

Status of Newborn Hearing Screening in Various Countries Based on Published Reports

Countries Screening 90% or more of Newborns					
Country	Annual Births	Published Reports	Country	Annual Births	Published Reports
1. Austria	76,000	64, 157	5. Slovakia	55,000	20
2. Netherlands	185,000	19,25,60, 89,112,153,154	6. United Kingdom	743,000	12,39,66,77, 88,96,108,109 ,141,156
3. Oman	61,000	22,45,66,74,146	7. United States of America	4,399,000	65,66,87,99, 103,118,139, 150, 161
4. Poland	372,000	57,67, 78	8. Taiwan	205,000	29,30-32,45,106
Countries Screening 25-89% of Newborns					
1. Australia	267,000	54, 76, 90	6. Philippines	2,236,000	45,66,74,86, 146
2. Belgium	119,000	61,62,79,92,104, 143	7. Russia	1,545,000	66
3. Canada	353,000	66,70,94,95	8. Singapore	37,000	21,33,45,74, 146, 127
4. Germany	666,000	66,82,105,115, 122,137,138	9. Switzerland	73,000	9,121
5. Ireland	69,000	2,37,129	10. Japan	1,034,000	1,98,111,151, 155
Countries with Pilot Programs: Screening Less than 25% of Newborns					
1. Albania	46,000	17	29. Iran	1,388,000	45,74,146
2. Argentina	689,000	15	30. Israel	140,000	5,71,100,102
3. Bahamas	6,000	44			
4. Bangladesh	3,430,000	66	31. Jordan	157,000	5,45,74,146
5. Benin	342,000	43	32. South Korea	452,000	66
6. Brazil	3,105,000	6,45,66,75,80,81, 84,93,128,130,74, 146	33. Kuwait	52,000	4
7. Bulgaria	73,000	53	34. Luxembourg	6,000	48
8. Chile	251,000	13,45,74,146	35. Malaysia	551,000	3,36,45,74, 146, 120,158
9. China	18,134,000	40,55,63,66,69,85, 107,116,149,152, 159,160,161	36. Mexico	2,049,000	13,45,68,74, 146
10. Costa Rica	75,000	13,74,146	37. Nepal	732,000	66
			38. New Zealand	60,000	167
11. Columbia	918,000	13,74,146	39. Nigeria	6,028,000	45,46,66,74, 146
12. Cote d'Ivoire	722,000	58	40. Pakistan	5,337,000	45,74, 146
13. Croatia	42,000	51	41. Panama	70,000	13
14. Cuba	118,000	50,52, 125,126	42. Portugal	100,000	171
15. Cyprus	10,000	16	43. Qatar	15,000	44
16. Czech Republic	105,000	163	44. Saudi Arabia	591,000	45
17. Denmark	62,000	32, 35, 49	45. Serbia	66,000	172
18. Egypt	2,015,000	26	46. South Africa	1,091,000	45,56,74,97, 123,140,145, 146

19. Finland	55,000	168	47. Spain	491,000	47,59
20. France	752,000	23,28,42,91,117	48. Sri Lanka	365,000	66
21. Georgia	64,000	165	49. Sweden	116,000	164
22. Greece	107,000	24,132,135	50. Thailand	977,000	66
23. Guam		166	51. Tunisia	164,000	41,44
24. Guatemala	453,000	13,74,146	52. Turkey	111,000	7,45,72,73,74, 101,110,113, 147,148
25. Hong Kong	53,000	45, 74,146	53. United Arab Emirates	88,000	170
26. Hungary	92,000	169	54. Uruguay	50,000	13,74,146
27. India	26,913,000	27,38,45,66,74, 114,136,142			
28. Italy	546,000	8,10,11,14,34,83, 119,124,131,133, 134,144			

Published Reports of Newborn Hearing Screening Programs

- Adachi, N., Ito, K., Sakata, H., and Yamasoba, T. 2010. Etiology and on-year follow-up results of hearing loss identified by screening of newborn hearing in Japan. *Otolaryngology-Head Neck Surgery* 143 (10):97-100.
- Adelola, O.A., Papanikolaou, V., Gormley, P., Lang, J, and Keogh, I.J. 2010. Newborn hearing screening: a regional example for national care. *The Irish Medical Journal* 103 (5):146-9.
- Ahmad, A., Mohamad, I., Mansor, S., Daud, M.K, and Sidek, D. 2011. Outcome of a newborn hearing screening program in a tertiary hospital in Malaysia: The first five years. *Annals Saudi Medicine* 31 (1):24-28.
- Al-Kandari, J.M., and Alshuaib, W.B. 2007. Newborn hearing screening in Kuwait. *Electromyography Clinical Neurophysiology* 47 (6):305-313.
- Attias, J., Al-Masri, M., and AbuKader, L. 2006. The prevalence of congenital and early-onset hearing loss in Jordanian and Israeli infants. *International Journal of Audiology* 45:528-536.
- Bevilacqua, M.C., Alvarenga, Kde. F., Costa, O.A., and Moret, A.L. 2010. The universal newborn hearing screening in Brazil: From identification to intervention. *International Journal of Pediatric Otorhinolaryngology* 74 (5):510-515.
- Bolat, H., Bebitoglu, F.G., Ozbas, S., Altunsu, A.T., and Kose, M.R. 2009. National newborn hearing and screening program in Turkey: Struggles and implementations between 2004 and 2008. *International Journal of Pediatric Otorhinolaryngology* 73 (12):1621-2163.
- Calevo, M.G., Mezzano, P., Zullino, E., Padovani, P., and Serra, G. 2007. Ligurian experience on neonatal hearing screening: clinical and epidemiological aspects. *Acta Paediatrica* 96:1592-1599.
- Cao-Nguyen, M.H., Kos, M.I., and Guyot, J.P. 2007. Benefits and costs of universal hearing screening programme. *International Journal of Pediatric Otorhinolaryngology* 71:1591-1595.
- Ciorba, A., Hatzopoulou, S., Busi, M., Guerrini, P., Petrucci, J., and Martini, A. 2008. The universal newborn hearing screening program at the University Hospital of Ferrara: Focus on costs and software solutions. *International Journal of Pediatric Otorhinolaryngology* 72:807-816.
- De Capua, B., Costantini, D., Martufi, C., Latini, G., Gentile, M., and De Felice, C. 2007. Universal neonatal hearing screening: The Siena (Italy) experience on 19,700 newborns. *Early Human Development* 83:601-606.
- Fox, R., and Minchom, S. 2008. Parental experiences of the newborn hearing screening programme in Wales: A postal questionnaire survey. *Health Expectations* 11 (4): 376-383.
- Gerner de Garcia, B., Gaffney, C., Chacon, S., and Gaffney, M. 2011. Overview of newborn hearing screening activities in Latin America. *Revista Panamericana de Salud Publica*. 29 (3):145-152.
- Ghirri, P., Liumbruno, A., Lunardi, S., Forli, F., Boldrini, A., Baggiani, A., and Berrettini, S. 2011. Universal neonatal audiological screening: Experience of the University Hospital of Pisa. *Italian Journal of Pediatrics* 37 (16):1-8.
- Gravina, L.P., Foncuberta, M.E., Estrada, R.C., Barreiro, C., Chertkoff, L. 2007. Carrier frequency of the 35delG and A1555G deafness mutations in the Argentinean population Impact on the newborn hearing screening.

