

AUSTRALIAN CONSENSUS STATEMENT

ON NEONATAL HEARING SCREENING, Adelaide, March 2001

This Consensus Statement was agreed upon at 'Neonatal Hearing Screening in Australia: a National Forum for Consensus and Implementation', held on 24 March 2001 at the Women's and Children's Hospital, Adelaide. There were over 110 participants from all states and territories of Australia, including audiologists, teachers of the hearing impaired, neonatologists, paediatricians, ear, nose and throat surgeons, nurses, epidemiologists, and parents of children with hearing impairment

The Forum notes that:

1. Permanent hearing impairment is a significant and relatively common condition in newborns, affecting between 1 and 3 per 1000 live births.^{1,2} We would expect approximately 500 births in Australia each year of children with significant hearing impairment¹⁰; this is of the order of 10 to 100 times more frequent than the metabolic conditions for which newborn screening occurs at present. Significant permanent hearing impairment, if undetected, will impede, and can have profound effects on speech, language, and cognitive development,³ and thus emotional and social well-being. Even unilateral losses can have significant educational impacts.¹⁸
2. Current international research indicates that babies whose permanent hearing impairment is diagnosed before the age of six months, and who receive appropriate and consistent early intervention, have significantly higher language levels than those children identified after the age of six months.^{4,5} Of children aged 5 years with permanent hearing impairment, it is estimated that 90% have had the impairment since the neonatal period.⁶
3. Acceptable technologies are now available, viz., measurement of otoacoustic emissions (OAE) and automated measurement of the auditory brainstem response (A-ABR), that enable effective screening of hearing impairment in newborns during natural sleep or quiet rest. Such technology has been used in screening programs since 1990.^{7,8}
 - Research studies of universal (i.e. non-targeted) screening programs using OAE and A-ABR show sensitivity (proportion of infants with abnormal hearing who fail the screen) close to 100%, and specificity (proportion of infants with normal hearing who pass the screen) above 90%.^{8,11}
 - Research studies using currently manufactured A-ABR equipment can achieve false-positive rates as low as 2%.¹²
4. The average age of diagnosis of hearing impairment in some centres which have implemented universal newborn hearing programs is reported to be as low as 3 months.^{8,9} The average age of diagnosis of hearing impairment in centres which screen only infants known to have pertinent risk factors is estimated at 24 months.⁹ Data from Australian Hearing indicate that the median age at detection of children with the most severe hearing impairment (>90dB) is between 12 and 18 months while the median age at detection of children with mild hearing loss (<40 dB) is around 7 years.
5. Estimates of the cost of hearing screening per child are of the order of \$25 to \$50, depending on the technology used, and how the program is delivered, and are consistent with experience in other countries.^{8,12,13} Testing in more remote areas may be more expensive. It is likely that the cost of a successful program will be offset within a few years by the consequent reduction in the cost of the higher teacher-student ratio and greater life-long support required for children whose hearing impairment is diagnosed late.¹²
6. Although there is variable access to full audiological assessment for infants, especially outside of metropolitan area, Australia already has excellent facilities for audiological rehabilitation. The fitting and monitoring of hearing aids, is financially accessible to all Australian children as a result of federal government subsidy.
7. Thus the WHO preconditions¹⁴ for the establishment of a screening program are fulfilled.

8. The American National Institutes of Health Consensus Statement, 1993,¹⁵ the European Consensus Statement, 1998,¹⁶ the American Academy of Pediatrics, 1999,³ and the US Joint Committee on Infant Hearing¹⁷ have all supported the introduction of screening. It is mandatory to offer neonatal screening in most states of the USA. A program to offer hearing screening to all neonates has begun in Western Australia and been extended to most birthing units in Perth.

The forum believes that:

1. Universal neonatal hearing screening is feasible, beneficial, and justified.
2. Principles of equity and efficiency demand the establishment of a high quality program of universal neonatal hearing screening in Australia as soon as possible
3. Prompt audiological assessment must be achieved for all neonates identified by hearing screening, and prompt intervention must follow for those in whom the impairment is confirmed.
4. To be effective, a neonatal hearing screening program
 - should be universal (i.e., include all neonates), since selective screening based on high-risk criteria fails to detect at least half of all infants with congenital hearing loss.^{9,12}
 - should achieve high coverage and follow-up rates, relative to the total number of births in the population..
 - must be comprehensive in its approach , i.e. it should include training and supervision of personnel, full and accessible information for parents at all stages of the program, quality assurance, the follow-up of identified children, systems for reporting and monitoring outcomes, and counselling for parents of children with hearing impairment.⁴
5. Models for the delivery of a neonatal hearing screening program need to be designed to take account of Australian patterns of population distribution and service delivery.
6. Effective universal neonatal hearing screening will not replace the need for vigilance and for continued surveillance of hearing behaviour and language development to detect hearing impairment in children who have not received neonatal screening or who develop permanent hearing loss at a later age.

The forum resolves that:

1. A program of universal neonatal hearing screening should be introduced across all states and territories in Australia in order to detect children with permanent hearing loss at the earliest possible age
2. The Australian federal government should work together with state and territory governments to establish a coordinated screening program.
3. A universal hearing screening program must be sufficiently resourced to enable high quality monitoring and evaluation.
4. A range of national strategies will be necessary to achieve effective and efficient universal neonatal hearing screening programs for all Australian children
5. Clear time lines should be specified for the planning and implementation of universal neonatal hearing screening across Australia.
6. Audiological assessment, diagnosis and habilitation at the earliest possible age, as well as parental support, should be achieved for all Australian children with permanent hearing impairment.

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