



MINISTRY OF HEALTH MALAYSIA



GUIDELINES FOR NEONATAL HEARING SCREENING

MEDICAL DEVELOPMENT DIVISION

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SURGICAL AND EMERGENCY MEDICINE SERVICES UNIT
MEDICAL SERVICES DEVELOPMENT SECTION
MEDICAL DEVELOPMENT DIVISION

GUIDELINES FOR NEONATAL HEARING SCREENING

This guideline was developed by the Surgical and Emergency Medical Services Unit, Medical Services Development Section of Medical Development Division, Ministry of Health and the Drafting Committee.

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FOREWORD BY DIRECTOR GENERAL OF HEALTH

Good hearing is essential for a child's overall development. Hearing loss is one of the most common birth defect. Approximately 3 out of 1,000 babies are born with significant hearing loss. If a child's hearing loss goes undetected at birth, it can result in delays in language and social development. Early intervention greatly improves the child's prognosis of achieving normal social, emotional and language development.

This book will guide health care professionals working towards attaining the highest professional standards in the field of neonatal newborn hearing screening. In addition they address the issues of the resources, trained and credentialed personnel and organizational structure needed to run the screening as a national program.

I am happy that all hospital with audiology services has implemented high risk neonatal hearing screening program successfully. In line with global standard of early detection and intervention of hearing impairment, the expansion towards universal neonatal hearing screening program is adopted. The Ministry of Health strongly supports the program and will provide adequate resources needed. Continuing effort, awareness of stake holders, policy makers, hospital administrators and all related professional is vital if program momentum is to be sustained. Therefore, the involvement at all level of care including primary health care providers, private hospitals and teaching institutions will be the impetus to the success of the program for the country.

Special gratitude to all parties who have directly or indirectly contributed to the successful publication of this guideline.

DATUK DR. NOOR HISHAM ABDULLAH

Director General of Health
Ministry of Health Malaysia

FOREWORD BY HEAD OF OTORHINOLARYNGOLOGY SERVICE

Hearing loss occurs often enough in general population to justify the need of hearing screening program across the country. Hearing impairment in Malaysian children constitutes particularly serious obstacle to their optimal development and education, including language acquisition.

Congenital and early childhood deafness may affect the auditory neuropathway of children at later developmental stage if appropriate and optimal interventions are not provided within the critical period of central auditory pathway development. Therefore early detection is vital important element in providing appropriate support for deaf and hearing impaired babies that will help them enjoy equal opportunities in society alongside other children.

It is equally important to build capacity, create the required infrastructure, services and support for individuals, family and care providers. Therefore the need of the comprehensive program well-orchestrated universal hearing screening program is mandatory. This is to ensure that the hearing impaired population do not fall behind.

Collaboration between professionals in MOH is instrumental to the success of the program. I would like to thank all our committee members for their time and expertise in the effort on producing this second edition which took place end of 2014 till early 2015.

Dato' Dr Abd Majid b Md Nasir

Datin Dr Siti Sabzah bt Mohd Hashim

Head of Service Otorhinolaryngology 2014

Head of Service Otorhinolaryngology 2015

FOREWORD BY HEAD OF AUDIOLOGY PROFESSION

Guidelines for Neonatal Hearing Screening is a standard practical guideline intended to be used for all health practitioners who are involved in neonatal hearing screening program in Ministry of Health Malaysia.

The first edition of the Guidelines of High Risk Neonatal Hearing Screening was published on 2009 with the collaboration of all professional involved such as Audiologist, Otorhinolaryngologist, Pediatrician, Obstetrician, Speech Therapist and Nurses. This guideline provides a unified standard of practice for newborn hearing screening program especially for the target group of high risk newborn.

It is timely to update the current guideline due to the advancement and the availability of the technology, the wider accessibility to the Audiology services and the increasing awareness of the importance of universal newborn hearing screening amongst our health care providers.

I would like to thank the committee on their efforts and painstaking task undertaken to come out with this edition. May we strive together towards early hearing detection and intervention for infants in Malaysia.

Thank you

NUR AZYANI BT AMRI

Head of Audiology Profession,

Ministry of Health Malaysia

LIST OF ABBREVIATION

AABR	Automated Auditory Brainstem Response
ABR	Auditory Brainstem Response
B/O	Baby of
CI	Cochlea Implant
CMV	Cytomegalovirus
dBnHL	Decibel normal Hearing Level
DOB	Date of birth
DPOAE	Distortion Product Otoacoustic Emission
HRNHS	High Risk Newborn Hearing Screening
JCIH	Joint Committee on Infant Hearing
KPI	Key Performance Indicator
MOH	Ministry of Health
NICU	Neonatal Intensive Care Unit
NHS	Neonatal Hearing Screening
OAE	Otoacoustic Emission
ORL	Otorhinolaryngology
SCN	Special Care Nursery
TEOAE	Transient Evoked Otoacoustic Emission
UNHS	Universal Neonatal Hearing Screening
WHO	World Health Organisation

1. INTRODUCTION

Hearing loss is one of the most common major abnormalities that presents at birth and if undetected, will impair speech, language and cognitive development (Kemper & Downs, 2000; Cunningham & Cox, 2003). In 2009, WHO reported that around 0.5 to 5 in every 1000 neonates and infants have congenital hearing loss.

The critical period for language and speech development is generally within the first 3 years of life. Children who are identified with hearing loss between birth and 6 months of age and received immediate interventions have significantly higher cognitive, language and social development (Yoshinaga-Itano, 1995). Therefore, a neonatal hearing screening is the best mean to minimize the adverse effects of hearing loss.