- International Journal of Pediatric Otorhinolaryngology* 71:639-643.
16. Hadjikakou, K., and Bamford, J. 2000. Prevalence and age of identification of permanent childhood hearing impairment in Cyprus. *International Journal of Audiology* 39 (4):198-201.
 17. Hatzopoulos, S., Qirjazi, B., and Martinin, A. 2007. Neonatal hearing screening in Albania: Results from an ongoing universal screening program. *International Journal of Audiology* 46 (4):176-182.
 19. Holster, I.L., Hoeve, L.J., Wieringa, M.H., Willis-Lorrier, R.M.S, and de Gier. HW. 2009. Evaluation of hearing loss after failed neonatal hearing screening. *Journal of Pediatrics* 155 (5):646-650.
 20. Jakubikova, J., Kabatova, Z., Pavlovcinova, G., and Profant, M. 2009. Newborn hearing screening and strategy for early detection of hearing loss in infants. *International Journal of Pediatric Otorhinolaryngology* 73 (4):607-612.
 21. Joseph, R., Tan, H.K., Low, K.T., Ng, P.G., Tunnel, J., and Mathew, S. 2003. Mass newborn screening for hearing impairment. *Southeast Asian Journal of Tropical Medicine and Public Health*. 34 (2):229-230.
 22. Khandekar, R., Khabori, M., Jaffer Mohammed, A., and Gupta, R. 2006. Neonatal screening for hearing impairment - Oman experience. *International Journal of Pediatric Otorhinolaryngology* 70 (4):663-670.
 23. Kolski, C., Le Driant, B., Lorenzo, P., Vandromme, L., and Strunski, V. 2007. Early hearing screening: What is the best strategy? *International Journal of Pediatric Otorhinolaryngology* 71:1055-1060.
 24. Korres, S.G., Balatsouras, D.G., Nikolopoulos, T., Korres, G.S., and Ferekidis, E. 2006. Making universal newborn hearing screening a success. *International Journal of Pediatric Otorhinolaryngology* 70:241-246.
 25. Korver, A.M., Konings, S., Dekker, F.W., Beers, M., Wever, C.C., Frijns, J.H.M., Oudesluys-Murphy, A.M.; DECIBEL Collaborative Study Group. 2010. Newborn hearing screening vs later hearing screening and developmental outcomes in children with permanent childhood hearing impairment. *The Journal of the American Medical Association*. 304 (15):1701-1708.
 26. Kotby, M.N., Tawfik, S., Aziz, A., and Taha, H. 2008. Public health impact of hearing impairment and disability. *Folia Phoniatrica et Logopaedica* 60 (2):58-63.
 27. Kumar, S., and Mohapatra, B. 2010. Status of newborn hearing screening program in India. *International Journal of Pediatric Otorhinolaryngology* 75:20-26.
 28. Langagne, T., Leveque, M., Schmidt, P., and Chays, A. 2010. Universal newborn hearing screening in the Champagne-Ardenne region: A 4-year follow-up after early diagnosis of hearing impairment. *International Journal of Pediatric Otorhinolaryngology* 74 (10):1164-1170.
 29. Lin, C.Y., Huang, C.Y., Lin, C.Y., Lin, Y.H., and Wu, J.L. 2004. Community-based newborn hearing screening program in Taiwan. *International Journal of Pediatric Otorhinolaryngology* 68 (2):185-189.
 30. Lin, H.C., Shu, M.T., Chang, K.C., and Bruna, S.M. 2002. A universal newborn hearing screening program in Taiwan. *International Journal of Pediatric Otorhinolaryngology* 63 (3):209-218.
 31. Lin, H.C., Shun, M.T., Lee, K.S., Lin, H.Y., and Lin, G. 2007. Reducing false positives in newborn screening program: How and why. *Otology & Neurotology* 28 (6):788-792.
 32. Lin, H.C., Shu, M.T., Lee K.S., Ho, G.M., Fu, T.Y., Bruna, S., and Lin, G. 2005. Comparison of hearing screening programs between one step with transient evoked otoacoustic emissions (TEOAE) and two steps with TEOAE and automated auditory brainstem response. *Laryngoscope*. 115 (11):1957-1962.
 33. Low, W.K., Pang, K.Y., Ho L.Y., Lim, S.B., and Joseph, R. 2005. Universal newborn hearing screening in Singapore: The need, implementation, and challenges. *Annals Academy of Medicine Singapore*. 34 (4):301-306.
 34. Martines, F., Porrello, M., Ferrara, M., Martines, M., and Martines, E. 2007. Newborn hearing screening project using transient evoked otoacoustic emissions: Western Sicily experience. *International Journal of Pediatric Otorhinolaryngology* 71:107-112.
 35. Moller, T.R., Jensen, F.K., Ekmann, A., Wetke, R., and Ovesen, T. 2007. Screening project identification of hearing deficits in newborns. *Ugeskrift for Laeger*. 16 (10):900-903.
 36. Mukari, S.Z., Tan, K.Y., and Abdullah, A. 2006. A pilot project on hospital-based universal newborn hearing screening: Lessons learned. *International Journal of Pediatric Otorhinolaryngology* 70:843-851.
 37. Nadig, S. 2010. Current state: Newborn hearing screening in Northern Ireland. *Otolaryngology-Head and Neck Surgery*. 143 (2/Supp2):257.
 38. Nagapoomima, P., Ramesh, A., Srilakshmi, Rao, S., Patricia, P.L., Gore, M., Dominic, M., and Swarnarekha. 2007. Universal hearing screening. *Indian Journal of Pediatrics* 74 (6):545-549.
 39. Newborn Hearing Screening Programme Annual Report 2008/09. Retrieved January 10, 2011, from <http://hearing.screening.nhs.uk/publications>.
 40. [Nie, W.Y., Wu, H.R., Qi, Y.S., Lin, Q., Zhang, M., Hou, Q., Gong, L.X., Li, H., Li, Y.H., Dong, Y.R., Guo, Y.L. Shi, J.N., Yin, S.Y., Li, P.Y., and Zhang, W.H. 2007. Simultaneous screening program for newborns](#)

