

Appendix B. Bibliography of excluded studies and reason for exclusion

Reason for exclusion: Not a treatment study

1. Abdala, C., Sininger, Y. S., & Starr, A. (2000). Distortion product otoacoustic emission suppression in subjects with auditory neuropathy. *Ear and Hearing*, 21, 542–553.
2. Adunka, O. F., Roush, P. A., Teagle, H. F., Brown, C. J., Zdanski, C. J., Jewells, V., et al. (2006). Internal auditory canal morphology in children with cochlear nerve deficiency. *Otology & Neurotology*, 27, 793–801.
3. Ahmmed, A., Brockbank, C., & Adshead, J. (2008). Cochlear microphonics in sensorineural hearing loss: Lesson from newborn hearing screening. *International Journal of Pediatric Otorhinolaryngology*, 72, 1281–1285.
4. Akman, I., Özek, E., Kulekci, S., Türkdogan, D., Cebeci, D., & Akdas, F. (2004). Auditory neuropathy in hyperbilirubinemia: Is there a correlation between serum bilirubin, neuron-specific enolase levels and auditory neuropathy? *International Journal of Audiology*, 43, 516–522.
5. Amin, S. B., Prinzing, D., & Myers, G. (2009). Hyperbilirubinemia and language delay in premature infants. *Pediatrics*, 123, 327–331.
6. Attias, J., Buller, N., Rubel, Y., & Raveh, E. (2006). Multiple auditory steady-state responses in children and adults with normal hearing, sensorineural hearing loss, or auditory neuropathy. *Annals of Otology, Rhinology & Laryngology*, 115, 268–276.
7. Attias, J., & Raveh, E. (2007). Transient deafness in young candidates for cochlear implants. *Audiology & Neurotology*, 12, 325–333.
8. Berg, A. L., Spitzer, J. B., Towers, H. M., Bartosiewicz, C., & Diamond, B. E. (2005). Newborn hearing screening in the NICU: Profile of failed auditory brainstem response/passed otoacoustic emission. *Pediatrics*, 116, 933–938.
9. Berlin, C. I., Bordelon, J., St John, P., Wilensky, D., Hurley, A., Kluka, E., et al. (1998). Reversing click polarity may uncover auditory neuropathy in infants. *Ear and Hearing*, 19, 37–47.
10. Berlin, C. I., Goforth-Barter, P., St John, P., & Hood, L. J. (1999, February). *Auditory neuropathy: Three time courses after early identification*. Paper presented at the ARO Midwinter Meeting. Retrieved from <http://www.aro.org/archives/1999/668.html>.
11. Berlin, C. I., Hood, L. J., Morlet, T., Wilensky, D., St John, P., Montgomery, E., et al. (2005). Absent or elevated middle ear muscle reflexes in the presence of normal otoacoustic

emissions: A universal finding in 136 cases of auditory neuropathy/dys-synchrony. *Journal of the American Academy of Audiology*, 16, 546–553.

12. Berlin, C. I., Morlet, T., & Hood, L. J. (2003). Auditory neuropathy/dyssynchrony: Its diagnosis and management. *Pediatric Clinics of North America*, 50, 331–340.
13. Bhat, J. S., Kumar, K., & Sinha, S. K. (2006). Auditory neuropathy/dys-synchrony in school-aged hearing-impaired children: A south Indian perspective. *Asia Pacific Journal of Speech, Language & Hearing*, 10, 157–164.
14. Bradley, J., Beale, T., Graham, J., & Bell, M. (2008). Variable long-term outcomes from cochlear implantation in children with hypoplastic auditory nerves. *Cochlear Implants International*, 9, 34–60.
15. Brookes, J. T., Kanis, A. B., Tan, L. Y., Tranebjærg, L., Vore, A., & Smith, R. J. (2008). Cochlear implantation in deafness-dystonia-optic neuronopathy (DDON) syndrome. *International Journal of Pediatric Otorhinolaryngology*, 72, 121–126.
16. Buchman, C. A., Roush, P. A., Teagle, H. F., Brown, C. J., Zdanski, C. J., & Grose, J. H. (2006). Auditory neuropathy characteristics in children with cochlear nerve deficiency. *Ear and Hearing*, 27, 399–408.
17. Cianfrone, G., Turchetta, R., Mazzei, F., Bartolo, M., & Parisi, L. (2006). Temperature-dependent auditory neuropathy: Is it an acoustic uhlhoff-like phenomenon? A case report. *Annals of Otology, Rhinology & Laryngology*, 115, 518–527.
18. Cohen, N. L. (2004). Cochlear implant candidacy and surgical considerations. *Audiology & Neuro-Otology*, 9, 197–202.
19. Corley, V. M., & Crabbe, L. S. (1999). Auditory neuropathy and a mitochondrial disorder in a child: Case study. *Journal of the American Academy of Audiology*, 10, 484–488.
20. Deltenre, P., Mansbach, A. L., Bozet, C., Clercx, A., & Hecox, K. E. (1997). Auditory neuropathy: A report on three cases with early onsets and major neonatal illnesses. *Electroencephalography & Clinical Neurophysiology*, 104, 17–22.
21. Doyle, K. J., Sininger, Y., & Starr, A. (1998). Auditory neuropathy in childhood. *Laryngoscope*, 108, 1374–1377.
22. Dunkley, C., Farnsworth, A., Mason, S., Dodd, M., & Gibbin, K. (2003). Screening and follow up assessment in three cases of auditory neuropathy. *Archives of Disease in Childhood*, 88, 25–26.
23. Foerst, A., Beutner, D., Lang-Roth, R., Huttenbrink, K. B., von Wedel, H., & Walger, M. (2006). Prevalence of auditory neuropathy/synaptopathy in a population of children with

