



Visual impairment and orthoptics (clinical and functional vision assessment)

The best of both: working together to support children with visual impairment and additional complex needs

A series of leaflets exploring ways that the QTVI (Qualified Teacher of Visually Impaired children) and other professionals can achieve an effective working relationship together and ensure the best outcome for children with special requirements.

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“The team”

A child with a combination of disabilities is likely to receive continued support from several agencies, each to address a medical, educational, therapeutic or social need. Each supporting professional may have their own expertise, priorities, methods of working and aims for the child.

In this series of leaflets we look at the above scenario and explore ways that the QTVI can support effective team work with other professionals. We aim to discover how good communication and joint working can help to:

- eliminate seemingly conflicting or confusing practice for both professionals and parents
- avoid, or solve, practical problems
- co-ordinate working practice, aims and targets to ensure the best possible outcome for the child.

Other titles in the series include:

- Visual impairment and physiotherapy
- Visual impairment and occupational therapy
- Visual impairment and speech and language therapy
- Visual impairment and specific medical needs and medication.



How the orthoptist and QTVI can achieve the “best of both”

This leaflet explores the roles of the orthoptist and the QTVI in their joint working with children who have multiple disabilities including visual impairment (MDVI).

Vision assessment – clinical and functional

Orthoptists and QTVIs are both involved in the assessment of children’s vision but from very different perspectives. Orthoptists normally see children in the eye clinic, although some may carry out vision screening in school. The orthoptist’s clinical assessment aims to establish visual acuity, checks for strabismus (squint), amblyopia (lazy eye) and examines ocular motility status (eye movements).

The QTVI establishes how a child uses their vision in everyday situations (functional vision assessment). With very young children or those with complex needs, this can be an ongoing process as visual skills can change and develop. Children will be seen by the QTVI regularly (depending on their needs), with a focus on the child’s access to the school curriculum.

Eye care professionals – Where does the orthoptist fit in?

Orthoptists are part of health services and work alongside an ophthalmologist (a doctor who specialises in eyes and vision). Some orthoptists may also see children for vision screening in community clinics.

Other professionals in eyecare include:

- opticians, who dispense glasses and lenses
- optometrists (formally called ophthalmic opticians) prescribe and dispense glasses and some may specialise in detecting eye disease
- ophthalmic nurses and technicians
- low vision therapists
- eye clinic liaison officers (ECLOs).



At the hospital eye clinic, children are examined by the ophthalmologist. As part of the assessment they will see the orthoptist. If the child has a squint or needs treatment for amblyopia (see explanation below), follow up appointments may be with the orthoptist only. The ophthalmologist may continue to see the child annually to check eye health and refraction (this is the ability of the eye to bend light so that an image is focused on the retina more commonly known as a “glasses test”).

In the community, children may see an orthoptist for vision screening. They are also seen by an orthoptist in the eye clinic, often following referral by a health visitor or other professional. Some orthoptic services offer screening in special schools.

The orthoptist has responsibility for:

- investigation of visual acuity
- investigation and diagnosis of ocular motor (eye movement) disorders or nystagmus (involuntary eye tremor)
- investigation and diagnosis of ocular deviation, such as a squint, where an eye may turn in (convergent squint) or turn out (divergent squint), occasions where one eye may be higher or lower than the other
- investigation and diagnosis of amblyopia, sometimes referred to as a lazy eye (this is when one or both eyes don't see as well as they should due to the presence of a squint, a significant glasses prescription in one or both eyes, or other problems such as cataract)
- assessment of binocular vision – both eyes working effectively together to achieve 3D vision
- treatment of amblyopia, eg by patching therapy
- management of glasses wear and regular refraction appointments
- referral back to the ophthalmologist (if necessary), low vision services, QTVI of the local authority (LA) visual impairment service and ECLO (eye clinic liaison officer).

When assessing a very young child or a child with additional needs in the orthoptic department, an acuity measurement will always be attempted, and as part of that some functional testing may be carried out, eg observation of the child's reaction to light, faces, objects etc. Children attending a specialist paediatric department or assessment centre may have a more detailed functional assessment.

Acuity is assessed using age and ability appropriate tests. Examples include "preferential looking" (see below), Cardiff Acuity Test (often referred to as Cardiff Cards), Kay Pictures, and Keeler (letter matching). These tests, in addition to the cycloplegic refraction* carried out by the ophthalmologist, can identify refractive error, amblyopia and other eye conditions, and will be used to monitor a child's condition and treatment.