[hearing and ocular diseases. *Chinese Journal of Otorhinolaryngology Head and Neck Surgery* 42 \(2\):115-120.](#)

41. Nouaili, E.B., Chaouachi, S., Bezzine, A., Hamadi, M., Mbarek, C., Benlallehom, L., and Marrakchi, Z. 2010. Neonatal hearing screening with transient otoacoustic emissions: A pilot study. *La Tunisie Medicale* 88 (7):482-485.
42. Ohl, C., Dornier, L., Czajka, C., Chobaut, J.C., and Tavernier, L. 2009. Newborn hearing screening on infants at risk. *International Journal of Pediatric Otorhinolaryngology* 73 (12):1691-1695.
43. Okhakhu, A.L., Ibekwe, T.S., Sadoh, A.S., and Ogisi, F.E. 2010. Neonatal hearing screening in Benin City. *International Journal of Pediatric Otorhinolaryngology* 74 (11):1323-1326.
44. Olusanya, B.O., Luxon, L.M., Wirz, S.L. 2004. Benefits and challenges of newborn hearing screening for developing countries. *International Journal of Pediatric Otorhinolaryngology* 68 (3):287-305.
45. Olusanya, B.O., Swanepoel, D.W., Chapchap, M.J., Castillo, S., Habib, H. Mukari, S.Z., Martinez, N.V., Lin, H.C., and McPherson, B. 2007. Progress towards early detection services for infants with hearing loss in developing countries *BMC Health Service Research* 7:14.
46. Olusanya, B.O., Wirz, S.L., Luxon, L.M. 2008. Hospital-based universal newborn hearing screening for early detection of permanent congenital hearing loss in Lagos, Nigeria. *International Journal of Pediatric Otorhinolaryngology* 72 (7):991-1001.
47. Orejas, J.I.B., Cano, B.R., Perez, D.M., Fernamdez-Calvo, J.L., and Gomez, A.A. 2008. Results of applying universal protocol for early detection of hypoacusia in newborn infants for 42 months. *Acta Otorrinolaringologica Espanola* 59 (3):96-101.
48. Panosetti, E., Shi, B.X., Eloy, J.P., Orband, D., and Rasque, E. 1999. Evoked otoacoustic emissions at birth: The Luxembourg experience. *Archives of Pediatrics & Adolescent Medicine* 6 (2):353s-355s.
49. Pedersen, L., Moller, T.R., Wetke, R., and Ovesen, T. 2008. Neonatal hearing screening. A comparison of automatic auditory brainstem audiometry and otoacoustic emissions. *Ugeskrift for Laeger* 170 (8):642-646.
50. Perez-Abalo, M.C., Gaya, J.A., Savio, G., Ponce de Leon, M., Perera, M., and Reigosa, V. 2005. Early detection and intervention of hearing impairment in Cuba: Outcome after 20 years. *Revue Neurologique*. 41 (9):556-563.
51. Prpic, I., Mahulja-Stamenkovic, V., Bilic, I., and Haller, H. 2007. Hearing loss assessed by universal newborn hearing screening-The new approach. *International Journal of Pediatric Otorhinolaryngology* 71:1757-1761.
52. Rodriguez, E., Sanchez, M., Santos, E., and Perez, M.C. 2008. A system for hearing screening in newborns. *Clinical Neurophysiology* 119 (9):e146.
53. Rouev, P., Mumdzhev, H., Spiridonova, J., and Dimov, P. 2004 Universal newborn hearing screening program in Bulgaria. *International Journal of Pediatric Otorhinolaryngology* 68:805-810.
54. Russ, S.A., Rickards, F., Poulakis, Z., Barker, M., Saunders, K., and Wake, M. 2002. Six year effectiveness of a population based two tier infant hearing screening programme. *Archives of Disease in Childhood* 86:245-250.
55. [Sun, X., Shen X., Lv, J., Xu, Z., and Wu, H. 2009. Development of an effective public health screening program to assess hearing disabilities among newborns in Shanghai: A prospective cohort study. *World Health & Population* 11 \(1\):14-23.](#)
56. Swanepoel, D., Ebrahim, S., Joseph, A., and Friedland, P.L. 2007. Newborn hearing screening in a South African private health care hospital. *International Journal of Pediatric Otorhinolaryngology* 71:881-887.
57. Szyfter, W., Wróbel, M., Radziszewska-Konopka, M., Szyfter-Harris, J., and Karlik M. 2008. Polish universal neonatal hearing screening program-4-year experience (2003-2006). *International Journal of Pediatric Otorhinolaryngology* 72 (12):1783-1787.
58. Tanon-Anoh, M.J., Sanogo-Gone, D., and Kouassi, K.B. 2010. Newborn hearing screening in a developing country: results of a pilot study in Abidjan, Cote d'ivoire. *International Journal of Pediatric Otorhinolaryngology* 74 (2):188-191.
59. Trinidad-Ramos, G., Aguilar, V.A.D., Jaudenes-Casaubon, C., Nunez-Batalla, F., and Sequi-Canet, J.M. 2010. Early hearing detection and intervention: 2010 CODEPEH recommendation. *Acta Otorrinolaringologica Espanola*. 61 (1): 69-77.
60. van Dommelen, P., van Straaten, H.L.M., Verkerk, P.H.; Dutch NICU Neonatal Hearing Screening Working Group. 2011 Ten-year quality assurance of the nationwide hearing screening programme in Dutch neonatal intensive care units. *Acta Paediatrica*. 1-7.
61. van Kerschaver, E., Boudewyn, A.N., Stappaerts, L., Wuyts, F.L., and van de Heyning, P.H. Organisation of a universal newborn hearing screening programme in Flanders. *The Royal Belgian Society for ENT and Head and Neck Surgery* 3 (4):185-90.

