How and Why To Keep Up With Published Peer-reviewed Literature

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Disclosures

• J. Larky: Envoy Medical Audiology Advisory Board, ACIA
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Literature Reviews

• We all have personal experiences and “gut feelings” which influence our clinical practice, but we must also follow best practices which are based on empirical data and ideally peer-reviewed articles

• Important to read articles which might influence and improve our clinical practice

• Evidence-based knowledge makes us better clinicians and allows us to contribute meaningfully to our teams

• On-line searches are easy, particularly with Google Alerts

• Presentation Goal - a clinical “How To..”
Why We Chose This

• Important but hard to keep up
• All clinics are busy
• What is manageable and realistic?
• A little goes a long way...
  • A little effort ---- a lot of information
Our Methods
Auditory verbal habilitation is associated with improved outcomes for children with cochlear implants.

L Percy-Smith, TL Tønning, JL Josvassen... - Cochlear implants ..., 2018 - 1

Objectives: To study the impact of (re)habilitation strategy on speech-language development for early, cochlear implanted children enrolled in different intervention programs. Methods: Data relate to a total of 130 children representing two pediatrics clinics. Results: Children who received intensive (re)habilitation had significantly better outcomes than those in the comparison group. Conclusion: Early intervention is crucial for improved outcomes in children with cochlear implants.

Discrimination of voice pitch and vocal-tract length in users


Objectives: When listening to two competing speakers, normal-hearing (NH) listeners take advantage of voice differences between the speakers. Users of cochlear implants have difficulty in perceiving speech on speech. Previous literature has indicated that cochlear implant users can improve discrimination of voice pitch and vocal-tract length in users.

Neural preservation underlies speech improvement from a young cochlear implant recipients

G. Feng, E.M. Ingvallson... - Proceedings of the ..., 2018 - National Acad Sci

Although cochlear implantation enables some children to attain age-appropriate language development, communicative delays persist in others, and outcomes are variable and difficult to predict, even for children implanted early in life. To understand the neural mechanisms underlying speech improvement, researchers have focused on the preservation of neural pathways.
Twitter – convenient way to stay up to date
Twitter – Access to updates and trends in research
Methods Continued

We targeted 5 broad areas
1. Candidacy (unilateral/bilateral) & SSD
2. (Super) Complex cases
3. Device Considerations
4. Parental Stress/Parental something, Quality of Life?
5. Aural Rehabilitation
Results

• Boy were we surprised! Not as many articles in areas we targeted
• Google alerts popped into email nearly every day
• Easy to scan through titles and see what is of interest
• We have easy access to all journals because we are at institutions that subscribe to nearly all journals, but don’t let that be a barrier if you are not.
  • Go to library
  • Request article from author (won’t they be flattered!)
  • Ask a friend who is at an institution
  • Read abstracts and conclusions
  • Check your professional memberships which may have access to journals
Ideas

- Find an author you like and follow them on social media
- Twitter - some people post articles by other people.
- Some journals are free with complete articles
  - Journal of Early Hearing Detection and Intervention (NCHAM, U of Utah)
- Read with the intention of influencing best practices in your clinic.
  - Descriptive, ideas, recommendations and suggestions
Article Review
Purposes: 1) Review experience with children who underwent revision CI with emphasis on soft failures
2) determine clinical signs and symptoms of soft failures vs. hard failures to improve time from onset of symptoms to revision
Design & Results

• Children < 18 years

• 26 Revision CI surgeries from 2000 to 2012
  
  • Pre-explantation diagnosis: 7 cases hard failure, 12 cases soft failure, and 7 cases medical failure
  
  • Post-explantation diagnosis: 7/12 devices from the soft-failure group had normal integrity test pre revision, and abnormal findings post revision – 63% false-negative rate for the integrity test

• Retrospective review of pre and post explantation data

• Clinical Assessment:
  
  • otologic evaluation of the patient and computed tomography
  
  • re-programming of the device
  
  • exchange of all external hardware
  
  • integrity testing by the manufacturer

• Working plan for cases of suspected cochlear implant failure
Results Continued

- The predominant symptoms and signs of hard and soft failures were:
  - decline in auditory awareness
  - slower rate of language acquisition
  - behavioral changes and restlessness
  - Pain
deterioration in voice quality
  - disconnections with intermittent function
  - frequent replacement of external parts

- Negative findings on an integrity test cannot rule out electronic malfunction
  - Integrity tests were observed to have a high false negative rate (63%)
  - soft-failure symptoms may precede a final diagnosis of hard failure by months or even years
Hispanic Parents’ Beliefs, Attitudes, and Perceptions Toward Pediatric Hearing Loss: A Comprehensive Literature Review

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Purposes:
1) to understand research findings about Hispanic parents’ beliefs, attitudes, and perceptions related to hearing loss after having children who are deaf or hard of hearing
2) to inform future research needs that could expand audiologists’ ability to provide patient-centered care with this population.

