pathology and Audiology, 24,74-83



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Delivering better health in the Middle East

ENT Surgeons; the Gatekeepers to compliance to Aural re/habilitation programs in the Middle East



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Clinical Audiologist

The goal for any Cochlear Implant (CI) center is success for each patient walking through its doors. The only way to attain success is for each team member including the patient

and their family to know how to reach it.

The process seems fairly simple; to understand the stages of the CI evaluation and surgery, then to conform to the post implant training which includes MAPping sessions with the audiologist and aural habilitation or aural rehabilitation sessions with the speech pathologist. Yet, it has been my observation that with some patients, no matter how much the audiologist or speech pathologist tries to stress the importance of post surgery habilitation they or their parents (in cases of pediatric CI) do not seem to comprehend its importance unless it is stressed by the ENT surgeon himself.

I am now convinced that the ENT surgeons in the Middle East are the gatekeepers to patients' compliance to aural habilitation/rehabilitation programs and that unless they emphasize the importance of conformity to aural habilitation programs recipients will not reach their maximum potential and we consider "CI success".

It is important to emphasize to patients that although CIs dramatically augment the auditory information perceived by patients, it is really the intensive post implant training that plays a fundamental role in optimizing the post implant benefit. To call attention to this, we ask that our patients attend an orientation session and sign forms highlighting the importance of aural habilitation. What often occurs

is that after the initially hook up patients or their parents often miss follow up appointments. Parents see their children respond and improve so they cease to perceive the importance of continuity with the program and do not realize its association to enhanced performance.

They also do not anticipate that their child may regress if they do not continue with the therapy or that they may even cease to improve. Unfortunately, this comes from lack of awareness and reliance on medical professionals to make decisions on their behalf. On the other hand, this does not occur with the patients who are initially and regularly encouraged by the implant surgeon to attend therapy on a continuous basis. The patients who continue to visit him are the ones who are more likely to return to their audiologist and speech pathologist to complete the therapy.

The goal for all the children at our CI center is success. What constitutes "success" for us at the American Hospital Dubai differs from child to child in exactly the same way it would for normal hearing children. Not all children are the same and they will not all perform equally. We also have a definition for failure. This is a patient who chooses to no longer wear the implant despite its proper functioning. Maximal success on the other hand includes: open set speech recognition, achievement of age appropriate spoken language skills, and educational competence similar to hearing age peers. A large number of children receiving appropriate aural habilitation services perform somewhere between these two extremes and should be considered successful.



Literacy For Children Who Are Deaf And Hard Of Hearing



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Listening and speaking together provide a path to literacy for children who are deaf and hard of hearing. A publication by Lyn Robertson, Ph. D., *Literacy and Deafness: Listening and Spoken Language*,

Plural Publishing, San Diego, California, 2009, supports this view by providing an overall development model. Using approaches and anecdotes, theory and research are presented to support the premise that children with hearing loss who learn to listen and talk can achieve high literacy levels. The following aspects are included:

- All approaches to reading;
- Theory and meaning through reading;
- Practical aspects of reading acquisition;
- The anatomy of listening and how it relates to literacy;
- A description of amplification technologies available that meet requirements of the full speech spectrum in order for literacy development to occur;
- Modes of communication and how they impact literacy;
- Review of principles that form auditory-verbal therapy & education;

- Child development from birth to age 5;
- Relationship of reading to writing;
- Essentials for caregivers;
- Educational life and finding success;
- Application of principles of spoken language for non-native users of English;
- Enhancing the reading process and
- Alternative sources for education.

A conclusion related to the auditory verbal approach from Ling and Beebe, written several years ago, "completes the circle of connections between hearing and listening, listening and speaking, speaking and reading, and reading and writing" by substantiating the premise that "listening and spoken language provide a path to literacy".

Keenan, Susan K. Ed.D., Associate Professor Department of Liberal Studies, National Technical Institute for the Deaf, Rochester Institute of Technology, Literacy and Deafness: Listening and Spoken Language. In The Volta Review: Book Review, Volume 109, Number 1, Spring 2009, ISSN 0042-8639, (pp.47-49).

