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# Neonatal Hearing Screening

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## Abstract

Around the world 10 million people have some type or degree of auditory problem, of them, between 200,000 and 400,000 have total deafness. Estimating that a large population presents this problem from birth (61%), with an incidence of 1 to 3 of every 1000 newborns. For this reason, early implementation through the neonatal auditory sieve allows timely detection to respond early to the hearing impairment of the newborn, as the ideal age to carry out rehabilitation with the help of an auditory auxiliary and initiate Language therapy is at six months of age. Most of the international guides for the integral attention to persons with auditory disability it indicates that all newborns should be screened Auditory before his hospital discharge. The prevalence of auditory disturbances in our environment is 0.3%, a proportion that places us above national and global statistics, so it is very important to screen all newborns including those who do not have Apparent risk factors in order to establish the appropriate diagnosis, the necessary treatment and thus avoid delays in neurodevelopment.

**Keywords:** hearing defects, hearing loss, neonatal screening, OTOAC Sticas Emissions

## 1. Introduction

Hearing loss is the most common neurosensory alteration in the human being, due to the loss or alteration of the anatomical and/or physiological function of the auditory system [1]. It is estimated that worldwide 1 out of every 1000 children is born with bilateral hearing loss. To the deep and 5 out of every 1000 with other forms of deafness. In 2012, “WORLD HEALTH ORGANIZATION” estimated that 5.3% of the world’s population had hearing loss, with prevalence in South Asia, Sub-Saharan Africa and Asia Pacific region. In Latin America, the prevalence of 1.6% and specifically in Mexico is estimated that around 10 million people have some type or degree of auditory problem, of which between 200 000 and 400 000 present total deafness. In addition, each year are born between 2000 and 6000 Children with congenital deafness. These numbers show that hearing disorders are an important public health problem around the World [2]. This problem was considered in the National Development plan and in the health Sectoral program 2007–2012, for which the SSA designed the neonatal auditory sieve early intervention program, backed by the standard: NOM-173-SSA1–1998, for comprehensive care for hearing impaired persons [2]. This same recommendation has been Issued by the National Institutes of Health in the USA, in agreement with the American Academy of Pediatrics [3]. The previous

documents establish to make the sieve to all the newborns regardless of their state of health before the discharge hospital, if However most of the countries only reports of children with risk factors, with few compared to healthy children. With the neonatal auditory sieve is intended the timely detection of the hearing impairment of the newborn, its objective is to attend In advance these deficiencies in the neonate, since the ideal age to carry out the rehabilitation with the help of an auditory auxiliary and to initiate the therapy of the language, is at the age of six months, since at this age begins the development of the language. Any reduction in hearing can cause communication disturbances that affect the motor, affective and intellectual development of the individual [3]. Neonatal auditory sieve has several advantages over other methods for detecting no time. Auditory sieve, is 60% less expensive study compared to the neonatal metabolic sieve, faster (lasts about two minutes), immediate response, is not painful and can be repeated as many times as necessary to confirm the outcome [4]. In auditory screening studies a prevalence of permanent congenital hearing loss of 112 by 100,000 infants has been found, with a higher proportion in those who have risk factors (62 by 100,000) than in those who do not have them (54 per 100,000) [5]. There are many different equipment in the market, the most common used in our country is the Portable Interacoustics® OtoRead™ For Sieve Addictive. Provided of a Probe Of 30 Cm o 100 cm, soft latex olives of different calibers. Otoacoustic emissions of distortion products were performed at frequencies 2–5 KHz in four bands with intense. From 40 to 70 db [6]. This is a test that consists in collecting the response of the external hair cells by a receiver placed in the ear canal (CAE), after the sound stimulation by a click, emitted by a microphone in CAE, this technique simple and fast, reproducible, objective, innocuous and reliable: sensitivity: 80–100% and specificity: 90%. It was carried out as recommended by the Commission for the early detection of hearing loss in Spain (COPEDEH).

Phase 1: At birth or before discharge hospital, criterion of the step is the obtaining of the Wave V with PPATC to 40 db or the emission of emissions otoacoustic auditory bilateral.

Phase 2: Newborns who do not exceed this phase are re-explored between the first week and the month of age.

Phase 3: Newborns who do not exceed the second phase are assessed by the audiology service for definitive diagnosis and treatment.