62. Verhaert, N., Willems, M., Van Kerschaver, E., and Desloovere, C. 2008. Impact of early hearing screening and treatment on language development and education level: Evaluation of 6 years of universal newborn hearing screening (ALGOW) in Flanders, Belgium. *International Journal of Pediatric Otorhinolaryngology* 72:599-608.
63. [Wang, Q.J., Zhao, Y.L., Rao, S.Q., Guo, Y.F., He, Y., Lan, L., Yang, W.Y., Zheng, Q.Y., Ruben, R.J., Han, D.Y., and Shen, Y. 2011. Newborn hearing concurrent gene screening can improve care for hearing loss: a study on 14913 Chinese newborns. *International Journal of Pediatric Otorhinolaryngology* 75 \(4\):535-542.](#)
64. Weichbold, V., Nekahm-Heis, D., and Welzl-Mueller, K. 2006. Ten-year outcome of newborn hearing screening in Austria. *International Journal of Pediatric Otorhinolaryngology* 70:235-240.
65. [White, K.R., Forsman, I., Eichwald, J., and Munoz, K. 2010. The evolution of early hearing detection and intervention programs in the United States. *Seminars in Perinatology* 34:170-179.](#)
66. [World Health Organization. 2010. Newborn and infant hearing screening- current issues and guiding principles for action. *WHO Report 2010*:1-39.](#)
67. Wroblewska-Seniuk, K., Chojnacka, K., Pucher, B., Szczapa, J., Gadzinowski, J., and Grzegorowski, M. 2005. The results of newborn hearing screening by means of transient evoked otoacoustic emissions. *International Journal of Pediatric Otorhinolaryngology* 69:1351-1357.
68. Yee-Arellano, H.M., Leal-Garza, F., and Pauli-Muller, K. 2006. Universal newborn hearing screening in Mexico: Results of the first 2 years. *International Journal of Pediatric Otorhinolaryngology* 70:1863-1870.
69. [Zhang, V.W., McPherson, B., Shi, B.X., Tang, J.L.F., and Wong, B.Y.K. 2008. Neonatal hearing screening: a combined click evoked and tone burst otoacoustic emission approach. *International Journal of Pediatric Otorhinolaryngology* 72\(3\):351-360.](#)



70. Akinpelu OV, Peleva E, Funnell WR, Daniel SJ. Otoacoustic emissions in newborn hearing screening: A systematic review of the effects of different protocols on test outcomes. *Int J Pediatr Otorhinolaryngol.* 2014 Jan 27. pii: S0165-5876(14)00050-0.
71. Ari-Even Roth D, Hildesheimer M, Maayan-Metzger A, Muchnik C, Hamburger A, Mazkeret R, Kuint J. Low prevalence of hearing impairment among very low birthweight infants as detected by universal neonatal hearing screening. *Arch Dis Child Fetal Neonatal Ed.* 2006 Jul;91(4):F257-62.
72. Arslan S, Işık AU, Imamoğlu M, Topbaş M, Aslan Y, Ural A. Universal newborn hearing screening; automated transient evoked otoacoustic emissions. *B-ENT.* 2013;9(2):122-31.
73. Atas B, Altunhan H, Eryilmaz MA, Atas E. Frequency of congenital hearing loss in 43,503 healthy newborn infants in Konya, Turkey. *J Pak Med Assoc.* 2011 Aug;61(8):727-8.
74. Bansal S, Gupta A, Nagarkar A. Transient evoked otoacoustic emissions in hearing screening programs: protocol for developing countries. *Int J Pediatr Otorhinolaryngol.* 2008 Jul;72(7):1059-63.
75. Barbosa CP, Aires JB, Farias IY, Linhares FM, Griz SM. Newborn and infant hearing health education for nursing professionals. *Braz J Otorhinolaryngol.* 2013 Mar-Apr;79(2):226-32.
76. Barker MJ, Hughes EK, Wake M. NICU-only versus universal screening for newborn hearing loss: Population audit. *J Paediatr Child Health.* 2013 Jan;49(1):E74-9.
77. Basu S, Evans KL, Owen M, Harbottle T. Outcome of Newborn Hearing Screening Programme delivered by health visitors. *Child Care Health Dev.* 2008 Sep;34(5):642-7.
78. Bielecki I, Horbulewicz A, Wolan T. Risk factors associated with hearing loss in infants: an analysis of 5282 referred neonates. *Int J Pediatr Otorhinolaryngol.* 2011 Jul;75(7):925-30.
79. Boons T, Brox J, Frijns J, Philips B, Vermeulen A, Wouters J, van Wieringen A. Newborn hearing screening and cochlear implantation: impact on spoken language development. *B-ENT.* 2013;Suppl 21:91-8.
80. Botelho FA, Bouzada MC, Resende LM, Silva CF, Oliveira EA. Prevalence of hearing impairment in children at risk. *Braz J Otorhinolaryngol.* 2010 Nov-Dec;76(6):739-44.
81. Botelho MS, Silva VB, Arruda Lda S, Kuniyoshi IC, Oliveira LL, Oliveira AS. Newborn hearing screening in the Limiar Clinic in Porto Velho - Rondônia. *Braz J Otorhinolaryngol.* 2010 Sep-Oct;76(5):605-10.
82. Brockow I, Praetorius M, Neumann K, Am Zehnhoff-Dinnesen A, Mohnike K, Matulat P, Rohlf K, Lang-Roth R, Gross M, Duphorn E, Meuret S, Seidel A, Schönfeld R, Schönweiler R, Dienlin S, Reißmann A, Friedrich I, Lehnert B, Nennstiel-Ratzel U; VDHZ. [Universal newborn hearing screening : Definition of uniform parameters by the Association of German Hearing Screening Centers as a requirement for nationwide evaluation with valid results]. *HNO.* 2014 Mar;62(3):165-70.
83. Canale A, Favero E, Lacilla M, Recchia E, Schindler A, Roggero N, Albera R. Age at diagnosis of deaf babies: a

