

# Cortical Visual Impairment (CVI) and Cortical Visual Dysfunction

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## What is cortical visual impairment?

Most people's understanding of visual impairment relates to eye conditions such as cataracts, glaucoma or even a loss of an eye, where the problem is due to the health and/or efficiency of the eyes. However, Cortical Visual Impairment (CVI) (also known as Cerebral Visual Impairment or neurological impairment) and cortical visual dysfunction are much more complex and difficult to understand.

It is a temporary or permanent visual impairment which is a result of a problem in the part of the brain that is responsible for processing what we see and how it's interpreted. It is a condition that occurs when some of the "vision parts" of the brain and its connections are not working properly but the eyes themselves are normal and healthy and it means the brain does not consistently understand and interpret what the eyes are seeing. **It is a brain / processing problem, not an eye problem.**

What we see is in fact processed in different areas within the brain. The brain makes images from the signals sent to it from the eyes. 40% of the brain is devoted to vision, visual processing and awareness of the visual world around you.

The degree of impairment can vary from mild visual perception problems to severe visual impairment/total blindness.

It is very unusual for a child to have CVI in isolation; there is usually another neurological or developmental condition such as developmental delay or cerebral palsy.

There are no operations, medicines or glasses that can correct CVI.

## What can my child see?

Your child should be seen by an Ophthalmologist (specialist eye doctor) and an Orthoptist (specialist in the development of vision). They will check your child's vision, however, the vision recorded in a clinic may not be the same as functional vision at home or school and will be just a 'snap shot' of what your child can see. Also the level of vision varies day to day, moment to moment dependent on surroundings, lighting, mood, tiredness, stress. So by the end of a busy day your child's vision may not be as good as it was earlier in the day. Many children/young people with CVI have reduced functional visual acuity; they will struggle to see small things such as reading small text. Some children with CVI have normal visual acuity but have some difficulty in processing their vision.

## Will wearing glasses help?

Your child will be checked by one of the hospital Optometrists and glasses may be ordered, however, a need for glasses is due to the size and shape of the eye ball only, they cannot help the brain process vision, so even though there are visual problems, 'stronger' glasses will not help.

# Will my child's vision change?

There is no way to predict what a young child's vision will be like as they mature but many children with CVI experience some improvement in their vision over time, however, CVI will always be present and most children will learn ways to cope with their visual difficulties.

## Problems to expect.

Good visual skills are necessary for efficient information processing and if the visual system is damaged then every task can seem difficult.

CVI varies considerably and it depends on where in the brain the problem is and how much of the brain is affected. In many cases, the presence and extent of the CVI and the difficulties it causes may not be known until the child is older, sometimes not until they have settled at school and it becomes apparent that they are having difficulties in learning.

Here is a table of some of the visual problems, the effects you may notice and some helpful tips. Your child may be experiencing only some of these problems.

Visual Problem	Effect	Helpful hints
<b>Colour and contrast problems</b>	Struggle to differentiate soft colours	Have bright, colourful toys with distinct colour boundaries
<b>Poor peripheral vision – seeing what's around you</b>	Missing some of the visual area e.g. the lower area, or upper area or everything on one side	Move head to check missing area like looking down. Training & careful guidance of new environments, crossing roads
<b>Problems with busy or cluttered visual scenes</b>	Finding a toy in a toy box Finding an object on a patterned background Finding an item of clothing in a pile of clothes Watching a busy cartoon on TV	Separate storage for favourite items & always store in same place  Avoid patterns – carpets, duvet covers, wallpaper
<b>Poor control of eye movements, especially smooth tracking</b>	Difficulty in following friends running around the playground. Difficulty following a line when reading	Reduce 'busy' environments. Move head more Follow words with a finger when reading Mask off the other lines
<b>Identifying someone in a group</b>	Spotting Mum in a group of parents	Wear an obvious identifier Always stand in the same place
<b>Impaired recognition</b>	Recognising known people in person or photographs Recognising animals/ shapes Difficulty in reading facial expressions	Use your voice, use obvious identifiers Training and practise Learning tone of voice
<b>Depth perception problems</b>	Problems with floor boundaries, steps, kerbs, uneven surfaces	Mark edge of stairs/steps Avoid patterned floors

<b>Visual Problem</b>	<b>Effect</b>	<b>Helpful hints</b>
<b>Judging speed</b>	Not understanding how far away or the speed of an oncoming car	Training in road safety awareness
<b>Impaired attention</b>	Difficulty doing more than one visual task at a time Distracted by other stimuli like noise Difficulty 'seeing' when talking or listening Frustration at not being able to do these things	Limit distractions, ensure work area is kept distraction free, use a quiet table at school
<b>Impaired orientation</b>	Getting lost in known locations Difficulty in new environments	Use landmarks as reminders Training in orientation and mobility
<b>Visual fatigue</b>	Vision appears to get worse after prolonged visual work	Minimise clutter, reduce the amount of detail and complexity Give well earned breaks

With all children with CVI or suspected CVI it is important to keep visual clutter, distractions and background noise to a minimum whilst they are trying to concentrate on a task.

## Useful contacts

### Orthoptic Department

West of England Eye Unit  
Royal Devon & Exeter Hospital  
Barrack Road  
Exeter

Tel: **01392 406031**

### Devon ROVIC Service (Rehabilitation Officers for Visually Impaired Children) Integrated Children's Services (ICS)

Single Point of Access Team  
VCL-1a Capital Court  
Bittern Road  
Sowton Industrial Estate  
Exeter  
EX2 7FW

Tel: **03300245321**

Email: **VCL.DevonSpa@nhs.net**

## **Visual Impairment Team (support & advisory teachers)**

Milford House  
Pynes Hill  
Exeter  
EX2 5GF

Tel: **0800 0902090**

## **Useful websites**

- [www.littlebearses.org/what-is-cvi/](http://www.littlebearses.org/what-is-cvi/)
- [www.childrenshospital.org/](http://www.childrenshospital.org/)
- [www.tsbui.edu/seehear/fall98/cortical](http://www.tsbui.edu/seehear/fall98/cortical)

This leaflet has been produced by the Orthoptic Department  
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