PCVIS
Pediatric Cortical Visual Impairment Society

CVI Fact Sheet
for the
Teacher of Students with Visual Impairment

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?

Children with CVI have a history of a medical condition that disrupted the brain's visual pathways before, after, or around the time of birth. Perinatal conditions that cause CVI include:

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

Children with CVI may also have coexisting ocular condition(s), but these conditions will not fully explain their functional visual difficulties.

Behaviors commonly associated with CVI:

- Difficulty using eyes and hands together
- Difficulty looking at and reaching for toys
- Difficulty with fine motor and visual motor skills at the same time (look, look-away, reach pattern)
- Overly attracted to lights
- Tendency to respond to sound or an auditory stimulus, rather than to visually regard and see a target
- Difficulty finding objects in a visually complex environment, such as the grocery store or playground
- Head turns more frequently toward one visual field
- Difficulty making eye contact or recognizing familiar faces
- Delayed or absent blink to touch and threat
- Difficulty finding one's way around a building or community environment
- Lack of visual curiosity
- Novel objects and/or toys may not be regarded
- Difficulty attending to targets (people, objects, classroom board) at far distances
- Requiring the addition of light and/or movement to elicit a visual response to a target/object
- Difficulty navigating through a crowded space, for example, child may freeze and stay in place, hold onto an adult, or move more quickly than is safe
- 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
- Difficuly recognizing, discriminating, and/or identifying images or objects; confusing targets that are similar to others, for example, labeling all four-legged animals as the same animal

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 can you do if you suspect CVI?

- Refer the child to an ophthalmologist, neurologist, neuro-ophthalmologist, or optometrist.
- Communicate with the physician and/or give parents specific language to discuss with the physician.
- Complete the CVI Range© which includes Interview, Observation, Direct Assessment. [1]
- Implement intentional goals and interventions based on the CVI Range score. [1]
- Develop a CVI Schedule to allow the child visual access throughout the day. [1]

What is the TVI's role?

- Know the risk factors for CVI.
- Know the diagnostic criteria for CVI.
- Know the three Phases of CVI. [1, 2]
- Conduct the CVI Range. [1]
- Write IEP goals based on the CVI Range Rating I.
- Write intentional interventions for each of the nine characteristics that are not resolved in Rating II.
- Communicate with family and team members regarding the child's CVI Range score and how it impacts his or her functional vision.
- Plan for visual access throughout the child's day with the appropriate level of support and the CVI Schedule.

Know the 10 Characteristics of CVI [1, 2]

Difficulty With Visual Novelty
Children with CVI seem to prefer to visually regard targets that they have viewed over and over and, conversely, appear to ignore objects or other targets that are new.

Need For Movement
The child may be attracted to objects that have properties of movement over those that remain stationary, including shiny, reflective surfaces that create the illusion of movement.

Absence of Visually Guided Reach
Many children with CVI are unable to look and reach simultaneously. Some may localize or fixate on a target, turn away, and then reach in the direction of the target.

Difficulties With Visual Complexity
Visual complexity encompasses four interrelated aspects:

Complexity of patterns on the surface of objects
Children with CVI in general appear to have the most consistent visual responses to objects with simple patterns or color on their surfaces.

Complexity of visual array
Most children with CVI have ocular abilities that allow the reception of visual information. Often, however, visual information may be seen but cannot be sorted, interpreted, or understood.

Complexity of sensory environment
Visual attention can occur only when there are no distractions from other sensory stimuli. Many with CVI may be unable to establish or maintain visual attention when there is competition from other sensory inputs.

Complexity of visual elements of human faces
Children with CVI often demonstrate unusual regard of faces. Eye-to-eye contact is generally absent. As functional vision increases, the child with CVI may begin to discriminate faces in a slow and predictable way.

Color Preference
The child may have a strong attraction to visual targets of a particular color. Even when there is not a single, preferred color, the use of color is critically important. Vibrant or highly saturated color alerts and maintains visual attention to a target.

Visual Latency
The child's visual responses may be slow or frequently delayed, which may include a delay in recognition or interpretation. However, if sufficient wait time is permitted, the child may eventually turn in the direction of the target and localize (turn toward) or fixate (eye-to-object contact) on the object.

Visual Field Preference
The child may ignore information presented in certain areas of their visual field, or they may turn their heads to view objects from a particular portion of their field of view. Visual field preferences are present in almost all children who have CVI.

Need for Light
The child may exhibit unusual attraction to or need for light, and may spend prolonged periods of time gazing at primary sources of light, whether natural light or artificial light.

Difficulty With Distance Viewing
Many children with CVI who have difficulty with distance viewing behave as though they were highly nearsighted. The child may position his or her face within inches of a visual target and have great difficulty recognizing even familiar or large targets when they are presented beyond the immediate vicinity. This characteristic is closely linked to the characteristics of difficulty with complexity of array.

Atypical Visual Reflex Responses
Many children with CVI tend to have atypical responses with regard to two innate reflexes that serve to protect the eyes from potential harm: the visual blink reflex and the visual threat response. Assessment is of reflexes but they are not part of an intervention protocol or program as they are not directly influenced by instruction.

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.