- retrospective analysis highlighting the advantage of newborn hearing screening. *Int JPediatrOtorhinolaryngol.* 2006Jul;70(7):1283-9.
84. Cavalcanti HG, Guerra RO. The role of maternal socioeconomic factors in the commitment to universal newborn hearing screening in the Northeastern region of Brazil. *Int J Pediatr Otorhinolaryngol.* 2012 Nov;76(11):1661-7.
85. [Chen G, Yi X, Chen P, Dong J, Yang G, Fu S. A large-scale newborn hearing screening in rural areas in China. *Int J Pediatr Otorhinolaryngol.* 2012 Dec;76\(12\):1771-4](#)
86. Chiong C, Ostrea E Jr, Reyes A, Llanes EG, Uy ME, Chan A. Correlation of hearing screening with developmental outcomes in infants over a 2-year period. *Acta Otolaryngol.* 2007 Apr;127(4):384-8.
87. [Choo D, Meizen-Derr J. Universal newborn hearing screening in 2010. *Curr Opin Otolaryngol Head Neck Surg.* 2010 Oct;18\(5\):399-404.](#)
88. Clarke P, Iqbal M, Mitchell S. A comparison of transient-evoked otoacoustic emissions and automated auditory brainstem responses for pre-discharge neonatal hearing screening. *Int J Audiol.* 2003 Dec;42(8):443-7.
89. Coenraad S., A. Goedegebure, L.J. Hoeve. An initial overestimation of sensorineural hearing loss in NICU infant failure on neonatal hearing screening. *Int. J. Pediatr. Otorhinolaryngol.*, 75 (2011), pp. 159–162.
90. Colgan S, Gold L, Wirth K, Ching T, Poulakis Z, Rickards F, Wake M. The cost-effectiveness of universal newborn screening for bilateral permanent congenital hearing impairment: systematic review. *Acad Pediatr.* 2012 May-Jun;12(3):171-80.
91. Dauman R, Roussey M, Belot V, Denoyelle F, Roman S, Gavilan-Cellié I, Ruzza-Surroca I, Calmels MN, Lina-Granade G, Houssin E, Charlemagne A, Garabedian N. Screening to detect permanent childhood hearing impairment in neonates transferred from the newborn nursery. *Int J Pediatr Otorhinolaryngol.* 2009Mar;73(3):457-65.
92. Declau F, Boudewyns A, Van den Ende J, Peeters A, van den Heyning P. Etiologic and audiologic evaluations after universal neonatal hearing screening: analysis of 170 referred neonates. *Pediatrics.* 2008 Jun;121(6):1119-26.
93. Fernandes JC, Nozawa MR. [Effectiveness study of the universal newborn hearing screening]. *Cien Saude Colet.* 2010 Mar;15(2):353-61.
94. Fitzpatrick E, Durieux-Smith A, Eriks-Brophy A, Olds J, Gaines R. The impact of newborn hearing screening on communication development. *J Med Screen.* 2007;14(3):123-31.
95. Fitzpatrick EM, Whittingham J, Durieux-Smith A. Mild bilateral and unilateral hearing loss in childhood: a 20-year view of hearing characteristics, and audiologic practices before and after newborn hearing screening. *Ear Hear.* 2014 Jan-Feb;35(1):10-8.
96. Fraser L, Starritt N, Melia L, Kubba H. Development of a screening service for neonatal ear deformity using neonatal hearing screeners and an information leaflet. *Int J Pediatr Otorhinolaryngol.* 2013 Apr;77(4):538-43.
97. Friderichs N, Swanepoel D, Hall JW 3rd. Efficacy of a community-based infant hearing screening program utilizing existing clinic personnel in Western Cape, South Africa. *Int J Pediatr Otorhinolaryngol.* 2012 Apr;76(4):552-9.
98. Fukushima K, Mimaki N, Fukuda S, Nishizaki K. Pilot study of universal newborn hearing screening in Japan: district-based screening program in Okayama. *Ann Otol Rhinol Laryngol.* 2008 Mar;117(3):166-71.
99. [Gaffney M, Green DR, Gaffney C. Newborn hearing screening and follow-up: are children receiving recommended services? *Public Health Rep.* 2010 Mar-Apr;125\(2\):199-207.](#)
100. Geal-Dor M, Adelman C, Levi H, Zentner G, Stein-Zamir C. Comparison of two hearing screening programs in the same population: oto-acoustic emissions (OAE) screening in newborns and behavioral screening when infants. *Int J Pediatr Otorhinolaryngol.* 2010 Dec;74(12):1351-5.
101. Genç GA, Konukseven O, Muluk NB, Kirkim G, Başar FS, Tuncer U, Kayikci MK, Bolat H, Topcu C, Dizdar HT, Kaynar F, Akar F, Ozdek A, Serbetcioglu B, Belgin E. Features of unilateral hearing loss detected by newborn hearing screening programme in different regions of Turkey. *Auris Nasus Larynx.* 2013 Jun;40(3):251-9.
102. Gilbey P, Kraus C, Ghanayim R, Sharabi-Nov A, Bretler S. Universal newborn hearing screening in Zefat, Israel: the first two years. *Int J Pediatr Otorhinolaryngol.* 2013 Jan;77(1):97-100.
103. [Goedert MH, Moeller MP, White KR. Midwives' knowledge, attitudes, and practices related to newborn hearing screening. *J Midwifery Womens Health.* 2011 Mar-Apr;56\(2\):147-53.](#)
104. Hardonk S, Desnerck G, Loots G, Van Hove G, Van Kerschaver E, Sigurjónsdóttir HB, Vanroelen C, Louckx F. Congenitally deaf children's care trajectories in the context of universal neonatal hearing screening: a qualitative study of the parental experiences. *J Deaf Stud Deaf Educ.* 2011 Summer;16(3):305-24.

