



What is Cortical Visual Impairment?

Cortical Visual Impairment (CVI) is a congenital or acquired brain-based visual impairment which is unexplained by an ocular disorder and associated with unique visual and behavioral characteristics.

A child has CVI when:

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

What are the most common causes of CVI?

Medical conditions that disrupted a portion of the visual pathways can cause CVI. These can include:

- Perinatal hypoxia
- Hydrocephalus
- Traumatic brain injury
- Congenital infections such as cytomegalovirus
Intraventricular hemorrhage
- Periventricular leukomalacia
- Genetic disorders
- Stroke

Researchers estimate up to 70% of children with cerebral palsy also have CVI. ³

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Some of these characteristics can be confused with signs of other prevalent diagnoses such as autism.

Similarities include watching objects that move, trouble making eye contact with others, a preoccupation with light... These are things I keep in mind, especially when a child has a history of a neurological condition.

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Stephanie N. Hall, M.S., OTR L, ITFS

Behaviors commonly associated with CVI:

- Lack of visual curiosity
- Hesitancy interacting in new environments or with new items
- Difficulty looking at and reaching for objects at the same time
- Increased visual attraction to lights, windows, or ceiling fans
- Tendency to respond to sound or an auditory stimulus, rather than to visually regard and see a target
- Difficulty finding objects in a busy environment, such as the grocery store or playground
- Difficulty navigating through a building or community environment
- Tilts head to regard object in a specific visual field
- May have difficulty with lower field visual regard, affecting navigation of stairs, curbs and terrain changes, playground slides, and notice of objects on the ground
- Difficulty making eye contact or recognizing familiar faces
- Difficulty visually attending in a busy environment
- May take longer to look at or visually process information

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.

What is the therapist's role?

- Evaluate the child's functional skills to determine the cause of the underlying impairment(s) such as functional vision vs. sensory vs. coordination (usually OT).
- Develop a treatment service plan addressing functional performance that incorporates functional vision and visually guided movement.
- Facilitate social interactions and participation.
- Recommend assistive technologies that support use of vision, such as:
 - Mobility aids: walker, gait trainer, wheelchair.
 - Seating: adaptive seating or positioning device.
 - Communication: Augmentative and Alternative Communication Devices (AAC).
- Collaborate with caregivers regarding:
 - Environmental adaptations (home, school, and community).
 - Adaptations to daily activities and routines.
 - Observations of child's visual responses before and after adaptations.
 - Provide ongoing education and resources
- Collaborate with other professionals regarding:
 - Effective visual adaptations.
 - Child's functional performance in other environments and conditions.

What can you do if you suspect CVI?

- Refer the individual to an ophthalmologist, neurologist, neuro-ophthalmologist, or optometrist.
- Communicate with the physician and/or give parents specific language to discuss with the physician.
- Contact school personnel to ensure the child is assessed by all relevant disciplines (i.e., Teacher of Students with Visual Impairment and Orientation and Mobility Specialist).
- Recommend or perform a functional vision assessment specific to CVI (e.g., CVI Range^{© 1,2}).
- Trial environmental and task adaptations to improve visual response.

Common task, material object, and environmental adaptations

- Reduce the complexity of a visual target/object.
- Reduce or eliminate background information (e.g., put up black trifold, reduce clutter).
- Reduce the number of items offered at one time.
- Allow extra time for a child to view an object before moving it to a new position.
- Position materials or objects in the child's best regarded visual field.
- Change light as needed by either eliminating distracting light and/or using light to spotlight a specific object to elicit visual attention.
- Seating away from a busy part of the room and/or preferential seating.
- Use one bright color to highlight a specific part of materials or environmental features.
- Use language to support vision by labeling the salient visual features of an object.

Things to consider

- Visual accommodations should be considered for all aspects of a child's day.
- Apparent fluctuations in vision manifest from changes in environments and internal states.
- Consider how vision is used in a variety of situations and environments.
- Consider the impact of vision on the identification of any motor delay.
- Incorporate vision strategies from professionals who understand the child's vision.
- The level of visual support needed may change. When the child is completing a familiar task, they may not need as many adaptations. When the child is learning a new task, make it easier to use vision by providing additional visual adaptations.
- Look for opportunities to challenge vision when the child is highly motivated or familiar with the task (e.g., during feeding or during a highly preferred task).

1 Roman-Lantzy, C. (2018). *Cortical Visual Impairment: An Approach to Assessment and Intervention*. 2nd ed., New York, NY: AFB Press.

2 Roman-Lantzy, C. (2019). *Cortical Visual Impairment: Advanced Principles*. Louisville, KY: APH Press.

3 Durkin MS, Benedict RE, Christensen D, et al. (2016) Prevalence of Cerebral Palsy among 8-Year-Old Children in 2010 and Preliminary Evidence of Trends in Its Relationship to Low Birthweight. *Paediatr Perinat Epidemiol*.