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UNIVERSAL NEW-BORN HEARING SCREENING PROGRAMME

New born hearing screening (NBHS) programme is not only testing the hearing of infants or young children but also includes those services of follow-up and intervention of those who are not pass during screening test. The main aim is early identification of hard-of-hearing and / or deafness in young children. It is a well-established fact that if children are not exposed to sounds and language during their initial years of life, they will have problem in developing speech and language as well as in cognitive development and hence social skills could also be affected.

American Academy of Pediatrics (AAP) in 1999 advocated universal new-born hearing screening programme (UNHSP) and early intervention which is being practiced in most of the developed countries. New born hearing screening proposed by Joint Committee on Infant Hearing (JCIH) and early hearing detection and intervention (EHDI) are commonly employed in most of the countries around the world with minor variation to best suit the infrastructure and the resources at hand. It has been proven that, with use of early identification through new born hearing screening, the diagnosis can be made early and also age appropriate rehabilitation with amplification can be initiated early so that the age appropriate development can be obtained.

Congenital hearing loss is one of the important health issue in pediatric population which may remain unnoticed until the child reaches a certain age because of lack of UNHSP in most of the developing country. In context of Nepal, only few institutes have protocol to do hearing screening test limited only for high risk neonates. Dhulikhel hospital is the first tertiary center in Nepal to start the UNHS, dated from February 2017. The hospital had covered 92.6% of all deliveries. TU Teaching hospital has recently started UNHSP.

UNHS can be performed using otoacoustic emission (OAE) and / or automated auditory brain stem response (AABR). The sensitivity and specificity of OAE and AABR were mentioned in various literatures. The systematic review by Saeed H et al has shown sensitivity and specificity of the OAE 77% and 93% respectively, and for AABR they were 93% and 97% respectively.

Some institutes follow OAE screening protocol in which all the children receive an initial OAE screening on both ears. Those who will not pass the first OAE on one or both ears and will need a second OAE screening within 2 weeks. Those who will not pass the second OAE screening and will be referred to a health care provider for a middle ear evaluation and may need third screening. If the third screening also shows "refer", then child will be referred for the gold standard audiological test.

Dhulikhel hospital is using the Automated Auditory Brainstem Response (AABR) as a tool for UNHS. According to AABR test, if a response is detected and verified at 35 dBnHL, the test result is "pass." The machine indicates a "refer" when there is no response at 35 dBnHL at all frequencies. Parents of babies who do not pass (refer) screening test are counselled and asked to return after 6 weeks for second screening during their visit for immunization. These babies will go for a second testing in a quiet room. Those who pass on the

second screening are not followed unless they have any hearing issues in future. Those who do not pass on second AABR will be referred to audiologist for diagnostic ABR.

TU teaching Hospital conducts UNHS using OAE and if necessary AABR. The initial screening is performed at the time of BCG vaccination within 24 hours of the delivery. Both ears will be screened individually with OAE. The results of OAE will be assessed as Pass or Refer. If the infant does not pass the initial screening, they will be appointed for rescreening at the time of next vaccination (6 weeks of age). If the infant does not pass the re-screening or if results from OAE cannot be obtained in one or both ears, child will be assessed with automated ABR. Those who do not pass on AABR will be referred to audiologist for diagnostic ABR and ENT surgeon for appropriate solution.

Different studies have shown that at least one in 1000 newborns are affected by hearing impairment. It might be even more in developing country like Nepal. Therefore, UNHSP has to be implemented by ministry of health in its policy to accommodate more neonates.

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