- profound hearing loss. *International Journal of Pediatric Otorhinolaryngology*, 70, 1415–1422.
24. Forli, F., Mancuso, M., Santoro, A., Dotti, M. T., Siciliano, G., & Berrettini, S. (2006). Auditory neuropathy in a patient with mitochondrial myopathy and multiple mtDNA deletions. *Journal of Laryngology & Otology*, 120, 888–891.
 25. Gravel, J. S., & Stapells, D. R. (1993). Behavioral, electrophysiologic, and otoacoustic measures from a child with auditory processing dysfunction: Case report. *Journal of the American Academy of Audiology*, 4, 412–419.
 26. Hood, L. J., Berlin, C. I., Bordelon, J., & Rose, K. (2003). Patients with auditory neuropathy/dys-synchrony lack efferent suppression of transient evoked otoacoustic emissions. *Journal of the American Academy of Audiology*, 14, 302–313.
 27. Kumar, A. U., & Jayaram, M. (2005). Auditory processing in individuals with auditory neuropathy. *Behavioral and Brain Functions*, 1, 21.
 28. Lee, J. S. M., McPherson, B., Yuen, K. C. P., & Wong, L. L. N. (2001). Screening for auditory neuropathy in a school for hearing impaired children. *International Journal of Pediatric Otorhinolaryngology*, 61, 39–46.
 29. Loundon, N., Marcolla, A., Roux, I., Rouillon, I., Denoyelle, F., Feldmann, D., et al. (2005). Auditory neuropathy or endocochlear hearing loss? *Otology & Neurotology*, 26, 748–754.
 30. Mallur, P. S., & Lalwani, A. K. (2007). Fluctuating corticosteroid-responsive auditory neuropathy/dyssynchrony is suggestive of central nervous system pathology. *Otology & Neurotology*, 28, 1002–1004.
 31. McMahon, C. M., Patuzzi, R. B., Gibson, W. P., & Sanli, H. (2008). Frequency-specific electrocochleography indicates that presynaptic and postsynaptic mechanisms of auditory neuropathy exist. *Ear and Hearing*, 29, 314–325.
 32. Michalewski, H. J., Starr, A., Zeng, F.-G., & Dimitrijevic, A. (2009). N100 cortical potentials accompanying disrupted auditory nerve activity in auditory neuropathy (AN): Effects of signal intensity and continuous noise. *Clinical Neurophysiology*, 120, 1352–1363.
 33. Narne, V. K., & Vanaja, C. S. (2008). Effect of envelope enhancement on speech perception in individuals with auditory neuropathy. *Ear and Hearing*, 29, 45–53.
 34. Narne, V. K., & Vanaja, C. S. (2008). Speech identification and cortical potentials in individuals with auditory neuropathy. *Behavioral and Brain Functions* 4, 1–15.
 35. Narne, V. K., & Vanaja, C. S. (2009). Perception of envelope-enhanced speech in the presence of noise by individuals with auditory neuropathy. *Ear and Hearing*, 30, 136–142.

36. Ngo, R. Y. S., Tan, H. K. K., Balakrishnan, A., Lim, S. B., & Lazaroo, D. T. (2006). Auditory neuropathy/auditory dys-synchrony detected by universal newborn hearing screening. *International Journal of Pediatric Otorhinolaryngology*, 70, 1299–1306.
37. Oysu, C., Aslan, I., Basaran, B., & Baserer, N. (2001). The site of the hearing loss in Refsum's disease. *International Journal of Pediatric Otorhinolaryngology*, 70, 61, 129–134.
38. Pearce, W., Golding, M., & Dillon, H. (2007). Cortical auditory evoked potentials in the assessment of auditory neuropathy: Two case studies. *Journal of the American Academy of Audiology*, 18, 380–390.
39. Pearce, W., & Martin, R. L. (2009). Nuts & bolts: On auditory neuropathy, aka auditory neuropathy spectrum. *Hearing Journal*, 62, 38–40.
40. Podwall, A., Podwall, D., Gordon, T. G., Lamendola, P., & Gold, A. P. (2002). Unilateral auditory neuropathy: Case study. *Journal of Child Neurology*, 17, 306–309.
41. Psarommatis, I., Riga, M., Douros, K., Koltsidopoulos, P., Douniadakis, D., Kapetanakis, I., et al. (2006). Transient infantile auditory neuropathy and its clinical implications. *International Journal of Pediatric Otorhinolaryngology*, 70, 1629–1637.
42. Ramirez, J., & Mann, V. (2005). Using auditory-visual speech to probe the basis of noise-impaired consonant-vowel perception in dyslexia and auditory neuropathy. *The Journal of the Acoustical Society of America*, 118, 1122–1133.
43. Rance, G., Barker, E., Mok, M., Dowell, R., Rincon, A., & Garratt, R. (2007). Speech perception in noise for children with auditory neuropathy/dys-synchrony type hearing loss. *Ear and Hearing*, 28, 351–360.
44. Rance, G., Fava, R., Baldock, H., Chong, A., Barker, E., Corben, L., et al. (2008). Speech perception ability in individuals with Friedreich ataxia. *Brain*, 131, 2002–2012.
45. Rance, G., McKay, C., & Grayden, D. (2004). Perceptual characterization of children with auditory neuropathy. *Ear and Hearing*, 25, 34–46.
46. Rapin, I., & Gravel, J. (2003). “Auditory neuropathy”: Physiologic and pathologic evidence calls for more diagnostic specificity. *International Journal of Pediatric Otorhinolaryngology*, 67, 707–728.
47. Rodriguez-Ballesteros, M., del Castillo, F. J., Martin, Y., Moreno-Pelayo, M. A., Morera, C., Prieto, F., et al. (2003). Auditory neuropathy in patients carrying mutations in the otoferlin gene (OTOF). *Human Mutation*, 22, 451–456.
48. Roush, P. (2008). Auditory neuropathy spectrum disorder: Evaluation and management. *Hearing Journal*, 61, 36, 38–41.

