



LAURENT CLERC
NATIONAL DEAF EDUCATION CENTER

Early Intervention Network: Evidence Summary

Factor 4: Early fitting of amplification and ongoing monitoring of its effectiveness is integral to selecting communication strategies to facilitate language development.

- Blamey, P. J. (2003). Development of spoken language by deaf children. In M. Marschark & P. E. Spencer (Eds.), *Oxford handbook of deaf studies, language, and education* (pp. 232-246). New York: Oxford University Press.

This resource reviews a description of spoken language, measurements of spoken language, and the importance of hearing in speech perception, while identifying a critical period of language acquisition for those children using cochlear implants and hearing aids rather than sign language. Its results include that the presence of delays in spoken language can be resolved in part by early diagnosis and fittings of hearing aids or cochlear implants, though such technology may not completely restore normal language learning rates across all deaf and hard of hearing children; (results remain variable).

- Geers, A. E. (2006). Spoken language in children with cochlear implants. In P. E. Spencer & M. Marschark (Eds.), *Advances in the spoken language of deaf and hard-of-hearing children* (pp. 244-270). New York: Oxford University Press.

This book section details how access and use of cochlear implants over conventional hearing aids has contributed to the development of spoken language in profoundly deaf children across many educational settings and language approaches (e.g. total communication and oral). Deaf children, who utilized a cochlear implant before the age of three, have shown to have similar rates of language growth as their hearing peers. Questions remain as to how long growth is sustained, mentioning the need to assure the growth continues through adolescence.

- Geers, A. & Nicholas, J. (2013) Enduring advantages of early cochlear implantation for spoken language development. *Journal of Speech, Language, and Hearing Research*, 56, 643-653, American Speech-Language-Hearing Association.

A review of sixty children ages 4.5 and 10.5 years of age is provided. Results found that appropriate spoken language skills continued to be more likely with younger age of implantation, even after an average of 8.6 years of additional cochlear implant use. This suggests that early implantation leads to better spoken language outcomes, and suggests that these benefits to language development endure beyond the early language learning years. The length of use of cochlear implants was not as important a factor as the early age of implantation.

- Joint Committee on Infant Hearing. (2007). Year 2007 position statement: Principles and guidelines for early hearing detection and intervention programs. *American Academy of Pediatrics*, 120(4), 898-921.

This position paper reviewed the knowledge and current practice related to early hearing detection and intervention (EHDI). The article stressed the importance of early detection and assessment in language development and communication, calling for advanced research to better the assessment and technological assistive devices. The article states that the outcomes associated with the use of EHDI are variable, and suggest further research to identify the long-term outcomes of EHDIs.

- Joint Committee on Infant Hearing (JCIH). (April, 2013). Supplement to the JCIH 2007 Position Statement: Principles and guidelines for early intervention following confirmation that a child is deaf or hard of hearing. *PEDIATRICS*, 131(4). Available from: <http://pediatrics.aappublications.org/content/early/2013/03/18/peds.2013-0008.full.pdf+html>

This paper provides comprehensive practice guidelines for early hearing detection and intervention (EHDI) programs on establishing strong early intervention (EI) systems to meet the needs of children who are deaf or hard of hearing. It stresses the importance of prompt, individualized, targeted and high-quality intervention utilizing service providers with optimal knowledge and skill levels. The document provides 12 practice goals and other associated guidelines and benchmarks for EI systems and programs.

- Kral, A., & Sharma, A. (2012) Developmental neuroplasticity after cochlear implantation. *Trends in Neuroscience*, 35(2), 111-122.

This article reviews the neurodevelopmental “critical period” for the use of a cochlear implant. Results indicate that there is a critical period for the best outcomes (in relation to language production and oral language), with the best outcomes occurring before the age of 2. The critical period for best outcomes for cochlear implant is from 3.5-4 years old with the sensitive period ending between 6.5-7 years of age.

- Nicholas, J. G., & Geers, A. E. (2006). The process and early outcomes of cochlear implantation by three years of age. In P. E. Spencer & M. Marschark (Eds.), *Advances in the spoken language of deaf and hard-of-hearing children* (pp. 271-297). New York: Oxford University Press.

This resource discusses children who receive an implant at 2 years of age or younger appear to have an increased likelihood of more typical spoken language development than those implanted later. While the research suggests that age of implantation is highly influential in predicting outcomes for pre-lingually deaf children, it also discusses additional factors that influence spoken language outcomes, accounting for the great variability in the performance of children with cochlear implants regardless of age of implantation.

- Yoshinaga-Itano, C. (2006). Early identification, communication modality, and the development of speech and spoken language skills: Patterns and considerations. In P. Spencer & M. Marschark (Eds.), *Advances in the spoken language development of deaf and hard-of-hearing children* (pp. 298-327). New York: Oxford University Press.

This article reviews a study of children with hearing loss from the Colorado Home Intervention Program, and reviewed the correlation between speech production and level of early hearing loss (1994-2004). Children fitted with conventional hearing aids (with hearing loss in the middle to severe range) and who had early intervention, tended to develop intelligible speech by kindergarten. Children with less than eight consonants by 36 months of age, showed low probabilities of developing intelligible speech by 6 years of age, regardless of degree of hearing loss. Children in auditory stimulation programs were found to have the same outcomes as those with conventional amplification, who may not have been in those programs. Three different case studies are provided suggesting that having a visual language foundation facilitated later spoken language development.

The printing of this publication was supported by federal funding. This publication shall not imply approval or acceptance by the U.S. Department of Education of the findings, conclusions, or recommendations herein. Gallaudet University is an equal opportunity employer/educational institution, and does not discriminate on the basis of race, color, sex, national origin, religion, age, hearing status, disability, covered veteran status, marital status, personal appearance, sexual orientation, family responsibilities, matriculation, political affiliation, source of income, place of business or residence, pregnancy, childbirth, or any other unlawful basis.

Copyright © 2015 by Laurent Clerc National Deaf Education Center, Gallaudet University. All rights reserved.