Cochlear Implants Associated With Improved Voice Control Over Time in Children Who Are Deaf



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Cochlear implants provide the perception of sound through the conversion of sound stimuli into electrical impulses, which are received by the cochlear nerve and processed by the central auditory

system. Although cochlear implants do not restore sound perception as experienced by an individual with normal hearing, the implant provides the user with auditory feedback in the domains of timing, intensity and frequency of sound. These auditory feedback cues may be critical for the user to monitor his or her speech production and to make purposeful moment-to-moment adjustments in voicing."

Theresa Holler, and colleagues at The Hospital for Sick Children, University of Toronto, assessed 27 children age 3 to 15 who had cochlear implants in both ears. Participating children were asked to voice the vowel "a" for three seconds at a comfortable pitch and volume. Three repetitions of this voice testing were averaged, analyzed digitally and compared with acoustic results of children who

had an implant in one ear and also with norms for hearing children. Consistent with children who had an implant in one ear, those who had implants in both ears demonstrated poorer control over the pitch and loudness of their voice than those with normal hearing. Long-term control of pitch improved as children used their hearing aids, and therefore were exposed to hearing, for more time.

"To our knowledge, this is the first study to objectively evaluate acoustic voice outcomes in children with bilateral cochlear implants and to report the influence of overall time in sound on acoustic parameters

," the authors write."

"Targeted speech therapies that assist children using cochlear implants in monitoring and modifying the pitch and loudness of their voice would be useful in this setting," they conclude. "Future work is planned to develop and evaluate therapeutic tools that will specifically address these areas in implant recipients, with the objective of minimizing or eliminating these voice abnormalities."

Dysphagia after organ-preservation treatments in head and neck cancer



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Recently, I have had two patients present in clinic with very similar complaints. Both men were diagnosed with nasopharyngeal carcinomas, one 8 years ago treated with radiation therapy (RT), the other 12 years ago treated with combined chemoradiation therapy (CRT). Both are free of tumour recurrence. Both men are young (52 & 53 years old respectively), and both are reporting gradual onset of dysphagia symptoms including difficulty swallowing solid foods, deglutitive cough, nasal regurgitation of food/fluids, and marked frequency and severity of respiratory infections. One man has also experienced severe weight loss and malnutrition requiring gastrostomy tube-feeding. Both report significant disability in health and quality of life associated with their dysphagia. Fluoroscopic swallowing evaluations have demonstrated severe motor and sensory pharyngeal stage swallowing disorders, including silent aspiration. Neither men received any speech or swallowing therapy before, during, or after their treatment.

Advances in oncological treatment for advanced head and neck cancer (HNC) have resulted in RT and CRT being offered as the curative treatment modality in certain cases. Whilst this has undoubtedly achieved improved tumour response and control rates, it has also been associated with a number of early and late side effects and functional impairments, including late-onset pharyngeal dysphagia and aspiration. The previously held belief that such organ-preservation treatments would preserve organ function has largely been disproven in both clinical practice and the research literature.

For HNC survivors, life-saving treatments that result in chronic swallowing disability not only impact health status but also reduce quality of life. Although radiation-induced fibrosis was originally assumed to be a slow, irreversible process, recent studies suggest

that this may not be the case. Swallowing exercises have emerged as a potential treatment strategy that may restore, reduce or in some cases prevent the functional impact of radiation-induced myopathy and neuropathy by maintaining neuromuscular and musculoskeletal function.

There is preliminary evidence that indicates a potential benefit of prophylactic swallowing exercises in reducing long-term swallowing dysfunction and improving quality of life for HNC survivors treated with RT and CRT (Kulbersh, 2006; Carroll, 2008; Logemann, 2008). However, the number of patients in these studies was relatively small and the trials were not randomized. As a result, current clinical practice is mixed, with some patients receiving pre-emptive swallowing exercise programs, some receiving post-treatment programs, whilst others receive no intervention at all.

A new randomized phase III clinical trial will shortly be underway at Wake Forest University, USA. The trial will investigate the effect of early vs late onset swallowing exercise therapy in treating HNC patients undergoing RT and CRT regimes. The outcomes of this research will be a significant step forward in informing future clinical practice and improving the quality of life of HNC survivors.

In the meantime, the key messages for practising clinicians are:

- 1) prophylactic swallowing exercises and early access to swallowing rehabilitation services are likely to be beneficial to HNC patients in reducing chronic swallowing disability and improving quality of life.
- 2) delayed-onset radiation-induced oropharyngeal dysphagia may present many years following RT and CRT treatments.
- 3) comprehensive dysphagia evaluation and management is paramount for this patient population.



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