6.2 Vision assessment

6.2.3 Corneal light reflex test (Hirschberg test)

Aim

To detect strabismus (squint) in infants and young children.

Background

Alignment of the eyes during the early years of life is considered critical for development of binocular vision. Amblyopia is a condition that occurs when there is altered visual input or abnormal binocular interaction resulting in diminished vision in one or both eyes. Strabismus is the most common cause of amblyopia and is the term used to describe any anomaly of ocular alignment. It can occur in one or both eyes and in any direction.

Amblyopia is unique to children but is preventable if the child receives adequate treatment in childhood. The prevalence of amblyopia is approximately 1% - 4% of preschool children.

In a young baby both the accommodation and convergence systems are still developing which may cause the Corneal Light Reflex (CLR) to appear unequal up to three months of age.

Overall vision development is said to be complete by the time the child is eight years of age, however some aspects of visual development will already be complete by the time the child reaches school age.

The available evidence suggests that vision screening programs aimed at children aged 18 months to five years of age lead to improved visual outcomes.

The CLR Test forms part of the overall vision assessment along with the Cover Test (CT) and testing for visual acuity, as age appropriate.

For further information on vision refer to Community health policy guidelines:

- ‘3.7.1 Vision’, which includes information on development of vision; normal vision behaviours; vision problems; common vision defects, including strabismus; common eye disorders, including amblyopia; visual acuity tests; and rationale for vision screening.
- ‘3.8.12.2 Vision assessments in children-background’, which provides further information on assessment and evaluation; management and treatment; and referral.

Universal assessment using the CLR Test should be conducted at each universal child health contact, and the School Entry Health Assessment, usually completed when the child is at kindergarten.

Targeted assessment of the CLR should be performed where the child has abnormal head posturing or where the parent/carer, teacher or health professional has a concern about strabismus or vision.
Key Points

- This test should be undertaken by staff with appropriate training only.
- Prior to performing the test, it is important to obtain a history from the parent/carer. The child health Personal Health Record, CHS 409 - School Entry Health Assessment Record and the Enhanced Aboriginal Child Health Schedule all contain questions which aim to highlight parental concerns about their child’s vision.
- Testing for strabismus using the CLR involves shining a light into a child’s eyes. The position of the light reflections is then observed on the cornea.
- The light source should be large enough to view both corneas at once but adjustable for client comfort. The room lighting should be dark enough not to compete with the light source.\(^1\)
- The CLR Test is especially useful for children who are unable to cooperate or focus.
- Community health staff should practice overarching infection prevention and management. Hand hygiene is to be performed at all appropriate stages of the procedure.

Equipment

- Pen torch, ophthalmoscope or otoscope
- Small toy to attract child’s attention

Procedure

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<th>Steps</th>
<th>Additional information</th>
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<td>1. Engagement and consent:</td>
<td>Encourage parent/carer support and involvement with the procedure if appropriate.</td>
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<td>- Explain the procedure to the child, and parent/carer if present. Allow sufficient time for discussion of concerns.</td>
<td>If obtaining verbal consent, discuss with the parent/carer whether they consent to sharing of information with relevant school staff.</td>
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<td>- Ensure either written or verbal parental consent has been obtained prior to proceeding with testing.</td>
<td>Section 337(1) of the Health Act 1911 authorises nurses specified in the schedule to examine a child without parent consent if required.</td>
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<td>- Refer to ‘Special circumstances’ section in 4.4.2 School entry health assessments guideline or 4.2.4 Early detection sub-policy if screening is indicated and consent not able to be obtained for a school aged child.</td>
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NSQHS Standards: 1.7, 1.8

6 Procedures
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| **2. Preparation:**  
  - Sit the child comfortably on the parent/carer’s lap. An older child may prefer to stand.  
  - The examiner should face the child in front, square on, about an arms length (30-50 cm) away from the child.  
  - Observe the child’s eyes, head posture and alignment while child is in a relaxed state. | The child and examiner should be at approximately the same height.  
Be aware of normal convergence of eyes due to accommodation if the light is closer than 30cm.  
Ensure room lighting is not bright, as this may confound results.  
Note any abnormalities with the child’s eyes including the size and symmetry of pupils.  
Abnormal head posturing may indicate a visual difficulty. |

| **3. Testing strategies:**  
  - The examiner should attract the child’s attention to the pen torchlight by holding a small toy on top of the torch.  
  - The light is shone into the child’s eyes and the position of the light reflections is observed on the cornea.  
It is important to estimate the location of the light reflexes from the centre of the pupil:  
  - Where both light reflexes are symmetrical and located just slightly nasal to the centre of the pupil, the Hirschberg Test is negative and no strabismus is present.  
  - Where one reflex is in a position other than this, the Hirschberg test is positive and strabismus is suspected.  
The child needs to look toward the light or toy to achieve the measurement.  
Make sure that both eyes are in the sphere of the light.  
A normal light reflex is slightly towards the nose and not central, due to the position of the maculae in the retina.  
In some young children, a wide, flat nasal bridge with prominent epicanthal folds gives the eyes a crossed appearance. These are false squints and are not evidence of strabismus. False squints have symmetrical corneal light reflexes. | |

| **4. Explain results to parent/carer (if present) or inform parent by telephone or in writing.** | For outcome and referral pathways see below. |

| **5. Documentation:**  
  Documentation of CLR should include | Document findings in any one of the following:  
  - Child Health- CHS 800 and Personal |
Outcome

Babies less than 3 months of age with an unequal CLR should be noted and rechecked after 3 months of age.

Children who have an unequal CLR should have the Cover Test, CLR and VA (if age appropriate) rechecked within three months.

If any other anomalies are observed during vision assessment, Community health staff should use their clinical judgement to determine follow up or referral parameters. e.g.: ptosis of the eye or reluctance to have one eye covered.

It is recommended that staff use the correct terminology when discussing any vision results with the parent or carer. The use of the term ‘lazy eye’ can be misleading as it can relate to several different eye conditions. A squint is a more accurate description.

Referral pathway

Children with an unequal light reflex on re-check should be referred to a medical practitioner for assessment and/or referral. Results of all visual parameters tested should be included in the referral.

Children with an unequal light reflex who also have concerns with the visual acuity and/or cover test should be referred to the child’s medical practitioner for assessment and referral to an ophthalmologist or follow local service referral pathways to ophthalmology services. The CHS 663 - Referral from Community Health Services form should be used to refer the child to their medical practitioner. The CHS 418 - Information to Ophthalmologist from Community Health form may be completed by the CHN for the parent to give directly to the ophthalmologist. These forms will assist to facilitate monitoring of referral outcomes. Use of a reply paid envelope may help facilitate referral feedback.

Where ophthalmology services are limited or infrequently available, initial referral to an optometrist may be used to expedite assessment, treatment or prioritising for ophthalmology services.

Always obtain parental consent for referral.
Referral feedback

It is recommended that when there is no feedback received from the medical practitioner and/or ophthalmologist that the referral should be followed-up with the parent or carer and outcomes carefully documented.

Related policies, procedures and guidelines

| 3.7.1 Vision |
| 4.4.2 School entry health assessments |
| 6.2.2 Red reflex test (Bruckner Test) |
| 6.2.4 Distance vision testing (using Lea Symbols Chart) |
| 6.2.5 Cover Test |

Community health staff should also refer to any service specific policies where applicable.

Useful resources


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<td>Statewide Policy Unit.</td>
<td>Birth to School Aged Children.</td>
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References