*The ophthalmologist focuses a beam of light onto the eye's retina to check for long or short sightedness. Different lenses are used to measure the degree of refractive error. Eye drops to dilate the pupils are administered prior to this procedure.



Clinical vision assessment: children with complex needs

Children who have complex needs can be difficult to assess. Most test materials rely on the child being able to co-operate and understand what is required. The orthoptist can enable a child to match symbols or pictures if they cannot say what they see. Alternatively the child may indicate recognition of the symbols, eg using signs, gestures or sounds.

When the child cannot recognise or match images, a preferential looking test may be used. This type of test is used to assess very young children, who are naturally inclined to look at a pattern or picture rather than a blank space. Some preferential looking tests are based on "gratings" – a series of rectangular cards displaying stripes on one side and plain grey on the other. As the stripes become narrower, a point is reached where the eyes can no longer detect the difference between the pattern and the grey. At this point the child will stop looking towards the pattern, and an acuity score will be estimated. Cardiff Cards work in the same way, but rather than stripes there are pictures with thick bold outlines reducing to very fine ones (see image above).

This type of test has proved suitable for some children with complex needs. However, others may have motor-control difficulties, delayed responses, roving eye movements, "absence" seizures or other issues that can affect the result.

Even when clinical assessment has been relatively successful, the outcome may not be straightforward. Some children may have a “normal” result in clinical tests but have significant visual problems at home or school. Conversely, children who have significant problems seeing symbols on the test cards, sometimes manage everyday tasks surprisingly well.

Noah

Noah has retinal dystrophy (a disorder of the eye which causes damage to part of the retina). He achieved a surprisingly good result with the Kay Pictures acuity test. However in a functional situation, at home and in school, he does not see low contrast objects or images and his vision is severely impaired in reduced light. This is where the QTVI can contribute.

Functional vision assessment (FVA): the QTVI’s role

With children who are difficult to assess in the clinic, the QTVI has an advantage as they can observe the child’s visual behaviour over a period of time, and in different situations. Working in the home or school provides opportunities to discuss the child’s vision with parents or teachers. Knowing their own children well, school staff and caregivers can describe any difficulties or unusual “looking behaviours” that they might have observed.

One of the first things a QTVI will investigate when meeting a new child, is the way he or she uses vision in everyday situations. This information enables the QTVI to advise parents and teachers of ways they can make play and learning activities more accessible to the child. FVA also helps in planning a programme to optimise and develop a child’s visual and compensatory skills.

FVA investigates a wide range of visual skills including:

- visual awareness; fixation; eye contact; tracking; and visually switching from one stimulus to another
- visual field
- visually directed reach and hand-eye co-ordination
- contrast sensitivity – ability to see low-contrast objects and images
- figure-ground discrimination – seeing objects against complex backgrounds
- recognition – of objects, faces, pictures, symbols, shapes, colours
- perception of depth/3D
- mobility and orientation
- the effect of environmental factors – lighting, glare, contrast, visual crowding, extraneous noise.

Megan’s story

Three-year old Megan was referred to the vision impairment service by her orthoptist following a visit to the eye clinic. Born at 28 weeks, Megan has epilepsy and global developmental delay. Electrodiagnostic tests indicated a degree of cortical damage which was likely to affect her vision.

At the clinic, Megan turned to the light from the window but did not respond to any of the items used to attract her attention. She became very distressed and wouldn't let the ophthalmologist look at her eyes. Her mum was upset at Megan's lack of response. She realised that Megan was not as visually responsive as other children but had seen her reach for certain toys on the floor. She wanted to discuss Megan's vision with the consultant but felt she needed to get Megan out of the clinic as she was becoming inconsolable.

Sue, the QTVI, went to meet Megan and her mum at home. Megan played on the floor, while Sue asked mum some questions about Megan's general development, interests and visual responses. Sue noticed Megan reach for toys but only when they were on the plain carpet. She didn't seem to notice them on her patterned blanket. Having located a toy, Megan would then search the area with her hands before grasping it.



Sue showed Megan her pen with a light-up star on the top. Megan noticed it, but lost visual contact when the light moved. When Sue offered her a choice between her favourite yellow rabbit and a white brick, Megan handled each one before grasping the rabbit, indicating possible difficulty with visual recognition. Sue observed that when Megan was distracted by a noise, she stopped playing and listened.