49. Sanyelbhaa Talaat, H., Kabel, A. H., Samy, H., & Elbadry, M. (2009). Prevalence of auditory neuropathy (AN) among infants and young children with severe to profound hearing loss *International Journal of Pediatric Otorhinolaryngology*, 73, 937–939.
50. Sawada, S., Mori, N., Mount, R. J., & Harrison, R. V. (2001). Differential vulnerability of inner and outer hair cell systems to chronic mild hypoxia and glutamate ototoxicity: Insights into the cause of auditory neuropathy. *Journal of Otolaryngology*, 30, 106–114.
51. Sheykholeslami, K., Kaga, K., & Kaga, M. (2001). An isolated and sporadic auditory neuropathy (auditory nerve disease): Report of five patients. *Journal of Laryngology & Otology*, 115, 530–534.
52. Sheykholeslami, K., Schmerber, S., Kermany, M. H., & Kaga, K. (2005). Sacculo-collic pathway dysfunction accompanying auditory neuropathy. *Acta Oto-Laryngologica*, 125, 786–791.
53. Sininger, Y. S. (2002). Identification of auditory neuropathy in infants and children. *Seminars in Hearing*, 23, 193–200.
54. Starr, A., McPherson, D., Patterson, J., Don, M., Luxford, W., Shannon, R., et al. (1991). Absence of both auditory evoked potentials and auditory percepts dependent on timing cues. *Brain*, 114, 1157–1180.
55. Starr, A., Michalewski, H. J., Zeng, F. G., Fujikawa-Brooks, S., Linthicum, F., Kim, C. S., et al. (2003). Pathology and physiology of auditory neuropathy with a novel mutation in the MPZ gene (Tyr145->Ser). *Brain*, 126, 1604–1619.
56. Starr, A., Picton, T. W., Sininger, Y., Hood, L. J., & Berlin, C. I. (1996). Auditory neuropathy. *Brain*, 119, 741–753.
57. Starr, A., Sininger, Y., Nguyen, T., Michalewski, H. J., Oba, S., & Abdala, C. (2001). Cochlear receptor (microphonic and summing potentials, otoacoustic emissions) and auditory pathway (auditory brainstem potentials) activity in auditory neuropathy. *Ear and Hearing*, 22, 91–99.
58. Starr, A., Sininger, Y., Winter, M., Derebery, M. J., Oba, S., & Michalewski, H. J. (1998). Transient deafness due to temperature-sensitive auditory neuropathy. *Ear and Hearing*, 19, 169–179.
59. Starr, A., Sininger, Y. S., & Pratt, H. (2000). The varieties of auditory neuropathy. *Journal of Basic Clinical Physiology & Pharmacology*, 11, 215–230.
60. Stredler-Brown, A. (2002). Developing a treatment program for children with auditory neuropathy. *Seminars in Hearing*, 23, 239–249.

61. Tang, T. P., McPherson, B., Yuen, K. C., Wong, L. L., & Lee, J. S. (2004). Auditory neuropathy/auditory dys-synchrony in school children with hearing loss: Frequency of occurrence. *International Journal of Pediatric Otorhinolaryngology*, 68, 175–183.
62. Tlumak, A. I. (2002). Electrophysiological responses in individuals with auditory neuropathy. *Seminars in Hearing*, 23, 183–191.
63. Varga, R., Avenarius, M. R., Kelley, P. M., Keats, B. J., Berlin, C. I., Hood, L. J., et al. (2006). OTOF mutations revealed by genetic analysis of hearing loss families including a potential temperature sensitive auditory neuropathy allele. *Journal of Medical Genetics*, 43, 576–581.
64. Varga, R., Kelley, P. M., Keats, B. J., Starr, A., Leal, S. M., Cohn, E., et al. (2003). Non-syndromic recessive auditory neuropathy is the result of mutations in the otoferlin (OTOF) gene. *Journal of Medical Genetics*, 40, 45–50.
65. Vinay, & Moore, B. C. J. (2007). Ten(HL)-test results and psychophysical tuning curves for subjects with auditory neuropathy. *International Journal of Audiology*, 46, 39–46.
66. Wang, L. E., Wang, Z., Zhang, D. X., & Cao, K. L. (2009). Application of intraoperative round window electrocochleography for screening the patients with auditory neuropathy. *Chinese Medical Journal*, 122, 941–944.
67. Wang, Q., Gu, R., Han, D., & Yang, W. (2003). Familial auditory neuropathy. *Laryngoscope*, 113, 1623–1629.
68. Weinell, S., Lucky, A. W., Uitto, J., Pfendner, E. G., & Choo, D. (2008). Dystrophic epidermolysis bullosa with one dominant and one recessive mutation of the COL7A1 gene in a child with deafness. *Pediatric Dermatology*, 25, 210–214.
69. Wilson, W. J., Sharp, K. J., Hansen, C., Kwong, P., & Kelly, A. (2007). Especially prominent cochlear microphonic activity in the auditory brainstem response. *International Journal of Audiology*, 46, 362–373.
70. Yalçinkaya, F., Muluk, N. B., Atas, A., & Keith, R. W. (2009). Random gap detection test and random gap detection test-expanded results in children with auditory neuropathy. *International Journal of Pediatric Otorhinolaryngology*, 73, 1558–1563.
71. Yoshinaga-Itano, C., Johnson, C. D. C., Carpenter, K., & Brown, A. S. (2008). Outcomes of children with mild bilateral hearing loss and unilateral hearing loss. *Seminars in Hearing*, 29, 196–211.
72. Zeng, F. G., Kong, Y. Y., Michalewski, H. J., & Starr, A. (2005). Perceptual consequences of disrupted auditory nerve activity. *Journal of Neurophysiology*, 93, 3050–3063.

