Hearing in Infants and Children

Identification of hearing loss and intervention within the first six months of life has been shown to prevent adverse outcomes and facilitate language development. Adverse outcomes associated with congenital and acquired hearing loss include speech and language delay, poor academic performance, personal-social maladjustment, and emotional difficulties. The Committee on Practice and Ambulatory Medicine, and the Section on Otolaryngology and Bronchoesophagology of the American Academy of Pediatrics published a clinical report on hearing assessment in infants and children to outline the risk indicators for hearing loss, provide guidance for assessing hearing loss, and encourage physicians to be knowledgeable about hearing referral resources in their communities. While newborn and infant hearing screening detects most cases of congenital hearing loss, some cases may not become evident until the child is older. Infants and children with high-risk indicators should be screened periodically for late-onset congenital hearing loss and acquired hearing loss. Any parental concern should be addressed by a formal hearing evaluation.

On physical examination, the following findings should alert the physician to investigate hearing loss: heterochromia of the irises; malformation of the auricle or ear canal; abnormal tympanic membrane; dimpling or skin tags around the auricle; cleft lip or palate; asymmetry or hypoplasia of the facial structures; microcephaly; and hypertelorism with abnormal pigmentation of the skin, hair, and eyes (Waardenburg syndrome). Children with repeated otitis media with effusion are at high risk of acquired hearing loss.

If an objective tool is required for testing, it should be age appropriate. Automated auditory brainstem response (ABR) is an electrophysiologic measurement of activity in auditory nerve and brainstem pathways measured by placing electrodes on the head to detect auditory stimuli from earphones in one ear at a time. It is a 15-minute test that can be done in all ages but is best performed while

the infant or child is asleep to avoid artifacts caused by motion. Evoked otoacoustic emissions (OAE) are a 10-minute test that measures cochlear response using a small probe with a sensitive microphone in the ear canal for stimulus delivery and response detection. It can be assessed in all ages whether the child is awake or asleep. ABR and OAE test the auditory pathways, but they are not true tests of hearing. Condition-oriented responses and visual reinforced audiometry are behavior tests for children age nine months and above that measure the child's responses to speech and frequency-specific stimuli presented through speakers. Unlike ABR and OAE, these tests are not ear-specific. Children between the ages of two and four years are generally tested with play audiometry. Children older than four years are tested with conventional audiometry.

Physicians should be aware of the risk factors for hearing loss and make appropriate arrangement for formal evaluation and referral to resources, such as otolaryngologists, audiologists, and speech pathologists.