105. Hoth S, Janssen T, Mühler R, Walger M, Wiesner T. [Objective hearing tests in pediatric audiology: AGERA recommendations for follow-up diagnosis in infants that fail newborn hearing screening tests]. *HNO*. 2012 Dec;60(12):1100-2.
106. Huang CM, Yang IY, Ma YC, Lin GS, Yang CC, Tsai HT, Lin HC. The effectiveness of the promotion of newborn hearing screening in Taiwan. *Int J Pediatr Otorhinolaryngol*. 2014 Jan;78(1):14-8.
107. [Huang LH, Zhang L, Tobe RY, Qi FH, Sun L, Teng Y, Ke QL, Mai F, Zhang XF, Zhang M, Yang RL, Tu L, Li HH, Gu YQ, Xu SN, Yue XY, Li XD, Qi BE, Cheng XH, Tang W, Xu LZ, Han DM. Cost-effectiveness analysis of neonatal hearing screening program in China: should universal screening be prioritized? *BMC Health Serv Res*. 2012 Apr 17;12:97.](#)
108. Iley KL, Addis RJ. Impact of technology choice on service provision for universal newborn hearing screening within a busy district hospital. *J Perinatol*. 2000 Dec;20(8 Pt 2):S122-7.
109. Kennedy CR. Controlled trial of universal neonatal screening for early identification of permanent childhood hearing impairment: coverage, positive predictive value, effect on mothers and incremental yield. Wessex Universal Neonatal Screening Trial Group. *Acta Paediatr Suppl*. 1999 Dec;88(432):73-5.
110. Kirkim G, Serbetcioglu B, Erdag TK, Ceryan K. The frequency of auditory neuropathy detected by universal newborn hearing screening program. *Int J Pediatr Otorhinolaryngol*. 2008 Oct;72(10):1461-9.
111. Kobayashi M, Inadera H. [Present situation and future perspectives on newborn hearing screening system in Japan]. *Nihon Eiseigaku Zasshi*. 2011 Sep;66(4):696-703.
112. Korver AM, Konings S, Meuwese-Jonghejeugd A, van Straaten HL, Uilenburg N, Dekker FW, Wever CC, Frijns JH, Oudesluis-Murphy AM; DECIBEL Collaborative study group. National study of newborn hearing screening: programme sensitivity and characteristics of undetected children. *B-ENT*. 2013; Suppl 21:37-44.
113. Kucur C, Kınış V, Ozdem S, Kucur SK. [Newborn hearing screening results at Zeynep Kamil Women and Children Diseases Education and Research Hospital]. *Kulak Burun Bogaz Ihtis Derg*. 2012 Jan-Feb;22(1):38-42.
114. Kumar R, Bhave A, Bhargava R, Agarwal GG. Prevalence and risk factors for neurological disorders in children aged 6 months to 2 years in northern India. *Dev Med Child Neurol*. 2013 Apr;55(4):348-56.
115. Langer A, Brockow I, Nennstiel-Ratzel U, Menn P. The cost-effectiveness of tracking newborns with bilateral hearing impairment in Bavaria: a decision-analytic model. *BMC Health Serv Res*. 2012 Nov 22;12:418.
116. [Lee CY, Hsieh TH, Pan SL, Hsu CJ. Thresholds of tone burst auditory brainstem responses for infants and young children with normal hearing in Taiwan. *J Formos Med Assoc*. 2007 Oct;106\(10\):847-53.](#)
117. Lévêque M, Schmidt P, Leroux B, Danvin JB, Langagne T, Labrousse M, Chays A. Universal newborn hearing screening: a 27-month experience in the French region of Champagne-Ardenne. *Acta Paediatr*. 2007 Aug;96(8):1150-4.
118. [Lieu JE, Ratnaraj F, Ead B. Evaluating a prediction model for infant hearing loss. *Laryngoscope*. 2013 Nov;123\(11\):2873-9.](#)
119. Marciano E, Laria C, Malesci R, Iadicicco P, Landolfi E, Niri C, Papa C, Franzè A, Auletta G. Newborn hearing screening in the Campania region (Italy): early language and perceptual outcomes of infants with permanent hearing loss. *Acta Otorhinolaryngol Ital*. 2013 Dec;33(6):414-7.
120. Mazlan R, Ting TL, Mukari SZ, Abdullah A. A questionnaire-based study on parental satisfaction with a universal newborn hearing screening program in Kuala Lumpur, Malaysia. *Int J Pediatr Otorhinolaryngol*. 2014 Feb;78(2):348-53.
121. Metzger D, Pezier TF, Veraguth D. Evaluation of universal newborn hearing screening in Switzerland 2012 and follow-up data for Zurich. *Swiss Med Wkly*. 2013 Dec 13;143:w13905.
122. Meyer C, Witte J, Hildmann A, Hennecke KH, Schunck KU, Maul K, Franke U, Fahnenstich H, Rabe H, Rossi R, Hartmann S, Gortner L. Neonatal screening for hearing disorders in infants at risk: incidence, risk factors, and follow-up. *Pediatrics*. 1999 Oct;104(4 Pt 1):900-4.
123. Meyer ME, Swanepoel de W, le Roux T, van der Linde M. Early detection of infant hearing loss in the private health care sector of South Africa. *Int J Pediatr Otorhinolaryngol*. 2012 May;76(5):698-703.
124. Mezzano P, Serra G, Calevo MG; STERN Group. Cost analysis of an Italian neonatal hearing screening programme. *J Matern Fetal Neonatal Med*. 2009 Sep;22(9):806-11. doi: 10.3109/14767050902994465.
125. Mijares E, Pérez Abalo MC, Herrera D, Lage A, Vega M. Comparing statistics for objective detection of transient and steady-state evoked responses in newborns. *Int J Audiol*. 2013 Jan;52(1):44-9.