73. Zeng, F. G., Oba, S., Garde, S., Sininger, Y., & Starr, A. (1999). Temporal and speech processing deficits in auditory neuropathy. *NeuroReport*, 10, 3429–3435.

Reason for exclusion: Not a systematic review or study

74. American Speech-Language-Hearing Association. (1991). *The use of FM amplification instruments for infants and preschool children with hearing impairment* [Position statement]. Available from www.asha.org/policy.
75. Bauch, C. (2003). Research at Mayo Clinic. *Journal of the American Academy of Audiology*, 14, 173.
76. Berlin, C. I. (1999). Auditory neuropathy: Using OAEs and ABRs from screening to management. *Seminars in Hearing*, 20, 307–315.
77. Berlin, C. I., Hood, L., Morlet, T., Rose, K., & Brashears, S. (2003). Auditory neuropathy/dys-synchrony: Diagnosis and management. *Mental Retardation & Developmental Disability Research Review*, 9, 225–231.
78. Berlin, C. I., Li, L., Hood, L. J., Morlet, T., Rose, K., & Brashears, S. (2002). Auditory neuropathy/dys-synchrony: After the diagnosis, then what? *Seminars in Hearing*, 23, 209–214.
79. Colletti, V., Shannon, R. V., Carner, M., Veronese, S., Colletti, L., & Joost Verhaagen, E. M. (2009). Progress in restoration of hearing with the auditory brainstem implant. *Progress in Brain Research*, 175, 333–345.
80. Cone-Wesson, B. (2004). Auditory neuropathy: Evaluation and habilitation of a hearing disability. *Infants & Young Children: An Interdisciplinary Journal of Special Care Practices*, 17, 69–81.
81. Cone-Wesson, B., & Rance, G. (2000). Auditory neuropathy: A brief review. *Current Opinion in Otolaryngology & Head and Neck Surgery*, 8, 421–425.
82. Gibson, W. P., & Graham, J. M. (2008). Editorial: “Auditory neuropathy” and cochlear implantation—myths and facts. *Cochlear Implants International*, 9, 1–7.
83. Hood, L. J. (2002). Auditory neuropathy/auditory dys-synchrony: New insights. *Hearing Journal*, 55, 17–18.
84. Hood, L. J., Berlin, C. I., Morlet, T., Brashears, S., Rose, K., & Tedesco, S. (2002). Considerations in the clinical evaluation of auditory neuropathy/auditory dys-synchrony. *Seminars in Hearing*, 23, 201–208.

85. Kim, L.-S., Jeong, S.-W., Lee, Y.-M., & Kim, J.-S. (in press). Cochlear implantation in children. *Auris Nasus Larynx*.
86. King, A. M., Purdy, S. C., Dillon, H., Sharma, M., & Pearce, W. (2005). Australian hearing protocols for the audiological management of infants who have auditory neuropathy. *Australian and New Zealand Journal of Audiology*, 27, 69–77.
87. Montandon, P., & Pelizzone, M. (1997). Cochlear implants: Patient selection and preoperative assessment. *Advances in Oto-Rhino-Laryngology*, 52, 66–73.
88. Niparko, J. K., & Blankenhorn, R. (2003). Cochlear implants in young children. *Mental Retardation and Developmental Disabilities Research Reviews*, 9, 267–275.
89. Oxenham, A. J., & Bacon, S. P. (2003). Cochlear compression: Perceptual measures and implications for normal and impaired hearing. *Ear and Hearing*, 24, 352–366.
90. Quaranta, N., Bartoli, R., & Quaranta, A. (2004). Cochlear implants: Indications in groups of patients with borderline indications. A review. *Acta Oto-Laryngologica*, 124, 68–73.
91. Rance, G., & Aud, D. (2005). Auditory neuropathy/dys-synchrony and its perceptual consequences. *Trends in Amplification*, 9, 1–43.
92. Rapin, I., & Gravel, J. S. (2006). Auditory neuropathy: A biologically inappropriate label unless acoustic nerve involvement is documented. *Journal of the American Academy of Audiology*, 17, 147–150.
93. Sininger, Y. S. (2001, November). *Changing considerations for cochlear implant candidacy: Age, hearing level and auditory neuropathy*. Paper presented at the A Sound Foundation Through Early Amplification 2001 conference, Chicago, IL: Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.131.9187&rep=rep1&type=pdf>.
94. Sininger, Y. S., & Trautwein, P. (2002). Electrical stimulation of the auditory nerve via cochlear implants in patients with auditory neuropathy. *Annals of Otology, Rhinology & Laryngology*, 119, 29–31.
95. Stelmachowicz, P. G. (2000). Amplification for infants. *Seminars in Hearing*, 21, 409–722.
- Reason for exclusion: Not population under review*
96. Anderson, K. L., & Goldstein, H. (2004). Speech perception benefits of FM and infrared devices to children with hearing aids in a typical classroom. *Language, Speech, and Hearing Services in Schools*, 35, 169–184.

