Universal Screening for Hearing Loss in Newborns: Recommendation Statement


Summary of Recommendation
The U.S. Preventive Services Task Force (USPSTF) recommends screening for hearing loss in all newborn infants (Table 1). B recommendation.

TABLE 1.
Universal Screening for Hearing Loss in Newborns: Clinical Summary of the USPSTF Recommendation

<table>
<thead>
<tr>
<th>Population</th>
<th>All newborns</th>
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<tbody>
<tr>
<td>Recommendation</td>
<td>Screen for hearing loss in all newborn infants. Grade: B</td>
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<tr>
<td>Risk assessment</td>
<td>The prevalence of hearing loss in newborn infants with specific risk indicators is 10 to 20 times higher than in the general population of newborns. Risk indicators associated with permanent bilateral congenital hearing loss include:</td>
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<td></td>
<td>• Neonatal intensive care unit admission for two or more days</td>
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<td>• Family history of hereditary childhood sensorineural hearing loss</td>
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• Craniofacial abnormalities
• Certain congenital syndromes and infections

Approximately 50 percent of newborns with permanent bilateral congenital hearing loss do not have any known indicators.

Screening tests

Screening programs should be conducted using a one- or two-step validated protocol.

A frequently used two-step screening process involves otoacoustic emissions followed by auditory brain stem response in newborns who do not pass the first test.

Infants with positive screening test results should receive appropriate audiologic evaluation and follow-up after discharge.

Procedures for screening and follow-up should be in place for newborns delivered at home, birthing centers, or hospitals without hearing screening facilities.

Timing of screening

All infants should be screened for hearing loss before one month of age.

Infants who do not pass the newborn screening should undergo audiologic and medical evaluation before three months of age.

Treatment

Early intervention services for infants with hearing impairments should meet the individualized needs of the infant and family, including acquisition of communication competence, social skills, emotional well-being, and positive self-esteem.

Early intervention comprises evaluation for amplification sensory devices, surgical and medical evaluation, and communication assessment and therapy.

Cochlear implants are usually considered for children with severe-to-profound hearing loss only after inadequate response to hearing aids.

Other relevant recommendations from the USPSTF

Additional USPSTF recommendations regarding screening tests for newborns can be accessed at http://www.ahrq.gov/clinic/cps3dix.htm#pediatric.

NOTE: For the full USPSTF recommendation statement and supporting documents, visit
Rationale

Importance. Children with hearing loss have increased difficulties with verbal and nonverbal communication skills, increased behavioral problems, decreased psychosocial well-being, and lower educational attainment compared with children with normal hearing.

Detection. Because one half of children with hearing loss have no identifiable risk factors, universal screening (instead of targeted screening) has been proposed to detect children with permanent congenital hearing loss. There is good evidence that newborn hearing screening testing is highly accurate and leads to earlier identification and treatment of infants with hearing loss.

Benefits of detection and early treatment. Good-quality evidence shows that early detection improves language outcomes.

Harms of detection and early treatment. There is limited evidence about the harms of screening, with conflicting research findings regarding anxiety associated with false-positive test results. There is limited information about the harms of treatment. Complications of cochlear implant surgery include increased risk of meningitis; however, the overall risks of complications of screening and treatment are estimated to be small.

USPSTF assessment. The USPSTF concludes that there is moderate certainty that the net benefit of screening all newborn infants for hearing loss is moderate.

Clinical Considerations

1. Patient population. This recommendation applies to all newborn infants.

2. Assessment of risk. Risk factors associated with a higher incidence of permanent bilateral congenital hearing loss include neonatal intensive care unit admission for two or more days, several congenital syndromes, a family history of hereditary childhood sensorineural hearing loss, craniofacial abnormalities, and certain congenital infections. However, approximately 50 percent of infants with permanent bilateral congenital hearing loss do not have any known risk factors.

3. Screening tests. Screening programs should be conducted using a one- or two-step validated protocol. One frequently used protocol requires a two-step screening process, which includes otoacoustic
emissions followed by auditory brain stem response in those who do not pass the first test. Equipment should be well maintained; staff should be thoroughly trained; and quality control programs should be in place to reduce avoidable false-positive test results. Screening programs should develop protocols to ensure that infants with positive screening test results receive appropriate audiologic evaluation and follow-up after discharge. Newborns delivered at home, at birthing centers, or at hospitals without hearing screening facilities should have some mechanism for referral for newborn hearing screening, including tracking of follow-up.

4. Treatment. Early intervention services for infants with hearing impairment should be designed to meet the individualized needs of the infant and family, including acquisition of communication competence, social skills, emotional well-being, and positive self-esteem. Early intervention includes evaluation for amplification or sensory devices, surgical and medical evaluation, and communication assessment and therapy. In recent years, cochlear implants have become more available for appropriate candidates; this surgery is usually considered in children with severe-to-profound hearing loss only after inadequate response to hearing aids.

- Screening intervals. All infants should be screened for hearing loss before one month of age. Infants who do not pass the newborn screening should undergo audiologic and medical evaluation before three months of age for confirmatory testing. Because of the elevated risk of hearing loss in infants with risk indicators, an expert panel has recommended that these children undergo periodic monitoring for three years.1

This recommendation statement was first published in Pediatrics. 2008;122(1):143–148.

