

# Early evaluation and intervention critical for vaccinated children with hearing loss from meningitis

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Despite widespread use of pneumococcal vaccination, some children still develop deafness following pneumococcal meningitis, according to a report in the October issue of *Archives of Otolaryngology - Head & Neck Surgery*. Based on a small case series, early evaluation and simultaneous cochlear implantation in both ears may be a successful treatment strategy.

Since the 7-valent pneumococcal conjugate [vaccine](#) (PCV7) became widely used in the United States in 2001, cases of meningitis and other related diseases have dramatically declined, according to background information in the article. "However, pneumococcal meningitis continues to occur, even in healthy [children](#) who receive the recommended PCV7 vaccination series in early childhood," the authors write. "For this reason, it is important for cochlear implant programs to remain prepared to proceed with expeditious implantation in children recently deafened by meningitis."

Urgent evaluation is essential in these children, because their cochlea tend to ossify or harden into bone, making implantation difficult. Nancy M. Young, M.D., and Tina Q. Tan, M.D., both of Children's Memorial Hospital and Feinberg School of Medicine, Northwestern University, Chicago, review the cases of five children ranging in age from 15 months to 10 years. Despite vaccination, these children experienced sudden [hearing loss](#) in both ears between 2005 and 2007 following

illness with pneumococcal meningitis.

All the children underwent magnetic resonance imaging before surgery and four underwent auditory steady state response testing, which evaluates hearing loss in children too young for other tests. All successfully underwent cochlear implantation to restore hearing in both ears. The average time between meningitis diagnosis and implantation was 36.8 days.

"A number of studies have discussed auditory steady state response testing as an important tool in evaluating pediatric cochlear implant candidates. Our cochlear implant center has found this information to be helpful in counseling families regarding cochlear implant candidacy and in assisting the audiologist with more rapidly achieving optimal amplification, thereby shortening the hearing aid trial," the authors write.

Children and infants in the authors' clinic usually undergo a two- to three-month hearing aid trial, but in three of the post-meningitis cases, this protocol was not followed. "A more aggressive approach was used to optimize the likelihood of full electrode insertion in both ears in a population known to be at risk for progressive ossification," they write.

In addition, the use of MRI can provide helpful information about changes in the cochlea before the onset of bone formation, they conclude. "In light of the unpredictable nature of post-meningitic ossification, we recommend that cochlear implant surgeons consider bilateral simultaneous implantation to increase the likelihood of successful electrode array insertions, thereby preserving the potential for these children to achieve useful binaural hearing."

**More information:** Arch Otolaryngol. 2010;136[10]:993-998.

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