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Cortical Visual Impairment (CVI) has become the leading cause of visual impairment in children in developed countries because of advances in medical care and improved newborn survival rates. ¹⁻³



The number of children with CVI is increasing, elevating it to a public health crisis of high significance. ⁴

20-48%

Studies indicate that 20 to 48% of children with visual impairments in the United States, United Kingdom, New Zealand, and other developed economies have CVI. ⁵⁻⁸

A child has CVI when: ¹⁰

1. The child's visual loss cannot be fully explained by an eye exam.
2. There is a history of a neurological issue or traumatic event that affects the brain - even if brain-imaging studies appear normal.
3. The child demonstrates a set of unique visual and behavioral characteristics identified in medical and educational research. ¹³

44%

CVI is also increasing in developing nations and accounts for up to 44% of visually impaired children in India. ⁹

How is CVI different? There are fundamental differences between cortical visual impairment and ocular visual impairment.

Unique visual deficits related to higher-order visual processing pathways in the brain.

- Children with CVI (or brain-based visual impairment), have difficulties not only with seeing, but with interpreting what is perceived by the eyes. ¹¹
- Individuals with CVI have described their visual world as a "kaleidoscope of meaningless color and pattern." ¹³
- Characteristic behaviors should be assessed with a CVI-specific functional vision assessment (e.g., the CVI Range©). ¹²
- It is important to consider not just visual function (how the eye functions), but functional vision (how a person functions when performing activities requiring vision). ¹⁴

An expectation of improvement.

- The brain has the ability to change, known as neuroplasticity, and develop new neuronal connections in spite of damage to visual processing centers and pathways. ¹⁵
- Over time, a child with CVI may improve their functional vision and access to their visual world, unlocking their learning and social potential. ¹⁶

For more information, visit **PCVIS** at pcvis.vision

PCVIS is a 501(c)(3) nonprofit organization transforming outcomes for children with CVI by advocating for research, policy, education, practice, heightened awareness and understanding of this brain-based visual impairment.

How is CVI diagnosed? While some children with CVI have a co-existing ocular condition, this condition does not fully explain their visual loss. ¹⁷

- After a complete eye examination by a medical doctor – usually an ophthalmologist, neuro-ophthalmologist, neurologist, or optometrist – a diagnosis can be made.
- Children with CVI have history of a neurological issue due to a medical cause such as, but not limited to, perinatal hypoxia, prematurity, hydrocephalus, or genetic disorders. ^{2,3}
- Children with CVI will exhibit some or all of the unique visual and behavioral characteristics as described in the CVI Range. ¹³
- Children may need to be followed over time or undergo workup to exclude other causes of vision loss, such as inherited retinal disorders or delayed visual maturation. ¹⁸
- Brain-imaging studies may or may not indicate the neurological issue. ¹⁹

After diagnosis, a Teacher of Students with Visual Impairment (TVI), Occupational Therapist (OT), and Orientation & Mobility Specialist (O&M) help execute and plan appropriate interventions and adaptations to improve functional vision. There are currently no medical interventions for CVI, although children with CVI should receive treatment for any co-occurring ocular diagnoses. ³

CVI Range[®] Assessment ¹³

The CVI Range is currently the only educational tool that assesses the degree of impact on the functional vision of a child with CVI. Developed by Christine Roman-Lantzy, PhD, specifically for those with CVI, the CVI Range evaluates the overall extent to which the visual and behavioral characteristics associated with CVI, referred to as the 10 Characteristics of CVI, interfere with the child's use of vision and the degree to which each of the characteristics affects the child. (85–92) The term "Range" indicates that functional vision of a child with CVI is measured on a continuum, and that the functional vision can be improved with systematic and tailored interventions. (83)

Traditional assessments (ocular, educational, and psychological) fail to accurately gauge the ability and understanding possessed by a child with CVI. However, through the use of an intentional, systematic approach and methodology, guided by a child's CVI Range score, children with CVI, across varying levels of abilities, can learn to understand the world around them and achieve academically, thrive socially, and acquire independent life skills.

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