The “Other Considerations,” “Discussion,” and “Recommendations of Others” sections of this recommendation statement are available at http://www.ahrq.gov/clinic/uspstf08/newbornhear/newbhearrs.htm.

The U.S. Preventive Services Task Force Recommendations are independent of the U.S. government. They do not represent the views of the Agency for Healthcare Research and Quality, the U.S. Department of Health and Human Services, or the U.S. Public Health Service.

REFERENCE

in primary care clinical settings, including screening tests, counseling, and preventive medications.

A collection of USPSTF recommendation statements reprinted in *AFP* is available at http://www.aafp.org/afp/uspstf.

The complete version of this statement, including supporting scientific evidence, evidence tables, grading system, members of the USPSTF at the time this recommendation was finalized, and references, is available on the USPSTF Web site at http://www.ahrq.gov/clinic/uspstf/uspsnbhr.htm.

Putting Prevention into Practice

*An Evidence-Based Approach*

**Universal Screening for Hearing Loss in Newborns**

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**Case Study**

A 29-year-old patient gave birth to a healthy infant two days ago. You visit her and her newborn in the hospital where the first-time mother tells you that her baby is scheduled to have a hearing test in the newborn nursery. She asks you whether this is a routine test or whether she should be worried her baby has hearing loss.

**Case Study Questions**

5. Which of the following responses is/are appropriate to answer the patient's question about screening for hearing loss in newborns?
A. The U.S. Preventive Services Task Force (USPSTF) recommends screening for hearing loss in all newborn infants.

B. Screening is not necessary unless a risk factor assessment determines the infant is at high risk of hearing loss.

C. Newborns who are screened for hearing loss are more likely to receive earlier diagnosis and treatment than newborns who are not screened.

D. Risk factors for permanent bilateral congenital hearing loss include neonatal intensive care unit admission for two or more days and a family history of hereditary childhood sensorineural hearing loss.

6. Which one of the following describes the most common sequence of screening tests used to detect hearing loss in newborns?

A. Auditory brainstem response (ABR) is performed first, followed by otoacoustic emissions (OAEs) in all newborns.

B. OAEs are performed first, followed by ABR in all newborns.

C. ABR is performed first, followed by OAEs only in newborns who do not pass the ABR.

D. OAEs are performed first, followed by ABR only in newborns who do not pass the OAEs.

E. Both tests are performed in all newborns, and the order does not matter.

7. For infants who are diagnosed with congenital hearing loss, which one of the following statements about treatment interventions and outcomes is correct?

A. Cochlear implants are the most effective treatment for mild to moderate hearing loss.

B. Early detection of hearing loss in newborns has not been shown to affect language outcomes.

C. Early intervention should include evaluation for hearing aids, medical and surgical evaluation, and communication assessment and therapy.

D. The harms associated with the use of cochlear implants include a high risk of meningitis.
The overall risks of complications of treatment are estimated to be at least moderate.

**Answers**

1. **The correct answers are A, C, and D.** The USPSTF recommends screening for hearing loss in all newborn infants. The USPSTF found good evidence that screening newborns for hearing loss is highly accurate and leads to earlier identification and treatment of infants with hearing loss.

The USPSTF recommends universal screening of all newborns (as opposed to targeted screening of newborns who are considered to be at high risk) because 50 percent of children with permanent bilateral congenital hearing loss have no identifiable risk factors. Risk factors known to be associated with permanent congenital hearing loss include neonatal intensive care unit admission for two or more days; several congenital syndromes; family history of hereditary childhood sensorineural hearing loss; craniofacial abnormalities; and certain congenital infections.

2. **The correct answer is D.** The most common sequence of tests is a two-step screening process in which OAEs are performed first, followed by ABR in those newborns who do not pass the OAEs. Any newborn who has a positive screening test for hearing loss should receive further audiologic evaluation and follow-up after discharge. Confirmatory testing is necessary before a diagnosis of permanent bilateral congenital hearing loss can be made.

3. **The correct answer is C.** Early intervention for hearing loss should be designed to meet the individual needs of the infant and the family, including evaluation for hearing aids or other amplification or sensory devices, medical and surgical evaluation, and communication assessment and therapy.

Cochlear implants are deemed most appropriate for treatment of severe-to-profound hearing loss, and are considered only after inadequate response to hearing aids. Complications of cochlear implant surgery include increased risk of meningitis; however, the overall risks associated with cochlear implants are thought to be small.
SOURCES


The case study and answers to the following questions on universal screening for hearing loss in newborns are based on the recommendations of the U.S. Preventive Services Task Force (USPSTF), an independent panel of experts in primary care and prevention that systematically reviews the evidence of effectiveness and develops recommendations for clinical preventive services. More detailed information on this subject is available in the USPSTF Recommendation Statement and the evidence synthesis update on the USPSTF Web site ([http://www.ahrq.gov/clinic/uspsstf.htm](http://www.ahrq.gov/clinic/uspsstf.htm)). The practice recommendations in this activity are available at [http://www.ahrq.gov/clinic/uspsstf/uspsnbhr.htm](http://www.ahrq.gov/clinic/uspsstf/uspsnbhr.htm).

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