These observations indicated that Megan had some visual issues, but not necessarily those that could be easily identified in a clinical vision assessment.

Co-operative problem solving

Megan's mum was apprehensive about the next eye clinic visit. Last time Megan became very distressed when the nurse put drops in her eyes. They had to wait quite a long time for the drops to take effect, then Megan screamed throughout the examination. Mum came away with lots of unanswered questions that she felt unable to ask.

Sue contacted the clinic and explained Megan's difficulties. The consultant agreed that the eye drops could be administered by her mum at home, and luckily for Megan the first patient of the day had cancelled, so her appointment was brought forward.



Sue had been able to answer some of mum's questions following Megan's last clinic visit and described some of the assessments and procedures that might happen at future clinics. She explained why the eye drops were necessary and how Megan's vision might be affected for a few hours afterwards. Sue accompanied Megan and her mum to the clinic and submitted a copy of her own report describing Megan's functional vision and progress. The clinic visit was much less stressful this time and Megan's eyes were successfully examined. Sue received a copy of Megan's clinical assessment. Megan was found to be short-sighted and was prescribed glasses. The clinical and functional assessments together provided a much clearer picture of Megan's vision. Sue was able to support Megan in wearing her glasses and give feedback to the orthoptist regarding their success.



David

David attends a special school for children with severe learning difficulties. At his eye clinic appointment the orthoptist tried Kay Pictures to assess his visual acuity. David was unable to match or name the pictures. Sometimes he thought the duck was a fish or the house was a car. He was more successful with the preferential looking test, but this did not give such an accurate result. The orthoptist contacted the QTVI at David's school and asked if she could help. The QTVI lent Mum a copy of the Kay Pictures to take home and helped David practise matching and naming them. She was able to assess his near and distance vision in school using the Kay tests. At his next clinic visit David had a successful acuity test and the results were consistent with his test in school.

These two case studies illustrate ways that the orthoptist and QTVI together can achieve a full clinical and functional assessment of a child's vision.

Other co-operative working between the QTVI and orthoptist includes follow-up treatment for amblyopia, glasses-wear, and the use of low vision aids as illustrated in the following examples.

Nicky

Nicky is a wheelchair user and needs a low vision aid. He can't hold or move it himself. His orthoptist and low vision therapist found the best solution was a magnifier attached to his wheelchair using a double ended clamp and flexible arm. Under the advice of the orthoptist and low vision therapist, Nicky's QTVI helped him to use his low vision aid effectively in school.

Millie

Millie found wearing her glasses with her new hearing aid very difficult and would often throw off her glasses. Millie's QTVI arranged an appointment with the orthoptist, who following a discussion with the optometrist and audiologist, was able to attach her hearing aid to the arm of her glasses to reduce the irritation of wearing both behind her ear. Millie now wears both her glasses and hearing aid happily.

Conclusion

Good communication between the QTVI and eye clinic is essential, especially when dealing with children who have complex disabilities. Some local authorities recognise this, and hold a regular joint assessment clinic for these children. Unfortunately in other areas QTVIs and orthoptists report that co-operative working is difficult to achieve. However, in the interest of the child, we should always seek improved communications.

Where good partnerships exist, everyone benefits. Problems are readily identified and referrals made; information shared to provide a comprehensive assessment result; and families and schools supported to help children manage patches, glasses and low vision aids.

With co-operative working the orthoptist and QTVI have a great capacity to achieve the “best of both” for children with impaired vision.



Insight magazine

Inspirational and practical information on the education, health and wellbeing of **children and young people** with visual impairment, including those with complex needs.

Parents now receive **Insight** free when they become RNIB Members. **Insight** is also now available free to VIEW members! For details, call **0303 1234 5555** and quote “Insight offer”.

More from RNIB

Assessing functional vision: children with complex needs
Catherine Southwell (2003), RNIB, price £12.50

This booklet explores the different factors that affect what a child sees, such as the size, colour and position of an object, backgrounds, lighting condition and how much time a child is given to make sense of what is presented. The assessment activities have proved useful for assessing children with a wide variety of abilities, needs and interest and are designed to enable you to establish a baseline of visual functioning. To order, call 0303 123 9999 or visit rnib.org.uk/shop