126. Mijares Nodarse E, Herrera Alonso D, Gaya Vázquez J, Santos Febles E, Pérez Abalo MC, Mendez Alarcón L, Robertson Terry R. [Newborn hearing screening test with multiple auditory steady-state responses]. *Acta Otorrinolaringol Esp.* 2011 Mar-Apr;62(2):87-94.
127. Ngo RY, Tan HK, Balakrishnan A, Lazaroo D, Lim SB, Yan J. Auditory neuropathy detected by universal newborn hearing screening. *Cochlear Implants Int.* 2004 Sep;5 Suppl 1:206-8. doi: 10.1002/cii.234.
128. Nivoloni Kde A, da Silva-Costa SM, Pomílio MC, Pereira T, Lopes Kde C, de Moraes VC, Alexandrino F, de Oliveira CA, Sartorato EL. Newborn hearing screening and genetic testing in 8974 Brazilian neonates. *Int J Pediatr Otorhinolaryngol.* 2010 Aug;74(8):926-9.
129. O'Connor A, O'Sullivan PG, Behan L, Norman G, Murphy B. Initial results from the newborn hearing screening programme in Ireland. *Ir J Med Sci.* 2013 Dec;182(4):551-6.
130. Onoda RM, Azevedo MF, Santos AM. Neonatal Hearing Screening: failures, hearing loss and risk indicators. *Braz J Otorhinolaryngol.* 2011 Nov-Dec;77(6):775-83.
131. Paludetti G, Conti G, DI Nardo W, DE Corso E, Rolesi R, Picciotti PM, Fetoni AR. Infant hearing loss: from diagnosis to therapy Official Report of XXI Conference of Italian Society of Pediatric Otorhinolaryngology. *Acta Otorhinolaryngol Ital.* 2012 Dec;32(6):347-70.
132. Papacharalampous GX, Nikolopoulos TP, Davilis DI, Xenellis IE, Korres SG. Universal newborn hearing screening, a revolutionary diagnosis of deafness: real benefits and limitations. *Eur Arch Otorhinolaryngol.* 2011 Oct;268(10):1399-406.
133. Pastorino G, Sergi P, Mastrangelo M, Ravazzani P, Tognola G, Parazzini M, Mosca F, Pagni L, Grandori F. The Milan Project: a newborn hearing screening programme. *Acta Paediatr.* 2005 Apr;94(4):458-63.
134. Pisacane A, Auletta G, Toscano F, Errichiello M, Barrier F, Riccardi P, Laria C, Malesci R, Continisio GI, Continisio P, Barruffo L, Franzè A, Marciano E. Feasibility and effectiveness of a population-based newborn hearing screening in an economically deprived region of Italy. *Int J Pediatr Otorhinolaryngol.* 2013Mar;77(3):329-33.
135. Psarommatis I, Florou V, Fragkos M, Douniadakis E, Kontrogiannis A. Reversible auditory brainstem responses screening failures in high risk neonates. *Eur Arch Otorhinolaryngol.* 2011 Feb;268(2):189-96.
136. Rai N, Thakur N. Universal screening of newborns to detect hearing impairment--is it necessary? *Int J Pediatr Otorhinolaryngol.* 2013 Jun;77(6):1036-41.
137. Reichmuth K, Embacher AJ, Matulat P, Am Zehnhoff-Dinnesen A, Glanemann R. Responsive parenting intervention after identification of hearing loss by Universal Newborn Hearing Screening: the concept of the Muenster Parental Programme. *Int J Pediatr Otorhinolaryngol.* 2013 Dec;77(12):2030-9.
138. Rohlfs AK, Wiesner T, Drews H, Müller F, Breitfuss A, Schiller R, Hess M. Interdisciplinary approach to design, performance, and quality management in a multicenter newborn hearing screening project. Discussion of the results of newborn hearing screening in Hamburg (part II). *Eur J Pediatr.* 2010 Dec;169(12):1453-63.
139. [Ross DS, Visser SN. Pediatric primary care physicians' practices regarding newborn hearing screening. J Prim Care Community Health. 2012 Oct 1;3\(4\):256-63.](#)
140. Scheepers LJ, Swanepoel de W, Roux TI. Why parents refuse newborn hearing screening and default on follow-up rescreening--A South African perspective. *Int J Pediatr Otorhinolaryngol.* 2014 Apr;78(4):652-8.
141. Sim RJ, Matthew S, Foley RJ, Robinson PJ. Initial outcomes from universal newborn hearing screening in Avon. *J Laryngol Otol.* 2009 Sep;123(9):982-9.
142. Sirur GS, Rangasayee R. Age of identification of hearing impairment in Mumbai--a trend analysis. *Int J Pediatr Otorhinolaryngol.* 2011 Dec;75(12):1549-52.
143. Smets K, Verrue N, Dhooge I. Implementation and results of bedside hearing screening with automated auditory brainstem response in the neonatal intensive care unit. *Acta Paediatr.* 2012 Sep;101(9):e392-8.
144. Suppiej A, Rizzardi E, Zanardo V, Franzoi M, Ermani M, Orzan E. Reliability of hearing screening in high-risk neonates: comparative study of otoacoustic emission, automated and conventional auditory brainstem response. *Clin Neurophysiol.* 2007 Apr;118(4):869-76.
145. Swanepoel de W, Johl L, Pienaar D. Childhood hearing loss and risk profile in a South African population. *Int J Pediatr Otorhinolaryngol.* 2013 Mar;77(3):394-8.
146. Swanepoel de W, Louw B, Hugo R. A novel service delivery model for infant hearing screening in developing countries. *Int J Audiol.* 2007 Jun;46(6):321-7.
147. Tasci Y, Muderris II, Erkaya S, Altinbas S, Yucel H, Haberal A. Newborn hearing screening programme outcomes in a research hospital from Turkey. *Child Care Health Dev.* 2010 May;36(3):317-22.
148. Tatli MM, Bulent Serbetcioglu M, Duman N, Kumral A, Kirkim G, Ogun B, Ozkan H. Feasibility of neonatal