97. Auriemma, J., Kuk, F., Lau, C., Marshall, S., Thiele, N., Pikora, M., et al. (2009). Effect of linear frequency transposition on speech recognition and production of school-age children. *Journal of the American Academy of Audiology*, 20, 289–305.
98. Belzner, K. A., & Seal, B. C. (2009). Children with cochlear implants: A review of demographics and communication outcomes. *American Annals of the Deaf*, 154, 311–333.
99. Blamey, P. J., Sarant, J. Z., Paatsch, L. E., Barry, J. G., Bow, C. P., Wales, R. J., et al. (2001). Relationships among speech perception, production, language, hearing loss, and age in children with impaired hearing. *Journal of Speech, Language, and Hearing Research*, 44, 264–285.
100. Bond, M., Mealing, S., Anderson, R., Elston, J., Weiner, G., Taylor, R. S., et al. (2009). The effectiveness and cost-effectiveness of cochlear implants for severe to profound deafness in children and adults: A systematic review and economic model. *Health Technology Assessment*, 13(44).
101. Brown, A. S., Holstrum, W. J., & Ringwalt, S. S. (2008). Early intervention. *Seminars in Hearing*, 29, 178–195.
102. Ching, T. Y. C., Hill, M., Brew, J., Incerti, P., Priolo, S., Rushbrook, E., et al. (2005). The effect of auditory experience on speech perception, localization, and functional performance of children who use a cochlear implant and a hearing aid in opposite ears. *International Journal of Audiology*, 44, 677–690.
103. Colletti, V., Fiorino, F. G., Carner, M., Miorelli, V., Guida, M., & Colletti, L. (2004). Auditory brainstem implant as a salvage treatment after unsuccessful cochlear implantation. *Otology & Neurotology*, 25, 485–496.
104. Davidson, L. S. (2006). Effects of stimulus level on the speech perception abilities of children using cochlear implants or digital hearing aids. *Ear and Hearing*, 27, 493–507.
105. Dowell, R. C., Blamey, P. J., & Clark, G. M. (1995). Potential and limitations of cochlear implants in children. *Annals of Otology, Rhinology & Laryngology*, 106, 324–327.
106. El-Hakim, H., Abdoell, M., Mount, R. J., Papsin, B. C., & Harrison, R. V. (2002). Influence of age at implantation and of residual hearing on speech outcome measures after cochlear implantation: Binary partitioning analysis. *Annals of Otology, Rhinology & Laryngology*, 111, 102–108.
107. Francis, H. W., Pulsifer, M. B., Chinnici, J., Nutt, R., Venick, H. S., Yeagle, J. D., et al. (2004). Effects of central nervous system residua on cochlear implant results in children deafened by meningitis. *Archives of Otolaryngology—Head & Neck Surgery*, 130, 604–611.

108. Fryauf-Bertschy, H., Tyler, R. S., Kelsay, D. M., & Gantz, B. J. (1992). Performance over time of congenitally deaf and postlingually deafened children using a multichannel cochlear implant. *Journal of Speech and Hearing Research*, 35, 913–920.
109. Gibson, W. P., Sanli, H., & Psarros, C. (2009). The use of intra-operative electrical auditory brainstem responses to predict the speech perception outcome after cochlear implantation. *Cochlear Implants International*, 10, 53–57.
110. Gordon, K. A., Papsin, B. C., & Harrison, R. V. (2006). An evoked potential study of the developmental time course of the auditory nerve and brainstem in children using cochlear implants. *Audiology & Neurotology*, 11, 7–23.
111. Govaerts, P. J., Casselman, J., Daemers, K., De Beukelaer, C., Yperman, M., & De Ceulaer, G. (2003). Cochlear implants in aplasia and hypoplasia of the cochleovestibular nerve. *Otology & Neurotology*, 24, 887–891.
112. Gregg, R. B., Wiorek, L. S., & Arvedson, J. C. (2004). Pediatric audiology: A review. *Pediatric Review*, 25, 224–234.
113. Holt, R. F., & Kirk, K. I. (2005). Speech and language development in cognitively delayed children with cochlear implants. *Ear and Hearing*, 26, 132–148.
114. Kraus, N., & McGee, T. J. (1994). Mismatch negativity in the assessment of central auditory function. *American Journal of Audiology*, 3(2), 39–51.
115. Madell, J. R. (1992). FM systems as primary amplification for children with profound hearing loss. *Ear and Hearing*, 13, 102–107.
116. Miyamoto, R. T., Kirk, K. I., Svirsky, M. A., & Sehgal, S. T. (1999). Communication skills in pediatric cochlear implant recipients. *Acta Oto-Laryngologica*, 119, 219–224.
117. Moeller, M. P., Donaghy, K. F., Beauchaine, K. L., Lewis, D. E., & Stelmachowicz, P. G. (1996). Longitudinal study of FM system use in nonacademic settings: Effects on language development. *Ear and Hearing*, 17, 28–41.
118. Most, T., & Peled, M. (2007). Perception of suprasegmental features of speech by children with cochlear implants and children with hearing AIDS. *Journal of Deaf Studies and Deaf Education*, 12, 350–361.
119. Papsin, B. C. (2005). Cochlear implantation in children with anomalous cochleovestibular anatomy. *Laryngoscope*, 115, 1–26.
120. Rajput, K., Brown, T., & Bamiou, D. E. (2003). Aetiology of hearing loss and other related factors versus language outcome after cochlear implantation in children. *International Journal of Pediatric Otorhinolaryngology*, 67, 497–504.

