PROCEDURE

Red reflex test

| Scope (Staff): | Community health staff |
| Scope (Area): | CACH, WACHS |

This document should be read in conjunction with this DISCLAIMER

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.¹

Risk
Undetected or unmanaged vision impairment can have a significant effect on a child’s social, psychological development, educational progress, and long term social and vocational outcomes.

Background
The red reflex test is vital for the early detection of potential vision problems in neonates, infants and children. 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 Manual:
- Vision guideline 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.

Universal screening of the red reflex should occur at the 8 week and 4 month universal contacts.

Targeted screening of the red reflex should be performed at the 12 month or 2 year universal contacts, or any other time up to school entry if there is parental/caregiver concern, especially about eye opacity and/or strabismus.
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/caregiver. Refer to the risk factors and red flags listed in the Vision guideline.
- Both 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.
- When both the red reflex and the corneal light reflex are asymmetrical, strabismus is likely to be present.
- 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/caregivers 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

<table>
<thead>
<tr>
<th>Steps</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Engagement and consent</strong></td>
<td>If the child is wearing glasses, take them off.</td>
</tr>
<tr>
<td>Explain the procedure to the parent/caregiver and child if required. Allow sufficient time for discussion of concerns.</td>
<td>Encourage parent/caregiver support and involvement with the procedure where possible.</td>
</tr>
<tr>
<td>Ensure either written or verbal parental consent has been obtained prior to proceeding with testing.</td>
<td></td>
</tr>
<tr>
<td>In young infants, it is not always possible to complete the examination.</td>
<td></td>
</tr>
<tr>
<td>If there are no vision risk factors present, document and review at next scheduled or unscheduled contact.</td>
<td></td>
</tr>
<tr>
<td>If vision risk factors are present, review hospital discharge information, reschedule and attempt again in two weeks. Refer to GP as below.</td>
<td></td>
</tr>
<tr>
<td>Steps</td>
<td>Additional Information</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------</td>
</tr>
</tbody>
</table>
| 2. Preparation | The room should be as dark as possible to maximize pupil size.  
Note any abnormalities with the child’s eyes.  
Abnormal head posturing may indicate a visual difficulty.  
The setting on which the largest spot size is produced varies with brand and age of ophthalmoscope. |
| - Sit the child comfortably on the parent’s/caregiver’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 or seven, depending on the type of ophthalmoscope being used. |  

3. Testing strategies | 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 focusing wheel to +2 or +3, a few clicks beyond the point at which the child’s iris first comes into sharp focus through the view-hole.  
The intensity of colour reflected during the red reflex test may vary in children from different racial or ethnic groups depending on the levels of pigmentation of the ocular fundus. |
| - 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 eyes 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.  
Aim the light directly at the pupils. The pupils should glow orange.  
- 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. |  
| 4. Normal red reflex | Normal red reflex is where both reflexes appear symmetrical and identical in size, shape, colour. |


Red reflex test

<table>
<thead>
<tr>
<th>Steps</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Abnormal red reflex</td>
<td>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.²³</td>
</tr>
<tr>
<td>• Any asymmetry of the red reflex: may indicate an abnormality such as strabismus, refractive error or media opacity.²</td>
<td>Where black reflexes are noted, check the ophthalmoscope illumination is adequate and room lighting is dim.³</td>
</tr>
<tr>
<td>• White reflex (leukocoria) may indicate corneal scar, cataract, retinal scar (e.g., toxoplasmosis) or retinoblastoma.³</td>
<td>Debris over the surface of the eye can cause some black opacity. Encourage the child to blink and check if this changes the results.³</td>
</tr>
<tr>
<td>• Black or absent reflex: may indicate corneal scar, cataracts, or haemorrhage.³</td>
<td></td>
</tr>
<tr>
<td>• Red reflex with dark spots.⁴</td>
<td></td>
</tr>
<tr>
<td>6. Explain results to parent/caregiver</td>
<td>For outcome and referrals see below.</td>
</tr>
<tr>
<td>7. Documentation</td>
<td></td>
</tr>
<tr>
<td>Documentation of the red reflex should include at least one of the following:</td>
<td>Document findings according to local processes.</td>
</tr>
<tr>
<td>• Normal red reflexes</td>
<td>Documentation may include electronic records.</td>
</tr>
<tr>
<td>• Asymmetrical or abnormal red reflexes – describe findings as above.</td>
<td></td>
</tr>
</tbody>
</table>

Referral

Referral pathway

Where there are any vision concerns, and/or any situation where Community Health staff are concerned that the results may not be within normal limits, a referral should be made. This includes positive family history of retinoblastoma, congenital cataracts, congenital glaucoma or retinal abnormalities. Always obtain parental consent for referral.

The Clinical handover/Referral form (CHS 663- CACH only) form should be used to refer the child to their medical practitioner.

WACHS nurses should follow local processes as required; this may involve referral to an optometrist to expedite assessment, treatment and prioritising ophthalmology services.

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/caregiver and outcomes carefully documented.
Red reflex test

References


Related internal policies, procedures and guidelines

The following documents can be accessed in the Community Health Manual via the HealthPoint link or the Internet link

Distance vision testing (Lea Symbols Chart)

Cover test

Corneal light reflex test

Physical assessment 0 - 4 years

Vision

Related internal resources and forms

The following resources and forms can be accessed from the HealthPoint CACH Intranet link

Clinical handover/Referral form (CHS 663)

Clinical handover – Operational procedure for internal or external referrals
Red reflex test