PROCEDURE

Corneal Light 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 the presence of ocular misalignment or vision impairment (strabismus) in infants and young children.

Risk

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

Background

The Corneal Light Reflex (CLR), otherwise known as the Hirschberg test, tests how light is reflected from the corneas of the eyes, with ocular alignment a light reflection should be equally centred on both pupils. If it is unequal, an eye misalignment like strabismus or amblyopia may be present. [2]

Infants from the age of 3-4 months of age are still developing the accommodation and convergence systems causing intermittent asymmetrical alignment.[3, 4] Beyond this age, any constant or intermittent asymmetry is considered abnormal.

Strabismus is a common visual disorder which disrupts the normal alignment of the eyes and can occur in one or both eyes, in any direction. [5] In addressing strabismus, improving the alignment of the eyes may be achieved through the prescription of visual aids, medication, or surgery. It is preventable with early detection and adequate treatment, however, if left untreated is the most common risk factor of a child developing Amblyopia. [6]

Amblyopia is decreased vision in one or both eyes due to abnormal development of vision in infancy and childhood. Children are most susceptible to abnormal binocular vision that can cause amblyopia from ages 1-3 years old. [7] The prevalence of amblyopia is approximately 2% of preschool children in Australia. [6]

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

Key Points

- The CLR test forms part of a comprehensive baseline vision and eye health assessment along with the Cover Test (CT), Red Reflex (RR) and testing for visual acuity, as age appropriate.
- CLR test is offered at the 8-week contact, 4-month contact, and School Entry Health Assessment, unless there is evidence of the child being under the care of a relevant specialist.
- Targeted assessment should be offered when the child has abnormal head posturing or vision concerns raised by parent/caregiver, teacher or health professional about strabismus or vision.
- Vision screening must only be performed by community health staff (staff) who have undertaken required CACH or WACHS training and 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.
- 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.
- 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.

Equipment

- Small toy/object to attract child's attention.
- Light source: Bright pen torch or ophthalmoscope.

All equipment must be cleaned before and after each use (see *Medical Devices: Single Use, Single Patient Use and Reusable.*

* OD 0435/13 - 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.

Process

Steps	Additional Information

1. Engagement and consent
• Obtain verbal or written consent prior to testing.
• Obtain a history from the parent/caregiver.
• Explain the procedure to the child, and parent/caregiver if present. Allow sufficient time for discussion of concerns.
• Child health
  ○ Ensure verbal consent is obtained prior complete to performing assessment.
• School health
  ○ Ensure written consent is obtained prior to assessment.
	• Refer to the surveillance questions, risk factors and red flags listed in Table 1 of the Vision and eye health guideline.
	• School health: If obtaining verbal consent, discuss whether parent/caregiver consents to sharing of information with relevant school staff.
	• In accordance with *Consent for Services* policy, and *WACHS Engagement Procedure.*
	• Encourage parent/caregiver to support and be involved with the procedure, if appropriate.
	• Section 337(1) of the Health (Miscellaneous Provisions) Act 1911 authorises nurses specified in the schedule to examine a child without parent consent if required.

2. Preparation • Ask parent/caregiver to hold infant on their lap or over their shoulder. Older children may sit on a chair or stand. • Position of examiner should be square on and about 50cm away from the child.[8] • Observe the child's eyes, head posture and alignment while child is in a relaxed state. • Ensure there are no light sources in room to compete with the equipment used for testing. • Ensure the child's and the examiner's eyes are at the same height.	• When performing the assessment, examiner considers own posture to minimise any risk of musculoskeletal injuries. • Note any abnormalities with the child's eyes, including the size and symmetry of pupils. • