Fact Sheet 1, Version 1, June 2020

Cortical Vision Impairment (CVI) Factsheet

Overview

What is CVI?

Cortical Vision Impairment (CVI) refers to vision impairment caused by damage or disorder to the visual pathways and visual processing centres of the brain. CVI is the leading cause of vision impairment in children in developed countries (Philip & Dutton, 2014).

CVI is indicated when **all** the following characteristics exist:

- An ocular eye exam that is normal or cannot explain the functional vision impairment;
- A history of a significant congenital or acquired brain injury or neurological disorder; and
- The presence of **unique visual characteristics and behaviours** associated with CVI.

(Roman-Lantzy, 2018).

Causes of CVI

Causes of CVI can include:

- asphyxia
- stroke
- traumatic brain injury
- infection (such as meningitis or toxoplasmosis)
- tumour

CVI can coexist with ocular vision impairment.

With the appropriate, tailored intervention, the functional vision of children with CVI can improve over time.

- "Students with CVI need to have their unique needs addressed and respected, with the probable result that they will be helped to reach their maximum potential" (Roman-Lantzy, 2018, p. 229).
- "Each child (with CVI) has diverse and unique needs and requires corresponding intervention strategies…for the delivery of appropriate services" (Jan, Heaven, Matsuba, Langley, Roman-Lantzy & Anthony, 2013, p. 258)

Contact: Dr Bronwen Scott 0405 411 263
Website: https://www.independentpathways.org/
Email: independentpathwaysaus@gmail.com
ABN: 40 560 312 698

Independent Pathways
Orientation & Mobility and CVI Solutions

Fact Sheet 1, Version 1, June 2020

Visual characteristics and behaviours associated with CVI

There are 10 unique characteristics and behaviours that may be present in children with CVI. These may appear to fluctuate depending on the complexity of the surrounding environment.

Colour preference	Many children with CVI show a strong colour preference by visually attending to objects of a certain colour.
Difficulty with visual novelty	Children with CVI may have difficulty visually attending to novel objects, showing preference for familiar objects that are of a particular colour or pattern.
Visual latency	Visual latency is when there is a delayed response to look towards a visual target. These delays can be significant, up to 20 seconds or more.
Visual field preferences	Many children with CVI have strong visual field preferences (e.g. left or right side, or upper visual field).
Visual complexity	Visual complexity involves three parts: • The pattern or complexity of an object itself; • The visual background surrounding the object (i.e. the visual array); • The total sensory environment. Children with CVI may become overwhelmed and unable to process what they are seeing. Sensory complexity includes any other competing sensory input such as sound or touch, and it also includes physical (postural) demands and fatigue.
Need for light	Staring at light sources for extended periods of time.
Difficulty with distance viewing	As objects are further away, they become a smaller part of the overall picture, and may not be as easily discriminated. Distance viewing is associated with visual array complexity. The closer an object is when viewed, the less cluttered the background appears to be.
Atypical visual reflexes	There are two visual reflexes. One is where the child blinks simultaneously to a touch at the bridge of the nose. The second reflex is when they blink as a visual threat (e.g. an open hand) moves quickly towards the face at midline. A child with CVI commonly presents with absent or latent visual reflexes.
Need for movement	Children with CVI often respond best visually to shiny and reflective objects, or objects that move.
Absence of visually guided reach	Visually guided reach refers to the ability to look at and reach for an object simultaneously. A common pattern seen in many children with CVI is to look toward an object, look away, and then reach for it.

Contact: Dr Bronwen Scott 0405 411 263
Website: https://www.independentpathways.org/
Email: independentpathwaysaus@gmail.com
ABN: 40 560 312 698

What interventions are available?

The CVI Range

Independent Pathways' role is to conduct the CVI Range assessment, determine which phase of CVI the child is currently in, and then work collaboratively with families, therapists and education professionals to implement effective strategies within the child's daily routines. These might be routines in the home, or the child's day-care or educational setting.

Dr Bronwen Scott, O&M Specialist, has over 30 years of experience in the field of orientation and mobility (O&M), including proficiency in administering the CVI Range assessment tool.

The CVI Range is a reliable and validated assessment tool developed by Dr Christine Roman-Lantzy (2007, 2018) that can be used to describe how children with CVI see, develop appropriate interventions, and monitor progress and improvements in functional vision.

The CVI Range assesses for both the presence and the impact of each of the visual characteristics and behaviours described above. This information is collected through:

- Observation of the child in the home and education settings,
- An interview with parents and educators, and
- Direct assessment of the child.

Information from all three elements are used to determine a CVI Range 'score'. From this score, the child is assessed at being at one of three phases of CVI. This information is used to determine appropriate intervention for the child.

Phase One:	The aim is to build consistent visual behaviours.
Phase Two:	The aim is to integrate vision with functional behaviours.
Phase Three:	The aim is the refinement of CVI characteristics, and the development of appropriate orientation and mobility (O&M) goals.

Routines-based Interventions

Interventions are based on the principles of visual plasticity (Schwartz & Begley, 2002), which aids in the improvement of functional vision in children with CVI. To achieve this, we provide children with "as many opportunities to look as possible, by integrating motivating activities and materials into their daily lives" (Roman-Lantzy, 2007, p. 114). Independent Pathways develop interventions primarily related to orientation and mobility (O&M), however the information obtained within the CVI Range can assist both therapy and education.

Contact: Dr Bronwen Scott 0405 411 263
Website: https://www.independentpathways.org/
Email: independentpathwaysaus@gmail.com
ABN: 40 560 312 698

Further Information

Some useful websites for further links and information on CVI are:

CVI Community Australia:

https://www.cvicommunityaus.net

The Perkins Learning CVI Hub:

http://www.perkinselearning.org/cvi

The American Printing House for the Blind CVI page:

http://tech.aph.org/cvi/

Little Bear Sees:

http://littlebearsees.org

Kaleidoscope: The Cortical Visual Impairment Podcast:

http://thecvipodcast.libsyn.com/

References:

Jan, J.E., Heaven, R.K., Matsuba, C., Langley, M. B., Roman-Lantzy, C., & Anthony, T. (2013) Windows into the visual brain: New discoveries about the visual system, its functions and implications for practitioners. *Journal of Visual Impairment & Blindness, 107*(4), 251-261.

Lueck, A.H. & Dutton, G.N. (2015). *Vision and the brain: Understanding cerebral visual impairment in children*. New York: AFB Press.

Philip, S.S., & Dutton, G.N. (2014). Identifying and characterising cerebral visual impairment in children: a review. *Clinical and Experimental Optometry, 97*(3), 196-208.

Roman-Lantzy, C. (2007). *Cortical visual impairment: An approach to assessment and intervention*. New York: AFB Press.

Roman-Lantzy, C. (2010). Teaching orientation and mobility to students with cortical visual impairment. In W. R. Wiener, R. L. Welsh, & B. Blasch (Eds.), *Foundations of orientation and mobility* (3rd ed., Vol. II, pp. 667-711). New York: American Foundation for the Blind.

Roman-Lantzy, C. (2018). *Cortical visual impairment: An approach to assessment and intervention*. (2nd ed.). New York: AFB Press.

Schwartz, J.M., & Begley, S. (2002). *The mind and the brain.* New York: Harper Collins.

Contact

Bronwen Scott, Ed.D., Certified Orientation & Mobility Specialist (COMS)

Ph: 0405 411 263 **Email:** independentpathwaysaus@gmail.com

Web: https://www.independentpathways.org/