

AAO-HNS Fact Sheet:

Cochlear Implants and Meningitis Vaccination

What you should know

- Children with cochlear implants are more likely to get bacterial meningitis than children without cochlear implants. In addition, some children who are candidates for cochlear implants have inner ear anatomic abnormalities that may increase their risk for meningitis.
- Because children with cochlear implants are at increased risk for pneumococcal meningitis, the Centers for Disease Control (CDC) recommends that they receive pneumococcal vaccination on the same schedule that is recommended for other groups at increased risk for invasive pneumococcal disease. Recommendations for the timing and type of pneumococcal vaccination vary with age and vaccination history and should be discussed with a health care provider.
- The Centers for Disease Control and Prevention (CDC) has issued pneumococcal vaccination recommendations for individuals with cochlear implants. These recommendations can be viewed in detail on the CDC website:
(<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5909a2.htm>)
 - Children who have cochlear implants or are candidates for cochlear implants should receive PCV13. PCV13 is now recommended routinely for all infants and children (see Table 2 in the CDC March 12, 2010 MMWR issue located at the above website for the number of doses and dosing schedule).
 - Older children with cochlear implants (from age 2 years through age 5) should receive two doses of PCV13 if they have not received any doses of PCV7 or PCV13 previously. If they

have already completed the four-dose PCV7 series, they should receive one dose of PCV13 through age 71 months.

- Children 6 through 18 years of age with cochlear implants may receive a single dose of PCV13 regardless of whether they have previously received PCV7 or the pneumococcal polysaccharide vaccine (PPSV23) (Pneumovax®).
- In addition to receiving PCV13, children with cochlear implants should receive one dose of PPSV23 at age 2 years or older and after completing all recommended doses of PCV13.
- The Centers for Disease Control and Prevention (CDC) has issued pneumococcal vaccination recommendations for adults with cochlear implants. These recommendations can be viewed in detail on the CDC website:
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6140a4.htm>
 - Adult patients (≥ 19 yrs of age) who are candidates for a cochlear implant and those who have received a cochlear implant should be given a single dose of PCV13 followed by a PPSV23 at least 8 weeks later. **A second dose of PPSV23 is recommended for those 65 years of age and older.**
 - For those adults who previously have received ≥ 1 doses of PPSV23 should be given a PCV13 dose ≥ 1 year after the last PPSV23 dose was received. For those who require additional doses of PPSV23, the first such dose should be given no sooner than 8 weeks after PCV13 and at least 5 years after the most recent dose of PPSV23.
- For both children and adults, the vaccination schedule should be completed at two weeks or more before surgery.

Additional Facts

- According to the Food and Drug Administration (FDA), as of April 2009, approximately 188,000 people worldwide have received

cochlear implants. In the United States, roughly 41,500 adults and 25,500 children have received them. In the U.S., there are 122 known reports of meningitis in patients who have received cochlear implants with 64% of these cases having occurred in children.

- Meningitis is an infection of the fluid that surrounds the brain and spinal cord. There are two main types of meningitis, viral and bacterial. Bacterial meningitis is the more serious type and the type that has been reported in individuals with cochlear implants. The symptoms, treatment, and outcomes may differ depending on the cause of the meningitis.
- The vaccines available in the United States that protect against most bacteria that cause meningitis are:
 - 13-valent pneumococcal conjugate (PCV13) (Prennar 13®)
 - 23-valent pneumococcal polysaccharide (PPSV) (Pneumovax®)
 - *Haemophilus influenzae* type b conjugate (Hib)
 - Tetravalent (A, C, Y, W-135) meningococcal conjugate (Menactra® and Menveo®)
 - Tetravalent (A, C, Y, W-135) meningococcal polysaccharide (Menomune®)
- Meningitis in individuals with cochlear implants is most commonly caused by the bacterium *Streptococcus pneumoniae* (pneumococcus). Children with cochlear implants are more likely to get pneumococcal meningitis than children without cochlear implants.
- There is no evidence that children with cochlear implants are more likely to get meningococcal meningitis, caused by the bacterium *Neisseria meningitidis*, than children without cochlear implants. Health care providers should follow the CDC immunization guidelines for routine meningococcal vaccination.

- The *Haemophilus influenzae* type b (Hib) vaccine is not routinely recommended for those 5 years of age or older, since most older children and adults are already immune to Hib. Available information does not suggest that older children and adults with cochlear implants require the Hib vaccine. However, the Hib vaccine can be given to older children and adults who have never received it. Children less than age 5 should receive the Hib vaccine as a routine protection, according to the CDC guidelines for childhood immunizations. Most children born after 1990 have received the Hib vaccine as infants.
- Health care providers (family physicians, pediatricians, and otolaryngologists) and families should review the vaccination records of current and prospective cochlear implant recipients to ensure that all recommended vaccinations are up to date.