

## Case Study 9: 6 year old girl with severe/complex visual impairment and eye movement difficulties

### **Report included:**

Laura is a six-year-old girl who attends a school for children with special needs. She has a history of prematurity, meningitis and hydrocephalus leading to cerebral palsy (right side more affected), learning difficulties and moderate visual impairment. In addition to reduced vision Laura has difficulty with orientation in new/unfamiliar environments where she “bashes into furniture”. Laura’s mother reports that Laura doesn’t readily make eye contact. She enjoys TV but likes to be close to the screen. Laura has glasses which neither the school nor her mother feel make much difference. The family would like to know how they and the school can best help Laura cope with her visual problems. Laura’s parents completed a ‘visual skills inventory’ of questions developed by the visual assessment team at the Royal Hospital for Sick Children, Glasgow to elicit information about strengths and weaknesses in her visual processing.

### **Summary of findings:**

Laura’s high contrast vision is moderately reduced and she would benefit from enlargement of educational and recreational material (see enclosed images for appropriate size and complexity). A rule of thumb is that Laura needs objects and detail need to be 4x larger or 4x closer than someone with typical or '20:20' vision for her to appreciate them. Enclosed are some examples of images that are of an appropriate size and complexity for Laura’s vision.

Laura’s visual difficulties are compounded greatly by her inability to move her eyes smoothly and accurately and the answers that Laura’s parents gave to the visual skills inventory demonstrate that she also has some limitations in her ability process visual information rapidly, particularly when movement or a lot of visual information is involved. Additionally she demonstrated a failure to detect objects positioned on her right-hand side, especially if they were in the lower right part of her field of vision.

Laura finds it difficult to see objects within a busy or complex scene. The more complicated the picture becomes the less able she may be to see the detail in the picture. In order to help Laura see and understand visual information it would be useful if material is presented slowly (giving her plenty of time to find the image/word/toy), in a non-crowded format (e.g. isolated images on a plain background) and at high contrast (e.g. black on white or contrasting colours). She can be encouraged to touch the images as this helps her “find” the image with her eyes too.

Complexity/  
crowding issues

We did not formally compare the vision in Laura’s right and left eyes today, but as the left eye turns out it is likely that Laura mainly uses her right eye when viewing the world. Despite this Laura responds best to objects positioned on her left-hand side. This ties in with her right-sided limb weakness and her difficulty in seeing objects to

Visual field neglect

the right and below right is likely to contribute to her difficulties with moving through unfamiliar spaces. When speaking to Laura and working with her she may find it easier if people and objects are positioned centrally or slightly to the left of the centre of her vision. Laura may turn her head to the right to make the best of her vision and she also likes to get close to the TV screen. Both are visually useful adaptations for Laura and neither is harmful.

Given the apparent change in Laura's refractive error (need for glasses) over time it is unlikely that Laura will benefit from spectacles at this stage however, Laura's visual health and status should be monitored regularly and she may benefit from advice from the paediatric low vision clinic and from a support teacher for the visually impaired.

We have enclosed some strategies, based on Laura's parents' answers to the visual skills inventory, which may be helpful to reduce the impact of Laura's eye movement and visual processing difficulties and maximise her ability to use her vision.

**Visual function results:**

Current prescription (approx. 1 year old, good condition, from hospital eye service):

R -0.50/-1.00x90 L -0.75/-1.00x90

Refractive error (1% Cyclopentolate HCl):

R +0.75/-1.00x90 L +0.75/-0.50x90

Eye movements: poor/jerky pursuit movements, very slow re-fixation  
intermittent tonic deviation into downgaze (apraxia of gaze)

Ocular posture: left divergent strabismus

Visual acuity without glasses (Kay isolated picture test @ 3m):

Binocular 6/24 (naming)

At near (Kay near picture test @ 33cm): Binocular 6/24 (naming)

Accommodation (dynamic retinoscopy): normal responses

Visual Fields (gross confrontation): suggests right and right inferior field defect/neglect.

Ophthalmic findings: healthy as seen right and left.

Seen by: AN Other, Senior Optometrist

*Cc: Parents, Teacher, Therapists, General Practitioner, Paediatrician, Paediatric low vision clinic, Vision support teacher for the visually impaired*