PROCEDURE

Red reflex

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

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

Aim

To detect

- abnormalities in the normally transparent visual axis or in the retina
- strabismus and unequal refractive errors.

Risk

Undetected or unmanaged eye pathology or vision impairment can have a significant effect on a child's health, psycho-social development, educational progress, and long term social and vocational outcomes.[1]

Background

The red reflex (RR) test, also known as the Bruckner test, is vital for the early detection of potential eye health and vision problems in neonates, infants and children.[2] Numerous eye disorders of the neonatal and childhood period can lead to permanent visual impairment. Most cases of blindness are preventable and early detection can play a role with this.[3]

The RR test is performed using an ophthalmoscope which is a hand held optical instrument used to inspect the fundus or back of the eye[4]. The ophthalmoscope produces a reflection of light in the choroidal and retinal blood vessels that cause the pupil to appear red when examined.[5]

Anything that blocks the passage of light through the eye will be observed as a dull reflex or the reflex may be entirely blocked making the pupil appear dark[6]. This abnormal reflex may be white, yellow, dim, or show black focal areas. When both the red reflex and the corneal light reflex are asymmetrical, strabismus is likely to be present.

For further information on vision refer to the *Vision and eye health guideline* which includes information on development of vision, normal vision behaviours, common vision concerns including strabismus and amblyopia, and the rationale for vision screening.

Key points

- The RR forms part of a comprehensive baseline vision and eye health assessment along with the corneal light reflex (CLR), as age appropriate.
- Universal screening of the red reflex should occur at the 8 week and 4 month, 12 months, and 2-year universal contacts. [5-9]
- Targeted assessment of the red reflex should be performed at any other time up to school entry if there is relevant family history or parental/caregiver concern, especially about eye health and/or strabismus
- Vision screening must only be performed by community health staff who have undertaken the CACH Community Nurse Orientation or WACHS recommended training and have been deemed competent in the procedures.
    - After receiving training and prior to achieving competency, staff must work under the guidance of a clinician deemed competent.
- All nurses will refer to *the Nursing and Midwifery Board AHPRA Decision-making framework* in relation to scope of practice and delegation of care to ensure that decision-making is consistent, safe, person-centred and evidence-based.
- Nurses need to provide a culturally safe service delivery which demonstrates a welcoming environment that recognises the importance of cultural beliefs and practices of all clients.
- For cultural considerations when caring for Aboriginal* children and families, refer to Related resources to assist service provision to Aboriginal clients.
- Community health nurses must follow the organisation's overarching CAHS Infection Control Policies or WACHS Infection Prevention and Control Policy and perform hand hygiene in accordance with WA Health guidelines at all appropriate stages of the procedure.

Equipment

- Ophthalmoscope
- Replacement batteries and globes

The ophthalmoscope must be cleaned before and after each use

- CACH see *Medical Devices: Single Use, Single Patient Use and Reusable,*
- WACHS see *Infection Prevention and Control Policy*.

*MP 0097/18 – Within Western Australia, the term Aboriginal is used in preference to Aboriginal and Torres Strait Islander, in recognition that Aboriginal people are the original inhabitants of Western Australia. No disrespect is intended to our Torres Strait Islander colleagues and community.

Procedure

Steps	Additional Information

1. Engagement and consent
• Identify the child as per Patient/Client Identification Protocol (CACH) or Patient Identification Policy (WACHS).
• Encourage parent/caregiver to support and be involved with the procedure where appropriate.
• Explain the procedure to the child and parent/caregiver. Allow sufficient time for discussion of concerns.
• Ensure verbal parental consent has been obtained prior to proceeding with testing in accordance with the *CACH Consent for Services Policy* or *WACHS Engagement Procedure*.
	• It is the responsibility of the clinician to ensure informed consent has been obtained.
	• Consent should always be informed, current and relevant to the treatment in accordance with CACH Consent for Services Policy WACHS Engagement Procedure.
	• In young infants, it is not always possible to complete the examination.
	  ○ If there are no vision risk factors present, document and review at next scheduled or unscheduled contact.
	  ○ If vision risk factors are present, review hospital discharge information, reschedule and attempt again in two weeks. Refer to GP as below.