Peripheral hearing is the starting point for structuring expressive language. It is the basis for the comprehension, decoding and central auditory perception to be achieved after reception. These two great phenomena, peripheral sensation and cortical perception, allow the development of the oral language, characteristic and specific quality of the human [7, 8]. The sensations with which the afferent processes begin in the organ of Corti and the babbling with which the first manifesto begins efferent linguistics, are functions that are closely linked to the evolution of Abstract thinking [9]. When hearing does not exist, decreases or is lost, one, several or all psychoacoustic levels are rendered inoperative [10]. We need to be aware that there is a possibility to know if the hearing conditions of newborns are deficit from the first hours after childbirth, which is why it is imperative to act in the stages in which the unstructured as cortical are maturing and can be modeled, as the base as the basis for defining the future of more than 4000 to 6000 babies born deaf or deep hearing problems every year in most of the third world countries [11].

The audiology has its fields of action delimited with great precision, and although many of them correlate with other disciplines, it is the secondary prevention where we can focus the position of our document on the transcendence of sieve Neonatal auditory sieve [12]. The issue that concerns us, the deep hearing loss or total deafness, in many cases with primary prevention measures, it is possible to avoid the damage to the structures of the auditory system and the concomitant

Sensoperceptiva dysfunction [13]. In a percentage these measures cannot be applied, so it is essential to act in the field of secondary prevention to identify a possible problem from the time after birth, so that, continuing with the Diagnosis of certainty and early intervention, the auditory canal is enabled and the cerebral plasticity that will produce the most precious fruit of the audition, which is the language [14], is harnessed. The literature indicates that 0.1% of children are born with some type of congenital deafness [15], according to the results, the prevalence of problems Auditory in healthy newborns of our hospital was 0.3%, i.e. 3 times higher than the reported in the literature (3% reported) [16, 17].

The importance of conducting auditory screening at birth is in the timely detection, establishing early rehabilitation, lowering the cost of care for the institution and the health system in general [18, 19] in a systematic review on the prevalence of alterations in neurodevelopment in Mexico, it was identified that reports on the frequency of hearing loss, passed with methodological differences that do not allow the generalization of their results. In addition, The reports in our country are very scarce with high variability of auditory disturbances through auditory screening. However, it should be noted the findings of two studies conducted, one in low-risk population and one with high risk for Auditory problems. In the first group was observed prevalence of 0.65 for every 1000 live births, the second study estimated 2.6% of 6000 children who merited care in a neonatal intensive care unit [20, 21].

In the United States and European countries has prevalence at 5 years of age of 0.5% with estimated people of 800,000, compared to 2.6 million patients in Latin America, the big difference could be given by the prevention and identification of these alterations in Early stages of life. Unattended cases of hearing loss represent an annual global cost of 750 billion. Interventions aimed at preventing, detecting and treating hearing loss are not expensive and may result Very beneficial to the stakeholders. The greatest importance of timely detection is based in the times and degrees in the what the plasticity cerebral and the potential for linguistic development decreases in relation to the age of intervention [22]. The more time it takes for the proper intervention to begin, the more difficult it is for a good development of the oral language to be achieved, which is the basis for the integral development of the individual, which of course includes the mechanisms of written linguistic communication, with the acquisition of reading and writing as starting points of cognitive and cultural development. The critical period for that the intervention is successful is to the 18 months old. Then the potential and plasticity of the brain for the development of the language, until reaching the point where the late intervention becomes almost useless [23, 24], quickly decreases.

The benefits of early detection of various medical conditions have long been found; Such is the case of auditory alterations in newborns, an entity that by its very nature is not evident until it is presented retro in neurodevelopment, mainly speech. Unfortunately the ideal age to perform rehabilitation with the help of an auditory assistant and language therapy is at six months of age. Contreras and col. (2018) determined that the prevalence of congenital deafness in children without apparent (healthy) risk factors, was three times greater than that reported in the world literature, coupled with this, it is likely that in preterm infants or with various morbidities the prevalence will increase. (23) Therefore, It is essential to educate health providers at all levels of care for the newborn, and the high relevance of hearing screening with an early detection of hearing loss, as well as send it in a timely manner and To receive multidisciplinary management involving specialist in language, audiology, rehabilitation, otolaryngology, neonatology and psychology in order to promote the increase in the quality of life of these patients, increase the Possi to integrate in a successful and productive way in the society, reduce the costs of care and the socioeconomic cost that causes the country to maintain a problem like the Deafness.

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