

Universal Newborn Hearing Screening

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Key facts

- ❖ Universal Newborn Hearing Screening (UNHS) now operates in all Australian states and territories
- ❖ Screening occurs in the first few days after birth
- ❖ UNHS has reduced the average age of confirmation of hearing loss from 24 months to 3 months
- ❖ The aim is for hearing aid fitting and enrolment in an early intervention program to occur by the age of 6 months

UNHS in Australia

Advances in hearing screening technologies over the last few decades have enabled congenital hearing loss to be detected in babies just a few hours after birth. UNHS was first introduced in certain states of the USA in the early 1990s. In Australia it began in NSW in 2002, and is now operating in all states and territories under a National Framework incorporating evidence-based standards of practice.¹

The target rate for hearing screening is 97% of neonates born in Australia. The targeted level of hearing loss to be captured by the screening is congenital permanent hearing loss of greater than 40 dB in the better ear. This includes bilateral and unilateral losses, and permanent conductive as well as sensory hearing loss. It also includes neural hearing loss (Auditory Neuropathy Dyssynchrony Disorders). The screening process is not intended to be diagnostic. Rather, screening aims to identify infants who are more likely to have hearing impairment, and therefore require further investigation from diagnostic tests.¹

The screening test

Generally, the screening test is conducted in hospital in the first few days following the birth. While evoked otoacoustic emission testing (OAE) has been used in some states, currently all states and territories use automated auditory brainstem response (AABR) screening. Both are non-invasive physiological tests that are relatively quick and easy to perform. However, AABR provides a superior evaluation of the auditory system and better detection of auditory neuropathy disorders, which are not likely to be picked up by OAE.

AABR involves the placement of small skin electrodes on the baby's head and soft earphones on the ears. A series of soft clicks are played and the auditory brainstem response in the form of electroencephalographic (EEG) waves is measured through the electrodes. The screening requires a still, sleeping infant. AABR testing generally takes between 15 and 20 minutes, and usually is performed by nurses who have undergone a short training program.

After the initial screening

The standards set for the National Framework for Neonatal Hearing Screening prescribe that all babies should be screened within 24 – 72 hours of birth. If no hearing loss is detected, the result is a pass, or negative. If hearing loss is detected, the result is positive, or ‘refer,’ and a second screening is performed within two weeks. If this screening is also positive, the family is referred for definitive audiological diagnosis and medical evaluation to take place within 2 months. Thus, the goal is for all children who fail two screens to have a definitive diagnosis by the age of 3 months (or 3 months corrected age for infants born prematurely).

Following this, families are provided with information and referrals to Australian Hearing and other intervention services, and should be engaged with an early intervention program by the time the infant is 6 months old.

In cases where screening has not happened in hospital because of home birth or early discharge from hospital, the goal is for infants to be followed up within one month. Babies who pass their newborn hearing screening but who have high risk factors, such as a family history of hearing loss, severe jaundice at birth, and certain syndromes, are reassessed at 9 – 12 months of age.¹

AABR testing has a high rate of detection of moderate to profound hearing loss, but does result in a small number of false negatives, with potentially 1 to 2 infants with hearing loss not identified in the UNHS program each year.¹ In addition, some forms of early onset deafness are not apparent at birth; for example, the onset of hearing loss in babies with cytomegalovirus (CMV) at birth may not be until some months after birth, and deafness due to many genetic syndromes can be progressive or of later onset. This suggests that newborn hearing screening should be supplemented by hearing screening at later stages of early childhood.²

Implications for outcomes

In Australia as in other countries, the adoption of widespread newborn hearing screening has reduced the average age at which permanent hearing loss is confirmed from around 24 months to around 3 months.²⁻⁴ Australian Hearing data indicate that the rate of infants fitted with hearing aids by the age of 6 months rose from 27% in 2003 to 73% in 2009, and for those fitted by the age of 12 months, from 45% in 2003 to 94% in 2009. This was largely due to the progressive rollout of newborn hearing screening around Australia over these years.⁵

Thus, the adoption of UNHS has brought enormous changes to the age of diagnosis, initial amplification, and early intervention for many Australian children who are deaf or hard of hearing. There is evidence that such early identification, when it is followed with early amplification and/or cochlear implantation and timely enrolment in an early intervention educational program, leads to better outcomes than those for later-identified children, although many other variables also influence outcomes.⁶⁻⁸

Implications for parents

While UNHS has brought benefits to deaf children through the opportunity for very early hearing aid fitting and educational intervention, it can present particular difficulties for

families. When hearing parents first receive the diagnosis of a significant hearing loss, they are generally distressed and uncertain about the implications of the diagnosis and the decisions they need to make for their child. With UNHS, the very young age at which diagnosis occurs can add further stress to families. Instead of circumstances in which parents have suspected something was wrong for some time, and have sought identification of problems they have observed in their child, parents are getting the answer to questions they have not yet asked. Being told their newborn has a 'fail' or 'refer' result can add a range of troubling emotions to an already potentially vulnerable time, so soon after childbirth. In the ensuing months, with the concerns and decisions that come with a diagnosis of deafness, parents may find it harder to enjoy their new baby. It is important that parents have access to support and counselling and that professionals are sensitive to these issues.^{9 10}

References

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