2. Preparation • Consider surveillance questions, risk factors and red flags listed in the *Vision and eye health* guideline. • Obtain a history from the parent/caregiver with particular interest in a positive family history of retinoblastoma, congenital, infantile, or juvenile cataracts, glaucoma, or retinal abnormalities.[10] • Electronic recording systems (e.g., CDIS/CHIS) should be accessed for any	

Steps	Additional Information
documented history of vision concerns already identified.	
3. Preparation of Equipment • 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.[11, 12] • The room should be as dark as possible to improve visualisation of the red reflex.	• The setting on which the largest spot size is produced varies with model of ophthalmoscope.
4. Prior to Vision Assessment (Child) • Ask parent/caregiver to hold infant on their lap or over their shoulder. Older children may sit on a chair or stand. • Observe the child's eyes, head posture and alignment while child is in a relaxed state (as per Physical assessment 0-4).	• Note any abnormalities with the child's eyes. • When undertaking observation of the eyes recognise indicators for child abuse. • When performing the assessment, examiner considers own posture to minimise any risk of musculoskeletal injuries. • Abnormal head posturing may indicate a visual difficulty. • The examiner and the child should be at eye level with each other. The examiner faces the child directly front-on.
3. Assessment • Hold the ophthalmoscope about an arm's length from the base of the child's nose, with the instrument held close to the examiner's eyes.[12, 13] • Direct infant/child's attention toward the light.[12] • Aim the light directly at the pupils. • Adjust the distance to allow the light beam to shine on both eyes simultaneously. The lens on the	• It may help to hold your hand in front of the child's eyes at first, blocking the light from shining on the child's face and focusing the light onto the palm of your hand. Then remove your hand and the light should cover both eyes simultaneously. • Occasionally the focus dial of the ophthalmoscope may need to be altered slightly until the pupil glows bright orange.

Steps	Additional Information
ophthalmoscope should be adjusted until the skin around the eyes is in focus.[12] • View the red reflexes simultaneously. • Compare the size, shape, brightness, and colour of the reflex in both eyes.	
4. Interpreting results (see Appendix 1) • Consider history • A normal red reflex appears glowing orange/red. • Both reflexes should be equal in size, shape, brightness and colour.[12] • Any asymmetry or abnormality of the red reflex may indicate concerns.[12]	• A family history of retinoblastoma, congenital, infantile, or juvenile cataracts, glaucoma, or retinal abnormalities should be referred as per local process regardless of the outcome of the RR test.[10] • The reflex may appear absent if the pupils are not dilated enough.[13] or where black reflexes are noted, ○ check the ophthalmoscope illumination is adequate and ○ ensure room lighting is dim.[12, 13] • Leukocoria (white reflex) can depend on the position of the eye ○ check that nurse is viewing the child front and central and ○ the child is looking at the light.[12, 13] • Debris over the surface of the eye can cause some black opacity. ○ Encourage the child to blink and ○ Check if this changes the results.[12, 13]

Steps	Additional Information

5. Documentation
• CACH nurses must use a CDIS assessment screen to record the findings of cover test by selecting “assessed” and “normal or “asymmetrical or abnormal” under vision assessment – red reflex.
• WACHS nurses document the results in the relevant Universal Contact in CHIS
  ○ If the check is documented over multiple appointments, use “Universal Contact: Plus” as clinical item. Manage recalls according to findings.
	• Community health staff will document relevant findings according to CACH and WACHS processes.
	• If asymmetrical or abnormal reflexes noted, use the clinical notes to record findings:
	  ○ Unequal RR.
	  ○ No reflex presents in L/R eye.
	  ○ Foreign body in L/R eye.
	• CACH and WACHS nurses must use the relevant *Clinical Notes/Comments* field in CDIS/CHIS to record any factors that may have interfered with the accuracy of the findings as well as findings around the observation of the eye.