Universal neonatal hearing screening (UNHS) program is the current standard of practice in developed countries to detect hearing loss among children at the very early age. The purpose of UNHS is to detect hearing loss in newborn babies before 3 months of age and to provide appropriate intervention at no later than 6 months of age (Joint Committee on Infant Hearing, 1994).

The high risk neonatal hearing screening program (HRNHS) has been introduced in the Ministry of Health (MOH) hospitals since 2001. To date, 28 hospitals have implemented HRNHS and 6 hospitals have progressed to UNHS program. It is estimated that more hospitals will follow suit in the near future.

This Guideline is intended to provide a standard protocol of neonatal hearing screening program in MOH hospitals. However, it is important to allow for adaptation of this Guideline into the local policy of individual institution based on the availability of local resources and technology.

2. DESCRIPTIONS

Automated Auditory Brainstem Response (AABR)

An automated test of hearing, and evaluate the nervous system response to sound

Hearing Screening

An objective screening method performed to identify infants who may have hearing loss and who need follow up or more in depth testing.

Hearing Screening Database

An information management system which is used to record hearing screening data.

Hearing screening personnel

Any paramedic or nursing personnel, who had undergone a proper training in neonatal hearing screening program. The personnel should be knowledgeable about neonatal hearing screening protocol and technique.

High Risk Neonatal Hearing Screening (HRNHS)

A hearing screening performed on neonates who are born with high risk factors associated with congenital or acquired hearing loss.

High Risk Hearing Register

A list of factors that place a neonate or an infant at risk for hearing loss. (See Appendix 1).

Neonate

A baby from birth to four weeks of age.

One stage hearing screening

Involves only one method of hearing screening at any time; either OAE or AABR.

Otoacoustic Emission (OAE)

Automated hearing test which measure sounds emitted by normal, healthy inner ear. There are two types of OAE technologies: Transient Evoked Otoacoustic Emissions (TEOAE) and Distortion Product Otoacoustic Emissions (DPOAE).

Two stage screening

Involves two different method of hearing screening at any time of the screening program.

Universal Neonatal Hearing Screening (UNHS)

Hearing screening offered to all babies delivered in MOH hospital with UNHS program

3. OBJECTIVES OF THE NEONATAL HEARING SCREENING PROGRAM

- To screen babies by 1 month of age
- To diagnose any hearing loss by 3 months of age.
- To provide appropriate intervention by 6 months of age.
- To facilitate early cochlear implantation in children.

4. ROLES AND RESPONSIBILITIES OF PROFESSIONALS

The NHS program involves a multi-disciplinary team of professionals. All team members must work together to ensure the success of the program. The roles and responsibilities of each team member should be well defined. The team members are:

- State Health Director
- Hospital Director
- Otorhinolaryngologist
- Pediatrician
- Obstetrician
- Family Medicine Specialist
- Audiologist
- Speech Therapist
- State and Hospital Matron
- Screening personnel / Paramedic
- Medical Social Officer

4.1 State Health Director

4.1.1 As a state advisor

4.1.2 To delegate and provide support in terms of resources

4.1.3 To implement and monitor the NHS program in hospitals and Health Clinicss

4.2 Hospital Director

4.2.1 An Advisor to the NHS program

4.2.2 To provide support in terms of:

❖ Manpower

- Screening Personnel (Staff Nurse, Assistant Medical Officer, Technician, certified health personnel)
- Audiologists
- Speech Language Therapist
- Health Care Assistant (*Pembantu Perawatan Kesehatan*)

❖ Materials

- Health education (e.g. brochures, pamphlets, posters, electronic Information about hearing screening and hearing development)
- Database for NHS program

❖ Equipment & consumables

❖ Space for hearing screening

4.3 Otorhinolaryngologist

- 4.3.1 To coordinate and collaborate with other clinical disciplines in terms of comprehensive patient management.
- 4.3.2 To determine the etiology of hearing loss, identifying related risk indicators for hearing loss, including syndromes that involve the head and neck, and evaluating and treating ear diseases.
- 4.3.3 To determine the appropriate choice of medical and/or surgical intervention.
- 4.3.4 To involve in the long-term monitoring and follow-up.
- 4.3.5 To provide information and participate in the assessment of candidacy for amplification, assistive listening devices, and surgical intervention

4.4 Paediatrician

- 4.4.1 To identify babies who are at high risk of hearing loss
- 4.4.2 To monitor the hearing and speech development of the baby at risk.
- 4.4.3 To ensure and support the continuum of audiological assessment and care.
- 4.4.4 To initiate referrals for further evaluation necessary to determine the presence and etiology of the hearing loss.
- 4.4.5 To determine any other associated medical conditions.
- 4.4.6 To ensure all newborns are screened prior to discharge.

4.5 Family Medicine Specialist / Primary Healthcare Personnel

- 4.5.1 To review medical and family history during antenatal visits for babies with risk indicators that requires referral for hearing screening.
- 4.5.2 To include hearing loss awareness in the maternal child health program.
- 4.5.3 To monitor the general health, development, and well-being of the infant.
- 4.5.4 To ensure and support the continuity of audiological assessment and care.
- 4.5.5 To initiate referrals for further evaluation necessary to determine the presence and aetiology of the hearing loss.

- 4.5.6 To monitor hearing and speech development of children at 6, 12, and 18 months of age.