121. Roush, J., Holcomb, M. A., Roush, P. A., & Escobar, M. L. (2004). When hearing loss occurs with multiple disabilities. *Seminars in Hearing*, 25, 333–345.
122. Russo, N., Nicol, T., Musacchia, G., & Kraus, N. (2004). Brainstem responses to speech syllables. *Clinical Neurophysiology*, 115, 2021–2030.
123. Russo, N. M., Nicol, T. G., Zecker, S. G., Hayes, E. A., & Kraus, N. (2005). Auditory training improves neural timing in the human brainstem. *Behavioural Brain Research*, 156, 95–103.
124. Sarant, J. Z., Holt, C. M., Dowell, R. C., Rickards, F. W., & Blamey, P. J. (2009). Spoken language development in oral preschool children with childhood deafness. *Journal of Deaf Studies and Deaf Education*, 14, 205–217.
125. Szyfter, W., Pruszeicz, A., Karlik, M., Kawczynski, M., Sekula, A., Swidzinski, P., et al. (2003). Poznan's program of cochlear and brainstem implantation: A general review. *European Archives of Otorhinolaryngology*, 260, 460–463.
126. Tomblin, J. B., Spencer, L., Flock, S., Tyler, R., & Gantz, B. (1999). A comparison of language achievement in children with cochlear implants and children using hearing aids. *Journal of Speech, Language, and Hearing Research*, 42, 497–509.
127. Trezek, B. J., & Malmgren, K. W. (2005). The efficacy of utilizing a phonics treatment package with middle school deaf and hard-of-hearing students. *Journal of Deaf Studies and Deaf Education*, 10, 256–271.
128. Uziel, A. S., Sillon, M., Vieu, A., Artieres, F., Piron, J. P., Daures, J. P., et al. (2007). Ten-year follow-up of a consecutive series of children with multichannel cochlear implants. *Otology & Neurotology*, 28, 615–628.
129. Wolfe, J., Schafer, E. C., Heldner, B., Mülder, H., Ward, E., & Vincent, B. (2009). Evaluation of speech recognition in noise with cochlear implants and dynamic FM. *Journal of the American Academy of Audiology*, 20, 409–421.
130. Zwolan, T. A., Zimmerman-Phillips, S., Ashbaugh, C. J., Hieber, S. J., Kileny, P. R., & Telian, S. A. (1997). Cochlear implantation of children with minimal open-set speech recognition skills. *Ear and Hearing*, 18, 240–251.

Reason for exclusion: Not peer-reviewed study

131. Berlin, C. I., Morlet, T., & Hood, L. (2008). *Management of individuals with auditory neuropathy spectrum disorder* [Electronic version]. Retrieved from <http://www.scribd.com/doc/7843429/Berlin-Lake-Como-Paper-in-Color>.

132. D'Cunha, B. (2005, February). *Effectiveness of intervention methods for those diagnosed with auditory neuropathy / auditory dys-synchrony*. Paper presented at the First Annual CSD Research Day.
133. Hayes, D. (2009). Diagnosis and management of pediatric auditory neuropathy [Electronic version]. *Starkey Audiology Series, 1*, 1–4. Retrieved from http://www.audiologyonline.com/management/uploads/web_channel_resource/8_AO_Starkey_Audiology_Series_v1i2.pdf.
134. Hood, L. J. (1998). Auditory neuropathy: What is it and what can we do about it? *Hearing Journal, 51*, 10–18.
135. Hood, L. J., Wilensky, D., Li, L., & Berlin, C. I. (2003, November). *The role of FM technology in the management of patients with auditory neuropathy/dys-synchrony*. Paper presented at the ACCESS: Achieving Clear Communication Employing Sound Solutions 2003, Chicago.
136. Kim, L.-S., Jung, S.-W., Park, Y.-D., & Heo, M.-J. (2004). Cochlear implantation in paediatric auditory neuropathy. *Cochlear Implants International, 5*, 224–225.
137. Leigh, J., Rance, G., Dettman, S., & Dowell, R. (2009). Cochlear implant outcomes for children with auditory neuropathy spectrum disorder. *Perspectives on Hearing and Hearing Disorders in Childhood, 19*, 75–84.
138. Purdy, S. C., & Gardner-Berry, K. (2009). Auditory evoked potentials and cochlear implants: Research findings and clinical applications in children. *Perspectives on Hearing and Hearing Disorders in Childhood, 19*, 14–21.
139. Rose, K., Hood, L., & Berlin, C. I. (2002). An overview of the evolution of auditory neuropathy, its diagnosis and management. *Perspectives on Hearing and Hearing Disorders in Childhood, 12*, 3–11.
140. Scott, T. M. (2003, February 18). Hearing and hearing disorders in childhood: Auditory neuropathy in children. *The ASHA Leader, 8*(3), pp. 17–18.
141. Simmons, J., & Beauchaine, K. (2002). Amplification options in the treatment of auditory neuropathy. *Perspectives on Hearing and Hearing Disorders in Childhood, 12*, 24–27.
142. Simmons, J., & McCreery, R. (2007, June 19). Auditory neuropathy dys-synchrony: Trends in assessment and treatment. *The ASHA Leader, 12*(8), pp. 12–15.
143. Simmons, J. L. (2009). Cochlear implants in auditory neuropathy spectrum disorder. *ASHA Access Audiology, 8*(3).