6. Communicate results with parent/caregiver • Discuss results with parent/caregiver.	• Refer to *Language Services* policy for information on accessing interpreters. • Results should be given in a culturally safe environment, considering parent/caregivers health literacy.[14] • It is recommended that staff use the correct terminology when discussing any vision results with the parent or caregiver.
7. Referral and follow-up • An absent, abnormal, or unequal red reflex requires prompt referral. • Discuss and seek consent for sharing of information from parent/caregiver.	• Adherence to *CAHS-CH Clinical Handover* and *WACHS clinical handover of vulnerable children* procedure is required when handing over, or referring a

Steps	Additional Information

• Include RR results in referral along with information about other vision assessments (CLR).
• For clients at risk, follow up must occur with parents/caregivers to determine if the referral has been actioned. This includes clients of concern, children in care, or those with urgent vision concerns.
  ○ For other clients, use clinical judgment to determine if referral has been actioned
• Document plan for referral and follow up in CDIS or CHIS.
	client within, or outside of, the health service.
	• When assessing children at risk consider *Factors impacting on child health and development* guideline.
	• **CACH Staff:**
	  ○ Refer to a medical practitioner. The medical practitioner will assess and consider referral to an ophthalmologist or optometrist for further investigation.
	• **WACHS nurses**:
	  ○ Follow local processes as required; this may involve referral to a medical practitioner or an optometrist for further assessment.

Documentation

Nurses maintain accurate, comprehensive, and contemporaneous documentation of assessments, planning, decision making and evaluations according to CACH and WACHS processes.

References

1. World Health Organization. World report on vision. Geneva: World Health Organisation, 2019. Available from: https://apps.who.int/iris/bitstream/handle/10665/328717/9789241516570-eng.pdf.
2. American Optometric Association. Infant Vision: Birth to 24 Months of Age [Internet]. [cited 2024 Feb 07]. Available from: https://www.aoa.org/healthy-eyes/eye-health-for-life/infant-vision?sso=y.
3. Toli A, Perente A, Labiris G. Evaluation of the red reflex: An overview for the pediatrician. World J Methodol. 2021 Sep 20;11(5):263-77.
4. Cordero I. Understanding and caring for the direct ophthalmoscope. Community Eye Health. 2016;29(93):17.
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10. Pediatrics AAo. Red reflex examination in neonates, infants, and children. Pediatrics. 2008 Dec;122(6):1401-4. PubMed PMID: 19047263.
11. Coats D, Paysse E. Evaluation and management of strabismus in children. Waltham, MA2012.
12. Pediatrics AAo. Red Reflex Examination in Neonates, Infants, and Children. Pediatrics. 2008;122(6):1401-4.
13. McLaughlin C, Levin AV. The red reflex. Pediatric emergency care. 2006;22(2):137-40.
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Related internal policies, procedures and guidelines
The following documents can be accessed in the CACH Clinical Nursing Policy Manual HealthPoint link or CACH Clinical Nursing Policy Internet link
Clinical Handover - Nursing
Corneal light reflex test, Cover test, and Distance vision testing (Lea Symbols Chart)
Factors impacting on child health and development
Universal contact 0-14, 8 weeks, 4 months, 12 months, 2 years, School Health Entry Health Assessment
Universal plus – Child Health, Universal Plus School Health
Vision and eye health
The following documents can be accessed in the WACHS Policy Manual
Child Health Clinical Handover of Vulnerable Children Procedure
Consent for Sharing of Information: Child 0-17 years Procedure - Population Health
Fitness for Work

Health Record Management
Home and Community Visits in Remote Community Setting
Infection Prevention Control and Hand Hygiene
Management of Medical Equipment
Patient Identification
Work Health and Safety Policy
The following documents can be accessed in the CAHS Policy Manual
Child and Family Centred Care
Child Safety and Protection
Clinical Documentation
Communicating for Safety
Confidentiality, Disclosure and Transmission of Health Information
Patient/Client identification
Work Health and Safety
The following documents can be accessed in the CACH Operational Policy Manual
CDIS Client Health Record Management
Client Identification
Client Information – Requests and Sharing
Consent for Services
The following documents can be accessed in the CAHS Infection Control Policy
Hand Hygiene
Medical Devices: Single Use, Single Patient Use and Reusable
Toys, Books and Educational Material – Purchase Care Cleaning

