6.2 Vision assessment

6.2.2 Red reflex test (Bruckner test)

Aim

To detect opacities in the pupil or corneal abnormality, and abnormalities of the back of the eye. The potential for strabismus can also be identified.²

Background

The Red Reflex Test is vital for the early detection of potential vision problems in neonates, infants and children.¹ Any abnormalities of the red reflex require immediate referral to the ophthalmologist via a medical practitioner.

Any asymmetry of the red reflex between the eyes is usually an indicator of serious ocular pathology. If manifest strabismus exists, one pupil will appear brighter than the other.

Opacities anywhere in the eye from the cornea to the vitreous gel or large retinal lesions will produce an abnormal reflex, the opacities may be white or yellow, show black focal areas or there may simply be an overall dim reflex. Leukocoria (white pupil reflex) may indicate a retinoblastoma, corneal opacity, hyphema or other anterior chamber fluid, congenital cataract, vitreous opacity or retinal disease. Dim reflexes may be a result of refractive errors such as myopia. Unequal refractive errors may indicate unilateral high myopia (short sightedness), hypermetropia (long sightedness) or astigmatism.

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 screening of the red reflex should occur at each universal child health contact up to 3 to 3.5 years of age.

Targeted screening of the red reflex should be performed at any other child health contact visit if there is parental concern, especially about eye opacity and/or strabismus, up to 3 to 3.5 years of age.

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 and the Enhanced...
Aboriginal Child Health Schedule all contain questions which aim to highlight parental concerns about their child’s vision.

- Assessment should occur in a darkened room so that the pupils are not too small, the darker the room the larger the pupils are likely to be.
- The eyes should be examined simultaneously from up to a metre away with the infant/child looking directly at the light.
- The light reflex normally appears orange/red (red reflex).
- The red reflex seen from each eye should be equal in size, brightness and colour.
- The Corneal Light Reflex Test should be conducted along with the Red Reflex Test. For children with dark irises, the pupil location may be more difficult to observe therefore the red reflex test may be more accurate.
- When both the red reflex and the corneal light reflex are asymmetrical, strabismus is likely to be present.
- The Red Reflex Test may vary in children from different racial or ethnic groups depending on the levels of pigmentation of the ocular fundus.¹
- It is important that Community health staff use the correct examination technique for this test. Poor examination technique may result in missing serious eye conditions (false negative tests), and children with normal eyes may be referred unnecessarily (false positive tests).
- Ophthalmoscope batteries become flat very quickly and may leak if left in the ophthalmoscope. Take care to switch the ophthalmoscope off between uses, and to remove the batteries when the ophthalmoscope is not required for up to two weeks. Check for adequate light projection prior to use, as inadequate light may cause inaccuracy in findings.
- Community health staff should practice overarching infection prevention and management. Hand hygiene is to be performed at all appropriate stages of the procedure.
- Community health staff should encourage parents to observe the red eye reflex seen in photos. To do this the child should face the camera evenly and the red eye reduction mechanism on the camera should be deactivated.

**Equipment**

- Ophthalmoscope
- Replacement batteries and globes
## Procedure

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| **1. Engagement and consent:**  
  - Explain the procedure to the parent/carer and child if required. Allow sufficient time for discussion of concerns.  
  - Ensure either written or verbal parental consent has been obtained prior to proceeding with testing.  
  - If the child is wearing glasses, take them off.  
  - Encourage parent/carer support and involvement with the procedure where possible. | |
| **2. Preparation:**  
  - Sit the child comfortably on the parent's lap or on a chair for an older child. The examiner faces the child and stands directly in front.  
  - Observe the child’s eyes, head posture and alignment while child is in a relaxed state.  
  - Set the ophthalmoscope on its largest spot size. The focus dial should be set to zero.  
  - The room should be as dim as possible to maximize pupil size.  
  - Note any abnormalities with the child’s eyes.  
  - Abnormal head posturing may indicate a visual difficulty. | |
| **3. Testing strategies:**  
  - The ophthalmoscope is held starting at a distance of an arm’s length from the base of the child’s nose with the instrument held close to the examiner’s eyes.  
  - The examiner and the child should be at eye level with each other.  
  - The distance should be adjusted to allow the light beam to fall on to both eyes and the lenses on the ophthalmoscope should be adjusted until the skin around the eye is in focus.  
  - The infant/child should look at the light. For younger children, direct the child’s attention toward the light or ask the older child to look at the light.  
  - It may help to hold your hand in front of the child’s eyes first, blocking the light from shining on the child’s face and focusing the light onto the palm of your hand. You can then remove your hand and the light should be on the pupils.  
  - The reflex may appear absent if the pupils are not large enough.  
  - Occasionally, you may need to turn the focus dial of the ophthalmoscope until the pupil glows bright orange. This is done by turning the dial in the plus (+) direction toward the green (or black) coloured numbers, not toward the (-) red numbers. At the very most, you may need to move the focussing wheel to +2 or +3, a few clicks beyond the point at which the child’s iris first comes into |
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<td>pupils should glow orange.</td>
<td>sharp focus through the view-hole.</td>
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<tr>
<td>• The red reflexes are viewed simultaneously with the child fixating on the ophthalmoscope light. Compare the size, brightness and colour of the reflex in both eyes.</td>
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4. Normal red reflex:
   • Normal red reflex is where both reflexes appear symmetrical and identical in size, shape, colour.

5. Abnormal red reflex:
   • Any asymmetry of the red reflex: may indicate an abnormality such as strabismus, refractive error or media opacity.
   • White reflex (leukocoria): may indicate corneal scar, cataract, retinal scar (e.g. toxoplasmosis) or retinoblastoma.
   • Black or absent reflex: may indicate corneal scar, cataracts, or haemorrhage.
   • Red reflex with dark spots.

Leukocoria can depend on the position of the eye. The examiner should check that they are viewing the child front and central and the child is looking at the light.

Where black reflexes are noted, check the ophthalmoscope illumination is adequate and room lighting is dim.

Debris over the surface of the eye can cause some black opacity. Encourage the child to blink and check if this changes the results.

6. Explain results to parent/carer
   For outcome and referral pathways see below.

7. Documentation:
   Documentation of the red reflex should include at least one of the following:
   • Normal red reflexes
   • Asymmetrical or abnormal red reflexes – describe findings as above
   • Asymmetrical red reflexes and asymmetrical corneal reflexes (indicates strabismus).

Document findings in the relevant health record:
   • Child Health- CHS 800
   • Personal Health Record.
   • CHS 142- Referral to Community Health Nurse
   • CHS 409 – School Entry Health Assessment
   • Enhanced Aboriginal Child Health record.

Documentation may include electronic records.
Referral pathway

Where there is a positive family history of retinoblastoma, congenital cataracts, congenital glaucoma or retinal abnormalities, Community health staff should refer the family to their medical practitioner for review by an ophthalmologist. Staff should still routinely perform the Red Reflex Test.

Suspected abnormalities require prompt referral to an ophthalmologist via a medical practitioner using the CHS 663 - Referral from Community Health form or follow local service referral pathways to ophthalmology services. The CHS 418 - Information to Ophthalmologist from Community Health form may be completed 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. Use of a reply paid envelope may help facilitate referral feedback.

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 |
| 3.8.6  Guide to completing a physical assessment of an infant and child |
| 6.2.4  Distance vision testing (using Lea Symbols Chart) |
| 6.2.5  Cover Test (Standard of Practice) |
| 6.2.3  Corneal Light Reflex Test (Standard of Practice) |

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

Useful resources

http://pediatrics.aappublications.org/content/122/6/1401/F1.expansion.html

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References


