Editorial

Journal of Otorhinolaryngology and Facial Plastic Surgery

https://doi.org/10.22037/orlfps.v11i1.52447

Newborns Matters: The Case for Universal Screening, Timely Intervention, and Sustainable Care in Iran

Bijan Naghibzadeh[1]

1. Hearing Disorders Research Center, Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Conflicts of Interest: The Authors declare no conflicts of interest.

Please cite this article as: Naghibzadeh, B. Newborns Matters: The Case for Universal Screening, Timely Intervention, and Sustainable Care in Iran. J Otorhinolaryngol Facial Plast Surg 2025;11(1):1-3. https://doi.org/10.22037/orlfps.v11i1.52447

Congenital hearing loss is a major, often underrecognized global public health challenge (1) Its significance stems from the fact that it is among the few pediatric disabilities for which early identification and intervention can profoundly alter developmental outcomes (2). Without detection in the neonatal period, its consequences extend beyond auditory impairment to affect speech, language, cognition, education, social participation, family well-being, and lifetime productivity (2). In Iran, newborn hearing screening programs have expanded substantially in recent years. A national analysis reported that in 2022, 1,006,293 of 1,106,072 newborns underwent hearing screening, corresponding to a coverage rate of 90.97%. The study also estimated a mean prevalence of congenital hearing loss of 3.3 per 1,000 births and showed that a two-step screening strategy using otoacoustic emissions followed by automated auditory brainstem response is the most cost-effective approach, with an incremental cost-effectiveness ratio of 3297.2 US PPP per quality-adjusted life year (3). These findings are encouraging, indicating that large‑scale newborn hearing screening is both feasible and economically justifiable within the Iranian health system. Nevertheless, screening represents only the initial component of a comprehensive care pathway. Effective early hearing detection and intervention programs must ensure timely diagnostic confirmation, appropriate amplification, early rehabilitative services, and, when indicated, cochlear implantation to achieve optimal developmental outcomes.

The burden of congenital hearing loss is immediate and accumulates over time. In infancy and early childhood, untreated bilateral hearing loss disrupts spoken language acquisition during the critical window of neuroplasticity. Affected children often experience delayed vocalizations, impaired receptive language, and suboptimal speech intelligibility, which undermine overall communication competence. These early neurodevelopmental deficits frequently translate into long-term challenges in literacy, academic achievement, and socio-economic integration (4). From a cognitive standpoint, delayed auditory access can interfere with efficient language processing, working memory, and executive function, particularly when diagnosis and rehabilitation occur after the first year of life (5). Socially and psychologically, children may experience frustration, withdrawal, reduced peer interaction, and lower self-esteem. Families also bear a significant emotional burden, often facing uncertainty, repeated medical visits, communication strain, and long-term caregiving stress (6).

The economic consequences are equally profound. Hearing loss entails substantial direct medical costs, encompassing longitudinal audiologic assessments, hearing technology (hearing aids and cochlear implants), surgical interventions, and intensive rehabilitation. However, the indirect economic burden often outweighs direct costs,

driven by productivity losses among caregivers, specialized educational requirements, and diminished lifetime earning capacity for the affected individual. Consequently, early detection transcends clinical necessity; it represents a pivotal societal investment with high economic returns (7). Universal newborn hearing screening has therefore become the cornerstone of modern early hearing detection and intervention programs. International guidance from the Joint Committee on Infant Hearing (JCIH) continues to support the well-established **1-3-6 benchmark**: screening completed by **1 month**, diagnosis by **3 months**, and intervention initiated by **6 months**. JCIH further recommends that programs with high performance should aspire to an even faster **1-2-3 timeline** (8). Importantly, the JCIH 2019 statement also emphasizes early amplification options, including hearing aids and cochlear implants, and notes the need to consider lowering the age for cochlear implantation below 12 months in appropriate candidates (8).

The value of screening is not limited to earlier diagnosis; it can also accelerate definitive intervention. Recent evidence (2024) underscores that while newborn hearing screening (NHS) has significantly expedited the referral process to cochlear implant committees, bottlenecks within the surgical pathway persist. Even for infants identified early, intra-institutional delays remain a critical barrier, potentially deferring definitive intervention beyond the optimal neurodevelopmental window (9) . This is an important lesson for health systems: screening works, but it does not automatically eliminate bottlenecks. Referral networks, diagnostic capacity, surgical access, and rehabilitation services must function together.

For infants with severe-to-profound bilateral sensorineural hearing loss, amplification alone may not provide sufficient auditory access, and cochlear implantation can be transformative (10). Evidence and expert consensus increasingly support implantation in very young children when clinically appropriate (11,12). In well-selected cases, early cochlear implantation can support spoken language development, auditory awareness, improve developmental abilities and later educational attainment (13). However, cochlear implantation is not a “stand-alone cure.” Outcomes depend heavily on timely diagnosis, family engagement, auditory-verbal therapy, device use, and structured follow-up. The earlier the auditory signal reaches the brain, the greater the chance of meaningful language acquisition, even in the unilateral hearing loss (14,15).

In Iran, the main challenge is no longer whether newborn hearing screening is needed, but how to ensure that every screened infant moves rapidly through diagnosis and treatment. Coverage above 90% is impressive, but the remaining gap still leaves thousands of infants unscreened each year. In addition, screening coverage alone does not guarantee timely diagnosis, appropriate amplification, or access to cochlear implantation. The system must therefore prioritize referral tracking, regional diagnostic capacity, equitable access to pediatric audiology, and reimbursement structures that reduce out-of-pocket barriers for families.

