

Cortical visual impairment (CVI)

Cortical visual impairment (CVI) is bilateral visual impairment due to posterior visual pathway disease. It is one component of a global neurologic process.

Unlike ocular visual impairment, CVI impacts the visual pathways (which bring information from the eye through the brain) and the visual processing centres (the places in the brain that help you locate, attend, and understand what you see), not the eye itself.

Paediatric CVI is not a disease but a result of multiple brain diseases that affect children before birth, at birth, or after birth.

According to the National Eye Institute at NIH and Boston Children's Hospital, causes of CVI can include:

- Hypoxic-ischemic encephalopathy is when a baby doesn't receive enough oxygen and blood flow.
- Periventricular leukomalacia is a brain injury that affects preterm infants and causes the death of brain tissue.
- Traumatic brain injuries
- Neonatal hypoglycemia is a condition in which blood sugar is lower than expected.
- Various genetic syndromes (Williams, Rhetts, CDKL5, Trisomy 21, West, Pitt Hopkins, Malan, etc.) and specific genetic variants are associated with CVI.
- Metabolic disorders
- Twin pregnancy
- Central nervous system developmental defects
- Epilepsy/seizure disorders
- Abnormal Brain Conditions (i.e. Polymicrogyria, Agenesis of the Corpus Callosum, Microcephaly)
- Hydrocephalus (when fluid builds up in the brain)
- Perinatal and pediatric stroke
- Complications from prematurity
- Maternal addiction to drugs and alcohol

Premature infants are particularly vulnerable to anterior and posterior visual pathway disease, which may make identifying the cause of vision loss more difficult.

10 Characteristics of CVI

- Strong color preference
- Visual latency when visually attending to what is presented
- Difficulties with visual complexity in objects, faces, arrays, and environments
- Difficulty distance viewing
- Difficulty viewing what is novel and not familiar
- Need for movement for visual attention
- Visual field preference
- Light gazing and non-purposeful gaze
- Atypical visual reflexes
- Difficulty with visually guided reach

Our Developmental Optometrist can assess a child's specific visual functioning on the CVI Range (0-1), identify the major phases (I, II, and III), describe the level of impact of the CVI characteristics, and provide therapy approaches needed to support progress in visual function.



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