

What if the brain cannot see?



Cortical visual impairment (CVI) is a form of **visual impairment** that is caused by a brain problem rather than an eye problem.

CVI is a neurological disorder caused by damage to the visual centres of the brain, which interferes with communication between the brain and the eyes. The eyes can see, but the brain is not interpreting what is being seen. Therefore, it is not a disease of the eye itself or an indicator of cognitive skills.

If a child shows signs of one or more visual or behavioural characteristics indicating impairment

in his/her visual and/or visual perceptual abilities, a neurologist, ophthalmologist, or other medical specialist may diagnose the child with CVI. The level of severity can range from mild to severe depending on the age of the child at the time of insult along with the location and intensity of the damage.

It is also sometimes referred to as cortical blindness, delayed visual maturation, cerebral visual impairment, and neurological visual impairment. But most people with CVI are not completely blind. Though the vision of a person with CVI may change, it rarely ever becomes normal.

There are many conditions that can cause CVI, but the main causes are:

- Asphyxia
- Hypoxia
- Ischemia

These may occur during the birth process, due to developmental brain defects or head injury or hydrocephalus or a stroke involving the occipital lobe; and/or infections of the central nervous system such as meningitis and encephalitis. 80% of children with cerebral palsy also have CVI.

Living with CVI

Since more than 80% of the information we obtain about the world around us is obtained through our visual senses, a child who has CVI or any other visual impairment, has limited or no access to **incidental learning**.



Visual development occurs mainly in the first 7 years of life, because the visual sense is not fully developed at birth. During their developmental years, a child's brain **learns to process** visual input, even for a child with normal vision.

Now for a child with a visual impairment, such as CVI, this **window period** for development should be utilised. Otherwise, it can result in delays, not just on a child's visual development, but in all areas of development. Strategies must be developed to minimise or overcome the impact.

Children with a visual impairment, such as CVI, are at risk for delays in

- Fine motor development
- Gross motor development
- Cognitive development
- Play skills
- Self-help skills
- Social interaction
- Communication and language development

Intervention for children with CVI



The brain is an amazing organ that adjusts and is shaped based on experiences (neuroplasticity).

The child with CVI can be provided with opportunities for the brain to experience certain stimuli, by making adjustments to the visual environment and/or objects within this environment.

Stimulation of functional use of vision can have a positive impact on all areas of development. The use of residual vision, acts as motivation to explore the world.

Stimulation should aim to develop the use of functional vision and/or use of non-visual methods to facilitate progress in all developmental areas.

Children who have multiple disabilities and visual impairment need a team approach for the planning of intervention and educational programs designed to meet specific needs (Hazenkamp, cited in Scholl, 1986).

Here the occupational therapist and speech therapist plays a vital role.



The role of the occupational therapist:

As a member of the team, they have the expertise to interpret the medical and developmental history of a child to educators. For them to design optimal learning experiences, they analyse activity and environmental adaptations. They also must be able to understand differences in the types of visual impairment in order to plan appropriate occupational therapy objectives. Occupational therapy is frequently a primary intervention service when a child has multiple disabilities (which is usually the case with CVI), specifically to improve the child's ability to play and learn.



It provides intervention planning in a child's:

- Gross motor skills
- Fine motor skills
- Spatial awareness
- Play skills
- Self-help skills
- Independence
- Sensory integration
- Specialist equipment

The role of the speech therapist:



Visually impaired children need language. Because they cannot see the world around them, they need it to be spoken about. For example, a child will not associate barking with a dog, unless someone tells him it's a dog. So, language is utilised to explain the environment to visually impaired children. They are unable to read facial expressions, so they cannot understand what's on a person's mind and they cannot work out context, because they cannot see it.



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Therefore, a speech therapist provides intervention by/through:

- Maximising communication opportunities
- Receptive and expressive language development
- Alternative and augmentative communication methods
- Speech development
- Pragmatics
- Feeding
- Hearing and listening
- Play skills