A practical policy agenda for Iran should include five priorities. First, maintain and expand universal newborn hearing screening with sustained quality assurance. Second, strengthen follow-up systems to minimize loss to diagnosis after failed screening. Third, ensure affordable access to hearing aids, cochlear implant evaluation, surgery, and mapping services. Fourth, invest in early intervention programs, including speech-language therapy and auditory-verbal rehabilitation. Fifth, develop national outcome registries to monitor long-term language, educational, and psychosocial results.

In conclusion, congenital hearing loss is common, consequential, and highly time-sensitive. The evidence from Iran and international guidelines is clear: **the earlier the identification, the better the developmental outcome**. Newborn hearing screening should be regarded not as an isolated test but as the entry point to a comprehensive system of care. For Iran, the next step is to move beyond high screening coverage toward guaranteed diagnostic follow-up, timely intervention, and equitable access to cochlear implantation and rehabilitation. The ultimate goal is not simply to detect hearing loss, but to ensure that every child

with hearing loss has the opportunity to develop language, participate fully in society, and reach their potential.

References

1. Korver AMH, Smith RJH, Van Camp G, Schleiss MR, Bitner-Glindzicz MAK, Lustig LR, et al. Congenital hearing loss. Nat Rev Dis Primers. 2017 Jan 12;3:16094. doi:10.1038/nrdp.2016.94 PubMed PMID: 28079113; PubMed Central PMCID: PMC5675031.

2. Poonual W, Navacharoen N, Kangsanarak J, Namwongprom S. Outcome of Early Identification and Intervention on Infants with Hearing Loss Under Universal Hearing Screening Program. J Med Assoc Thai. 2017 Feb;100(2):197–206. PubMed PMID: 29916635.

3. Moradi-Joo E, Noori Hekmat S, Ghobeishipour H, Hamedpour H, Davarpanah M, Barouni M, et al. Challenges and Strategies of Newborn Hearing Screening Programs Worldwide: A Scoping Review. Med J Islam Repub Iran. 2026 Jan 1;40(1):254 EP – 261. doi:10.47176/mjiri.40.29

4. Porcar-Gozalbo N, López-Zamora M, Valles-González B, Cano-Villagrasa A. Impact of Hearing Loss Type on Linguistic Development in Children: A Cross-Sectional Study. Audiol Res. 2024 Nov 27;14(6):1014–27. doi:10.3390/audiolres14060084 PubMed PMID: 39727607; PubMed Central PMCID: PMC11673131.

5. Hall ML, Eigsti IM, Bortfeld H, Lillo-Martin D. Executive Function in Deaf Children: Auditory Access and Language Access. Journal of Speech, Language, and Hearing Research. 2018 Aug 8;61(8):1970–88. doi:10.1044/2018_JSLHR-L-17-0281

6. McCreery RW, Walker EA. Variation in auditory experience affects language and executive function skills in children who are hard of hearing. Ear Hear. 2022;43(2):347–60. doi:10.1097/AUD.0000000000001098 PubMed PMID: 34288630; PubMed Central PMCID: PMC8738778.

7. Yin L, Liu J, Zhang J, Tang L, He S, Shan C, et al. Economic burden due to hearing loss among individuals in Hebei, China. BMC Public Health. 2025 Mar 21;25:1080. doi:10.1186/s12889-025-22177-6 PubMed PMID: 40119393; PubMed Central PMCID: PMC11927146.

8. Year 2019 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs - American Academy of Audiology [Internet]. [cited 2026 Jun 9]. Available from: https://www.audiology.org/practice-guideline/year-2019-position-statement-principles-and-guidelines-for-early-hearing-detection-and-intervention-programs/

9. Alothman N, Abdelsamad Y, Almuhawas F, Allami H, Hagr A. Cochlear implantation in pediatrics: Impact of newborn hearing screening on intervention time. Int J Pediatr Otorhinolaryngol. 2024 Jun;181:111990. doi:10.1016/j.ijporl.2024.111990 PubMed PMID: 38796944.

10. Entwisle LK, Warren SE, Messersmith JJ. Cochlear Implantation for Children and Adults with Severe-to-Profound Hearing Loss. Semin Hear. 2018 Nov;39(4):390–404. doi:10.1055/s-0038-1670705 PubMed PMID: 30374210; PubMed Central PMCID: PMC6203457.

11. Rusinowska B. The Benefits of Early Cochlear Implantation for Speech Development in Children with Usher Syndrome: Literature Review. Journal of Hearing Science. 2024 Jun 5;14(1):21-31.

12. Sharma SD, Cushing SL, Papsin BC, Gordon KA. Hearing and speech benefits of cochlear implantation in children: A review of the literature. International Journal of Pediatric Otorhinolaryngology. 2020 Jun 1;133:109984. doi:10.1016/j.ijporl.2020.109984

13. Developmental Outcomes Following Early Cochlear Implantation in Infants and Toddlers: a Comparative Study with Normal-hearing Peers | Head and Neck Diseases Conflux [Internet]. [cited 2026 Jun 10]. Available from: https://ojs.lifeconfluxpress.com/index.php/hndconflux/article/view/prwgkz02

14. Arras T, Boudewyns A, Dhooge I, Zarowski A, Philips B, Desloovere C, et al. Early cochlear implantation supports narrative skills of children with prelingual single-sided deafness. Sci Rep. 2023 Oct 19;13(1):17828. doi:10.1038/s41598-023-45151-x

15. Bozsoy Mİ, Yücel E. Corrigendum to “Auditory and language development in children with cochlear implants: A retrospective longitudinal study” [Int J Pediatr Otorhinolaryngol (198), November 2025, 112601]. International Journal of Pediatric Otorhinolaryngology. 2025 Nov 1;198:112615. doi:10.1016/j.ijporl.2025.112615