

Non-Genetic Causes of Developmental Delay

The PCP should obtain a comprehensive history to determine if the presence of one or more of these factors is sufficient to account for the developmental delay. A genetic cause of developmental delay may still be present in a child with one or more of these factors.

- **PERINATAL FACTORS:**
 - Maternal factors
 - Maternal age below 20 or above 35¹
 - Overweight^{2,3}
 - Underweight³
 - Preeclampsia³
 - Diabetes³
 - Autoimmune disease³
 - Chorioamnionitis³
 - Psychiatric drug use
 - Intrauterine Infection⁴
- **POSTNATAL FACTORS:**
 - Low birth weight^{1,3,4,5}
 - Premature birth^{1,3,4,5}
 - Post-term births²
 - Complications during birth⁴
 - Hypoxic-Ischemic encephalopathy³
 - Neonatal ischemic stroke³
 - Neonatal cerebral venous sinus thrombosis³
 - Neonatal sepsis³
 - Periventricular Leukomalacia³
 - Untreated jaundice⁴
 - Head injury²
 - Cerebral infections²
 - Hypothyroidism³
 - Intracranial hemorrhage³
 - Hypoglycemia³
 - Hypocalcemia³
 - Hearing loss⁶
 - Environmental toxins (lead)^{4,7}
- **SOCIAL FACTORS:**
 - Low maternal/paternal education^{1,8,5}
 - Exposure to violence, abuse^{7,9}
 - Attributes associated with poverty⁹
 - Malnutrition
 - Poor housing
 - Maternal depression⁷
 - Institutionalization⁷
 - Poor stimulation¹⁰
 - Inadequate access to healthcare¹⁰

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- ¹ Ozkan, Mehpare et. al. "The Socioeconomic and Biological Risk Factors for Developmental Delay in Early Childhood." *European Journal of Pediatrics* 171, no.12 (December 2012):1815-21.
 - ² Persha, Amarjyothi et al. "Biological and Psychosocial Predictors of Developmental Delay in Persons with Intellectual Disability: Retrospective Case-File Study." *Asia Pacific Disability Rehabilitation Journal* 18, no. 1 (2007): 93-100.
 - ³ Ergaz, Zivanit and Asher Ornoy. "Perinatal and Early Postnatal Factors Underlying Developmental Delay and Disabilities." *Developmental Disabilities Research Review* 17, no. 2 (2011): 59-70.
 - ⁴ "Facts About Developmental Disabilities." Centers for Disease Control and Prevention. April 17, 2018. <https://www.cdc.gov/ncbddd/developmentaldisabilities/facts.html>
 - ⁵ Delgado, Christine E. F., Sara J. Vagit and Keith G. Scott "Identification of Early Risk Factors for Developmental Delay." *Exceptionality: A Special Education Journal* 15, no. 2 (2007): 119-136.
 - ⁶ "What Causes Developmental Delay?" My Child Without Limits. Accessed June 5, 2018. <http://www.mychildwithoutlimits.org/understand/developmental-delay/what-causes-developmental-delay/>
 - ⁷ Walker, Susan P et al. "Inequality in early childhood: risk and protective factors for early child development." *The Lancet* 378, no. 9799 (2011): 1325-1338
 - ⁸ Demirci, Aylin and Mehtap Kartal. "Sociocultural risk factors for developmental delay in children aged 3-60 months: a nested case-control study." *European Journal of Pediatrics* 177, no.5 (2018): 691-697.
 - ⁹ *Early Childhood Development and Disability: A Discussion Paper*, Edited by Donna Phillips. Malta: World Health Organization, 2012.
 - ¹⁰ Guimaraes, Alessandro Fernandes et al. "Risk of developmental delay of children aged between two and 24 months and its association with the quality of family stimulus." *Revista Paulista de Pediatria Sociedade de Pediatria de Sao Paulo* 31, no.4 (2013): 452-458.

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This document has been prepared for the use of healthcare professionals when advising patients and families about genetic testing. This does not constitute a legal opinion. If a legal opinion is required, referral to a qualified attorney is recommended.