Some Causes of Childhood Permanent Hearing Loss,
Possible Physical Problems and Developmental/Psychological Difficulties

Cause	Possible Co-Occurring Difficulties	References
Genetic Factors (Heredity)	• Children whose hearing loss is genetically based are the least likely of all major etiological groups to have multiple disabilities. • However, approximately 1/3 of genetic hearing loss is associated with another trait recognizable as a syndrome (e.g., Down Syndrome, Usher Syndrome, Fetal Alcohol Syndrome, CHARGE, Treachers, etc.) that can negatively affect physical and psychological well being. • Infants with an FASD may also have low muscle tone or be floppy. They may have poor spatial awareness, resulting in a failure to cross the midline (e.g., reaching for something to the left with one's right hand). Child may have much less detailed language than peers. Expressive skills are superior to receptive skills. They can repeat information and sound as if they understand when they do not. Parents report that children can repeat a rule, tell what might happen if it is broken, and then break it a minute later. When they are reprimanded, they do not understand why the parent is upset. • Individuals in the 70% category of non-syndromic deafness can still experience Specific Language Impairment (SLI).	Brookhouser, Worthington, & Kelly, 1994; Grundfast, 1992; Grundfast, Atwood, & Chuong, 1999; Karchmer, 1985; Vernon, 1969a, 1969b, 1976, 1982 Morgan, Herman, and Woll, 2007. http://www.fasdcenter.samhsa.gov educationTraining/courses/ /FASDTheCourse/module4/mod4 _ct_ss_pg1.cfm
Complication of Rh Factor	• Cerebral palsy • Aphasia • Developmental delay/mental retardation • Multiple disabilities • Behavior disorders • Learning Disabilities	D. F. Moores, 1987; Vernon, 1982.
Meningitis	• High incidence of physical and cognitive disabilities (e.g., aphasia, developmental delay/mental retardation, learning disabilities, behavioral/emotional problems). • Children may suffer severe physical and neuropsychological sequelae and have difficulty in educational programs. • Problems with: short-term memory loss, verbal intelligence, reading difficulties, acquisition of language skills, delayed language skills, visuo-spatial functions, metaphors, idioms, jokes, riddles, discourse, turn taking, inferential reasoning tasks, hyperactivity, distract ability, impulsivity, ability to solve non-routine problems, sentence assembly, ambiguous sentences, making inferences, figurative language inferring other's intentions. • Expressive skills can be superior to receptive ability.	Dodge, 1992; Karchmer, 1985; D. F. Moores, 1987; Schuyler & Rushmere, 1987; Vernon, 1967. Schmidt, Heimann, Djukic, Mazurek, Fels, Wallesch and Nau, 2006. Pentland, Anderson, and Wrennall, 2000.
Maternal Rubella, Congenital Rubella Syndrome (CRS)	• Physical difficulties may include hearing, vision, urogenital, and endocrine disorders. • Increased contraindications for lithium. • Major, frequently late-occurring neuropsychological sequelae (such as developmental delay/mental retardation, autism, abnormal behavior patterns, impulsivity,	Cunningham, 1992; Hutchinson & Sandall, 1995; D. F. Moores, 1987; Sison & Sever, 1993. Bird and Kitson (2000).

	hyperactivity, rigidity and specific learning disabilities). • Language related issues such as intermittent skips in understandability.	
Prematurity	• Infants under 3.5 pounds who experience anoxia or intracranial bleeding are at risk for later developmental problems. • Infants with a hearing loss who are born prematurely often have physical and psychological sequelae (e.g., developmental delay/mental retardation, cerebral palsy, and learning and emotional disabilities). • Hyperactivity, Distractibility, Restlessness, LD, MR, etc.	American Academy of Pediatrics, 1995; Bergman et al., 1985; Duara, Suter, Bressard, & Gutberlet, 1986; Hille et al., 1994; McCormick, 1997; McCormick, Brooks, Workman-Daniels, Turner, & Peckham, 1992; D. F. Moores, 1987; Vernon, 1969b, 1982.
Syphilis Bacterial Infection	• May be asymptomatic at birth, but may later manifest signs of intellectual delay, visual disability and sensorineural hearing loss.	American Academy of Pediatrics, 1995; Blackman, 1997
Herpes Simplex Virus Infection	• Approximately two-thirds of all herpes simplex virus infections are body-system pervasive. • More than half of all survivors have permanent neurological impairments (e.g., learning disabilities) and accompanying visual system disturbances and hearing loss.	Hutchinson & Sandall, 1995; McCollister, 1988; Sison & Sever, 1993; Stagno & Whitley, 1985.
Cytomegalovirus (CMV) Infection	• CMV is a common cause of congenital hearing loss. • One out of 100 infants born with CMV is asymptomatic. • 10% to 15% of affected infants will likely develop central nervous system damage (i.e., hearing loss, developmental and intellectual delays, and psychomotor difficulties). • CMV-related learning problems may go unidentified until formal schooling begins. • Schildroth (1994, 31) noted that “CMV has pernicious educational consequences” for children who are deaf or hard of hearing. • CP, vision loss, small head, motor difficulties, developmental delays, mental retardation, learning delays, autism, add, OCD, SLI, balance. Shorter attention span, impulse control issues, low tolerance for delayed gratification. • Significantly different language processing problems that are just now becoming obvious in research.	Bale, Blackman, Murph, & Andersen, 1986; Barbi et al., 2003; Blackman, 1997; D. F. Moores, 1987; Pappas, 1985; Schildroth, 1994; Schuyler & Rushmere, 1987; Sison & Sever, 1993; Stagno, Pass, Dworsky, & Alford, 1982. Anderson, Amos, Boppana, Pass, 1996; Kylat, Kelly, Ford-Jones, 2006; Dollard, Grosse, Ross, 2007
Toxoplasmosis	• Multiple disabilities including vision loss (eye pain sensitivity to light, tearing of the eyes, blurred vision) and brain damage, abnormal enlargement or smallness of the head, seizures, mental disabilities. • Confusion, lethargy, memory loss, weakness on one side of the body, speech and language disorders.	CDC, Toxoplasmosis Report; Berger, 2003; Freeman, 2005.

National Child Traumatic Stress Network (2006). *White paper on addressing the trauma treatment needs of children who are deaf or hard of hearing and the hearing children of deaf parents.* Los Angeles, Calif., and Durham, NC: National Child Traumatic Stress Network, 2006, www.NCTSN.org.

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