- hearing screening program with two-stage transient otoacoustic emissions in Turkey. *Pediatr Int.* 2007 Apr;49(2):161-6.
149. [Tobe RG, Mori R, Huang L, Xu L, Han D, Shibuya K. Cost-effectiveness analysis of a national neonatal hearing screening program in China: conditions for the scale-up. *PLoS One.* 2013;8\(1\):e51990.](#)
150. [Todd NW. Universal newborn hearing screening follow-up in two Georgia populations: newborn, mother and system correlates. *Int J Pediatr Otorhinolaryngol.* 2006 May;70\(5\):807-15.](#)
151. Tsuchiya H, Goto K, Yunohara N, Matsuoka M, Nishioka M, Nakamura Y, Fukuda Y, Endo F, Matsui K. Newborn hearing screening in a single private Japanese obstetric hospital. *Pediatr Int.* 2006 Dec;48(6):604-7.
152. [Tsui PW, McPherson B, Wong EC, Ng IH. Infant hearing screening: effects of timeline. *Clin Otolaryngol.* 2008 Apr;33\(2\):108-12.](#)
153. Uilenburg N, Kauffman-de Boer M, van der Ploeg K, Oudesluys-Murphy AM, Verkerk P. An implementation study of neonatal hearing screening in the Netherlands. *Int J Audiol.* 2009 Mar;48(3):108-16.
154. Van der Ploeg CP, Uilenburg NN, Kauffman-de Boer MA, Oudesluys-Murphy AM, Verkerk PH. Newborn hearing screening in youth health care in the Netherlands: National results of implementation and follow-up. *Int J Audiol.* 2012 Aug;51(8):584-90.
155. Wada T, Kubo T, Aiba T, Yamane H. Further examination of infants referred from newborn hearing screening. *Acta Otolaryngol Suppl.* 2004 Oct;(554):17-25.
156. Watkin P, Baldwin M. The longitudinal follow up of a universal neonatal hearing screen: the implications for confirming deafness in childhood. *Int J Audiol.* 2012 Jul;51(7):519-28.
157. Weichbold V, Nekahm-Heis D, Welzi-Mueller K. Universal newborn hearing screening and postnatal hearing loss. *Pediatrics.* 2006;117(4):e631-6.
158. Wiwanitkit V. Letter to the Editor regarding "A questionnaire-based study on parental satisfaction with a universal newborn hearing screening program in Kuala Lumpur, Malaysia". *Int J Pediatr Otorhinolaryngol.* 2014 Apr;78(4):710.
159. [Wu CC, Hung CC, Lin SY, Hsieh WS, Tsao PN, Lee CN, Su YN, Hsu CJ. Newborn genetic screening for hearing impairment: a preliminary study at a tertiary center. *PLoS One.* 2011;6\(7\):e22314.](#)
160. [Yao GD, Li SX, Chen DL, Feng HQ, Zhao SB, Liu YJ, Guo LL, Yang ZM, Zhang XF, Sun CX, Wang ZH, Zhang WY. Combination of hearing screening and genetic screening for deafness-susceptibility genes in newborns. *Exp Ther Med.* 2014 Jan;7\(1\):218-222.](#)
161. [Yoshinaga-Itano C. Principles and guidelines for early intervention after confirmation that a child is deaf or hard of hearing. *J Deaf Stud Deaf Educ.* 2014 Spring;19\(2\):143-75.](#)
162. Zhang Z, Ding W, Liu X, Xu B, Du W, Nan S, Guo Y. Auditory screening concurrent deafness predisposing genes screening in 10,043 neonates in Gansu province, China. *Int J Pediatr Otorhinolaryngol.* 2012 Jul;76(7):984-8.
- 0 -----
163. Banghova K, Al Taji E, Cinek O, Novotna D, Pourova R, Zapletalova J, Hnikova O, Lebl J. Pendred syndrome among patients with congenital hypothyroidism detected by neonatal screening: identification of two novel PDS/SLC26A4 mutations. *Eur J Pediatr.* 2008 Jul;167(7):777-83
164. Berninger E, Westling B. Outcome of a universal newborn hearing-screening programme based on multiple transient-evoked otoacoustic emissions and clinical brainstem response audiometry. *Acta Otolaryngol.* 2011 Jul;131(7):728-39.
165. Burdzgla I, Pietsch M, Chkhartishvili B, Kevanishvili Z. The proper time for hearing screening in newborns. *Georgian Med News.* 2007 Mar;(144):24-7.
166. Centers for Disease Control and Prevention (CDC). Identifying infants with hearing loss - United States, 1999-2007. *MMWR Morb Mortal Wkly Rep.* 2010 Mar 5;59(8):220-3.
167. Flynn M, Austin N, Flynn TS, Ford R, Buckland L. Universal Newborn Hearing Screening introduced to NICU infants in Canterbury Province, New Zealand. *N Z Med J.* 2004 Nov 26;117(1206):U1183.
168. Sahlberg H, Salonen J, Jääskeläinen S, Lapinleimu H. [Screening for hearing loss in newborns at Turku University Central Hospital]. *Duodecim.* 2011;127(18):1934-41.

169. Szabó E, Szabó G, Simon G. [Audiologic screening of the population aged 0-18 in Hungary]. *Orv Hetil.* 1983 May 29;124(22):1317-22. Hungarian.
170. Ur Rehman M, Mando K, Rahmani A, Imran A, Ur Rehman N, Gowda K, Chedid F. Screening for neonatal hearing loss in the Eastern region of United Arab Emirates. *East Mediterr Health J.* 2012 Dec;18(12):1254-6.
171. Vilarinho L, Rocha H, Sousa C, Marcão A, Fonseca H, Bogas M, Osório RV. Four years of expanded newborn screening in Portugal with tandem mass spectrometry. *J Inherit Metab Dis.* 2010 Dec;33 Suppl 3:S133-8.
172. Zivić L, Obradović S, Stojanović S, Zbiljić I, Jakovljević VL, Zivić D, Stojanović J, Laban O. Neonatal screening of hearing function by otoacoustic emissions--a single center experience. *Vojnosanit Pregl.* 2012 Apr;69(4):340-4.