144. Sirimanna, T. (2009). *2008 annual evidence update on hearing disorders: Auditory neuropathy/auditory dys-synchrony*. Retrieved from <http://www.library.nhs.uk/ent/viewResource.aspx?resID=279920>.
145. Sutton, G., Gravel, J., Hood, L., Lightfoot, G., Mason, G., Sirimanna, T., et al. (2008). *Assessment and management of auditory neuropathy/auditory dys-synchrony. A recommended protocol. Newborn hearing screening programme (England)*. Retrieved from <http://hearing.screening.nhs.uk/cms.php?folder=84>.
146. Wolfe, J., & Clark, J. (2008, July 15). Intervention for a child with auditory neuropathy/dys-synchrony. *The ASHA Leader*, 13(9), pp. 5–6.
147. Zdanski, C. J., Buchman, C. A., Roush, P. A., Teagle, H., & Brown, C. J. (2006). Cochlear implantation in children with auditory neuropathy. *Perspectives on Hearing and Hearing Disorders in Childhood*, 16, 12–20.

Reason for exclusion: Not age under review

148. Dell'Aringa, A. H. B., Esteves, M. C. B. N., Dell'Aringa, A. R., & Arruda, G. V. (2009). Hearing aid fitting results in a case of a patient with auditory neuropathy. *International Archives of Otorhinolaryngology*, 13, 107–110.
149. Jafari, Z., Malayeri, S., Ashayeri, H., & Farahani, M. A. (2009). Adults with auditory neuropathy: Comparison of auditory steady-state response and pure-tone audiometry. *Journal of the American Academy of Audiology*, 20, 621–628.
150. Kraus, N., Bradlow, A. R., Cheatham, M. A., Cunningham, J., King, C. D., Koch, D. B., et al. (2000). Consequences of neural asynchrony: A case of auditory neuropathy. *Journal of Association in Research Otolaryngology*, 1, 33–45.
151. Shivashankar, N., Satishchandra, P., Shashikala, H. R., & Gore, M. (2003). Primary auditory neuropathy—an enigma. *Acta Neurologica Scandinavica*, 108, 130–135.
152. Soliman, S., Kamal, N., & Ashour, S. (2003). Auditory neuropathy and cochlear implantation. *International Congress Series*, 1240, 423–428.

Reason for exclusion: Did not provide pre/post data for analysis

153. Adunka, O., Roush, P., Grose, J., Macpherson, C., & Buchman, C. A. (2006). Monitoring of cochlear function during cochlear implantation. *Laryngoscope*, 116, 1017–1020.
154. Franck, K. H., Rainey, D. M., Montoya, L. A., & Gerdes, M. (2002). Developing a multidisciplinary clinical protocol to manage pediatric patients with auditory neuropathy. *Seminars in Hearing*, 23, 225–237.

155. Gardner-Berry, K., Gibson, W. P., & Sanli, H. (2005). Pre-operative testing of patients with neuropathy or dys-synchrony. *Hearing Journal*, 58, 24–30.
156. Gibson, W. P., & Sanli, H. (2007). Auditory neuropathy: An update. *Ear and Hearing*, 28, 102S–106S.
157. Kei, J., Gibson, R., Tudehope, D., & Maurer, M. (2007). Audiologic outcomes and management of infants with hyperbilirubinemia. *Asia Pacific Journal of Speech, Language, and Hearing*, 10, 71–85.
158. Marco, J., Morant, A., Orts, M., Pitarch, M. I., & Garcia, J. (2000). Auditory neuropathy in children. *Acta Oto-Laryngologica*, 120, 201–204.
159. Pau, H., Gibson, W. P. R., Gardner-Berry, K., & Sanli, H. (2006). Cochlear implantations in children with Waardenburg syndrome: An electrophysiological and psychophysical review. *Cochlear Implants International*, 7, 202–206.
160. Rance, G., & Barker, E. J. (2009). Speech and language outcomes in children with auditory neuropathy/dys-synchrony managed with either cochlear implants or hearing aids. *International Journal of Audiology*, 48, 313–320.
161. Rance, G., Barker, E. J., Sarant, J. Z., & Ching, T. Y. (2007). Receptive language and speech production in children with auditory neuropathy/dyssynchrony type hearing loss. *Ear and Hearing*, 28, 694–702.
162. Simmons, J. L., & Beauchaine, K. L. (2000). Auditory neuropathy: Case study with hyperbilirubinemia. *Journal of the American Academy of Audiology*, 11, 337–347.
163. Walton, J., Gibson, W. P., Sanli, H., & Prelog, K. (2008). Predicting cochlear implant outcomes in children with auditory neuropathy. *Otology & Neurotology*, 29, 302–309.
164. Zeng, F. G., & Liu, S. (2006). Speech perception in individuals with auditory neuropathy. *Journal of Speech, Language, and Hearing Research*, 49, 367–380.