Related external legislation, policies, and guidelines

Clinical Handover Policy
Clinical Incident Management Policy

Related internal resources (including related forms)
Clinical handover/Referral

Related resources to assist service provision to Aboriginal clients
The resources below can be accessed on CAHS-Aboriginal Health page via HealthPoint
Cultural Information Directory
Effective and appropriate communication with Aboriginal people
Keeping our Mob healthy: Strabismus,Trachoma
The following resource can be accessed from WACHS Aboriginal Resources
WA Aboriginal Health and Wellbeing Framework 2015–2030
WACHS Aboriginal Health Strategy 2019-2024

Related external resources (including related forms)
Raising Children Network: Lazy Eye or amblyopia, Blocked Tear Duct, Cleaning baby eyes, ears and noses, Colour Blindness, Conjunctivitis, Lazy eye, Long sightedness, Ophthalmologist, Optometrist, Orthoptist, Short sightedness, Squint, Stye, Vision Impairment

This document can be made available in alternative formats on request.

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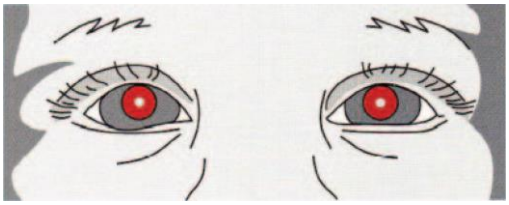
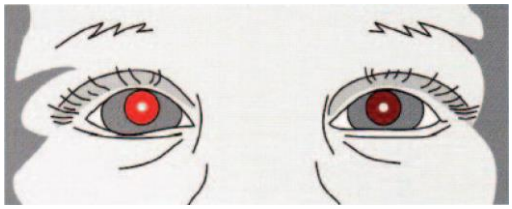
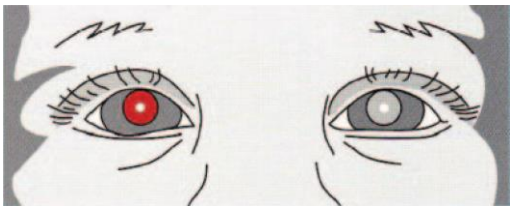
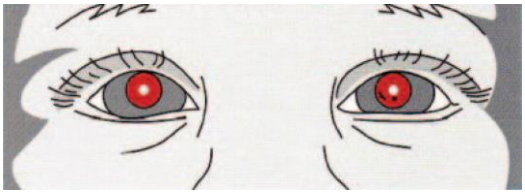
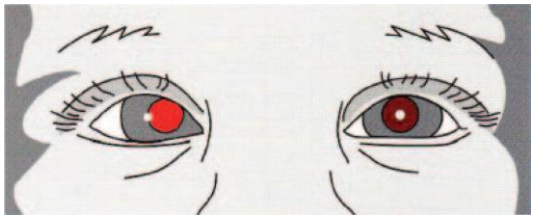
Healthy kids, healthy communities

Compassion | Excellence | Collaboration | Accountability | Equity | Respect

Neonatology | Community Health | Mental Health | Perth Children's Hospital

Appendix 1: Normal and abnormal red reflexes[10]

	NORMAL.	Child looks at light. Both red reflections are equal in size, shape, brightness, and colour
	UNEQUAL REFRACTION –	One red reflection is brighter than the other
	NO REFLEX	An absent or abnormal (white, dull yellow) reflex may indicate cataract, retinoblastoma, or corneal or retinal scar, as lens or other media opacites block or diminish the red reflex
	FOREIGN BODY/ABRASION	(Left cornea) – the red reflection from the pupil backlights corneal defects or foreign bodies
	STRABISMUS	The red reflection is more intense from the deviated eye