

([Hayes, Geers, Treiman, et al, 2009](#); [Lantos, 2012](#)). Children with sensorineural hearing loss have lost or damaged some or all of their hair cells or auditory nerve fibers. Often these children cannot benefit from conventional hearing aids because they only amplify sound that cannot be processed by a damaged inner ear. A cochlear implant bypasses the hair cells to directly stimulate surviving auditory nerve fibers so that they can send signals to the brain. These signals can be interpreted by the brain to produce sound and sensations ([Grindle, 2014](#); [Lantos, 2012](#)).

Multi-channelled implants are a sophisticated device that stimulates the auditory nerve at a number of locations with differently processed signals. This type of stimulation allows a person to use the pitch information present in speech signals, leading to better understanding of speech. The trend is toward early use of cochlear implants, usually by 12 months old, to give the child maximum opportunity to develop listening, language, and speaking skills.

## **Nursing Care Management**

Assessment of children for hearing impairment is a critical nursing responsibility. Identification of hearing loss before the first 3 months of age with intervention no later than 6 months old is essential to improve the language and educational development for children with hearing impairments ([Grindle, 2014](#); [Lammers, Jansen, Grolman, et al, 2015](#); [World Health Organization, 2012](#)). The Joint Committee on Infant Hearing issued guidelines on auditory screening of newborns and infants to detect early hearing loss and implement intervention programs ([American Academy of Pediatrics, Joint Committee on Infant Hearing, 2007](#); [Joint Committee on Infant Hearing of the American Academy of Pediatrics, Muse, Harrison, et al, 2013](#)). Auditory testing is presented in [Chapter 4](#).

At birth, the nurse can observe the neonate's response to auditory stimuli, as evidenced by the startle reflex, head turning, eye blinking, and cessation of body movement. The infant may vary in the intensity of the response, depending on the state of alertness. However, a consistent absence of a reaction should lead to suspicion of hearing loss. [Box 18-4](#) summarizes other clinical manifestations of hearing impairment in infants.