Reason for exclusion: Study did not provide original data

165. Berlin, C. I., Hood, L., Morlet, T., Li, L., Mattingly, K., Taylor-Jeanfreau, J., et al. (2010). Multi-site diagnosis and management of 260 patients with auditory neuropathy/dys-synchrony (auditory neuropathy spectrum disorder). *International Journal of Audiology*, 49, 30–43.
166. Madden, C., Rutter, M., Hilbert, L., Greinwald, J. H., Jr., & Choo, D. I. (2002). Clinical and audiological features in auditory neuropathy. *Archives of Otolaryngology & Head Neck Surgery*, 128, 1026–1030.

167. Miyamoto, R. T., Kirk, K. I., Renshaw, J., Hussain, D., & Seghal, S. T. (2000). Cochlear implantation in auditory neuropathy. *Advances in Otorhinolaryngology*, 57, 160–161.
168. Peterson, A., Shallop, J., Driscoll, C., Breneman, A., Babb, J., Stoeckel, R., et al. (2003). Outcomes of cochlear implantation in children with auditory neuropathy. *Journal of the American Academy of Audiology*, 14, 188–201.
169. Vlastarakos, P. V., Nikolopoulos, T. P., Tavoulari, E., Papacharalambous, G., & Korres, S. (2008). Auditory neuropathy: Endocochlear lesion or temporal processing impairment? Implications for diagnosis and management. *International Journal of Pediatric Otorhinolaryngology*, 72, 1135–1150.
170. Zdanski, C. J., Buchman, C. A., Roush, P. A., Teagle, H. F. B., & Brown, C. J. (2004). Assessment and rehabilitation of children with auditory neuropathy. *International Congress Series*, 1273, 265–268.

Reason for exclusion: Did not address a clinical question

171. Colletti, V., Carner, M., Miorelli, V., Colletti, L., Guida, M., & Fiorino, F. (2004). Auditory brainstem implant in posttraumatic cochlear nerve avulsion. *Audiology & Neuro-Otology*, 9, 247–255.
172. Colletti, V., Fiorino, F., Carner, M., Miorelli, V., Guida, M., & Colletti, L. (2004). Perceptual outcomes in children with auditory brainstem implants. *International Congress Series*, 1273, 425–428.
173. Colletti, V., Fiorino, F., Sacchetto, L., Miorelli, V., & Carner, M. (2001). Hearing habilitation with auditory brainstem implantation in two children with cochlear nerve aplasia. *International Journal of Pediatric Otorhinolaryngology*, 60, 99–111.
174. Colletti, V., & Shannon, R. V. (2005). Open set speech perception with auditory brainstem implant? *Laryngoscope*, 115, 1974–1978.
175. Cone-Wesson, B., & Wunderlich, J. (2003). Auditory evoked potentials from the cortex: Audiology applications. *Current Opinion in Otolaryngology & Head Neck Surgery*, 11, 372–377.
176. Cullen, R. D., Zdanski, C., Roush, P., Brown, C., Teagle, H., Pillsbury, H. C., 3rd, et al. (2006). Cochlear implants in Waardenburg syndrome. *Laryngoscope*, 116, 1273–1275.
177. Kundu, P., & Rout, N. (2010). The impact of high gain conventional hearing aid on OAEs in a case of auditory neuropathy/dys-synchrony. *Eastern Journal of Medicine*, 15, 26–30.

178. Narne, V. K., & Vanaja, C. S. (2009). Perception of speech with envelope enhancement in individuals with auditory neuropathy and simulated loss of temporal modulation processing. *International Journal of Audiology*, 48, 700–707.
179. Runge-Samuelson, C. L., Drake, S., & Wackym, P. A. (2008). Quantitative analysis of electrically evoked auditory brainstem responses in implanted children with auditory neuropathy/dyssynchrony. *Otology & Neurotology*, 29, 174–178.
180. Shalloo, J. K., Jin, S. H., Driscoll, C. L., & Tibesar, R. J. (2004). Characteristics of electrically evoked potentials in patients with auditory neuropathy/auditory dys-synchrony. *International Journal of Audiology*, 43, S22–S27.

Reason for exclusion: Mixed population or mixed treatment; could not separate data for analysis

181. Buchman, C. A., Copeland, B. J., Yu, K. K., Brown, C. J., Carrasco, V. N., & Pillsbury, H. C., 3rd. (2004). Cochlear implantation in children with congenital inner ear malformations. *Laryngoscope*, 114, 309–316.
182. Colletti, L. (2007). Beneficial auditory and cognitive effects of auditory brainstem implantation in children. *Acta Oto-Laryngologica*, 127, 943–946.
183. Colletti, V., Carner, M., Miorelli, V., Guida, M., Colletti, L., & Fiorino, F. (2004). Cochlear implant failure: Is an auditory brainstem implant the answer? *Acta Oto-Laryngologica*, 124, 353–357.
184. Colletti, V., Carner, M., Miorelli, V., Guida, M., Colletti, L., & Fiorino, F. (2005). Auditory brainstem implant (ABI): New frontiers in adults and children. *Otolaryngology—Head and Neck Surgery*, 133, 126–138.