Category: Parental Stress/Parental something
Design & Results

• Literature review – 5 articles met inclusion criteria

• Results: Three primary themes emerged:
  1. deafness causality, parents tended to describe the cause of the hearing loss in terms of religion and folk beliefs
  2. cultural attitudes, parents reported having paternalistic views related to the care of their child and experiencing community stigma
  3. cultural values, parents described how personalism, familism, fatalism, and respect informed their perspectives.
Results Continued

• Specific suggestions are provided that may be helpful for audiologists when engaging families coming from a Hispanic background

• There are four values that are common within the Hispanic culture
  1. Ask families their thoughts on the cause of their children’s hearing loss
  2. Involve extended families and friends
  3. Provide emotional support:
  4. Provide Education opportunities

• Limited research on the beliefs, attitudes, and perceptions of Hispanic parents toward pediatric hearing loss

• A research need
Purposes: To evaluate a recent case report that suggested a possible relationship between cochlear implants and malignant glioma.
Design & Results

• Sound processor antenna creates a radio frequency-electromagnetic field transmitting the sound signal to the implant – similar to that in a mobile phone

• Population-based cohort study was performed examining all 2748 patient receiving a CI in Sweden during 1989-2014

• Expected occurrence of glioma, meningioma, acoustic neuroma calculated using specific national incidence rates in Swedish population

• Four patients diagnosed with brain tumor

• Number of brain tumors observed was well within the number expected from national incidence figures

• No support for concerns raised in previous case report regarding a potentially higher risk of glioma
Purposes: 1) To aid clinicians in deciding between traditional cochlear implantation vs. auditory brainstem implantation in CND 2) To determine if there are indicators from imaging or audiometric evaluations which could predict success with CI or ABI

Hearing Restoration in Cochlear Nerve Deficiency: the Choice Between Cochlear Implant or Auditory Brainstem Implant, a Meta-analysis

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Categories: 1) Candidacy, 2) Complex Cases, 3) Device Considerations
Design & Results

• Case Study
  • Bilateral cochlear implant (CI) recipient
  • CHARGE syndrome
  • Subsequent Auditory Brainstem Implant (ABI) recipient

• Quality-of-life (QoL) questionnaires

• Imaging

• Literature Review and subsequent meta-analysis
  • 13 studies, of aplastic or hypoplastic cochlear nerve on MRI
  • Outcomes categorized as: “open-set,” “closed-set,” or “sounds”
  • Preoperative (diagnostic) data included in the analysis: age at implantation, hearing thresholds, aided hearing thresholds, ABR thresholds, preoperative eABR responses, presence and size of the IAC and BCNC on CT, and presence and size of the cochlear nerve and CVN on MRI
Results Continued

• Widely varying CI outcomes in patients with CND
  • 27 attained “open-set”, 37 attained “closed-set, 44 attained sound detection only

• This study highlights the dilemma of cochlear implantation in patients with CND: which preoperative variables in patients with CND can indicate successful CI outcome.

• Patients with cochlear nerve aplasia on MRI had a smaller chance of attaining a good outcome of cochlear implantation than patients with cochlear nerve hypoplasia.

• The development of noninvasive diagnostic tools allowing investigation of the function of the auditory pathway, such as functional diffusion imaging techniques or functional MRI, would improve the identification of optimal therapeutic strategies. extra-cochlear ABR could be more accurate to diagnose CND than ABR because of effective electric stimulation of the auditory pathway.

• The disadvantage of the eABR during surgery with stimuli provided by the electrode is that cochlear implantation must be performed to perform eABR as the predictive (diagnostic) tool.
  • Negative eABR could be used as an indicator for ABI after cochlear implantation

• Authors recommended that when there is no success with this first CI, the treating team should consider proceeding to an ABI rather than attempt a second CI and risk further delay in auditory input.
The purpose of this study was to investigate parents’ experiences monitoring aided hearing for children who use hearing aids, bone conduction hearing aids, and cochlear implants.”

Category: Parental Stress/Parental something
Subject Recruitment  February to November 2017

• Parents of children 0 to six years who use hearing devices (i.e., hearing aids, bone conduction hearing aids, cochlear implants)

• Recruited through parent support websites and social media

• Completed surveys were received from 210 parents in 37 states and 8 countries. Thirty-two surveys were excluded

• Limitations: (1) majority of respondents were White mothers with a college education. (2) Self-reported responses which may reflect bias that overestimates hearing aid use and monitoring practices. (3) English proficiency required
Questions Asked

• Device use & Datalogging
• Hearing Device Monitoring - Confidence related to performing a speech sound check: “Parents of children who use CIs were more confident than parents of children who use HAs and BCHAs.”
• Parent education and support: “Parents want the professionals to be patient with them, trust them, and to listen to their thoughts and concerns. Parents also offered advice related to professionals’ practice”
• Consistent Audibility
• Research Implications
Other thoughts

• Appendices have feedback, ideas, comments which can be helpful to incorporate into your practice.

• Should we send out reminder cards?
  • “Have you done a listening check today?”
  • “Are the earmolds fitting well?”
  • “Have you changed the microphone covers?”
The Effect of Cochlear Implant Interval on Spoken Language Skills of Pediatric Bilateral Cochlear Implant Users

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Study Summary

• Objective: examine the effects of cochlear implant (CI) interval (time between CI surgeries) on receptive vocabulary and receptive language skills for children with bilateral CIs.”

• Study Design: Prospective

• Conclusions: Earlier age at CI (1) is critical for better receptive vocabulary and receptive language. Shorter CI intervals are not associated with better receptive vocabulary and receptive language skills for these 88 children, who nearly all used bimodal hearing during the interval. Use of a HA at the non-implanted ear, before receipt of a second CI (CI 2), may mitigate the effects of early bilateral auditory deprivation.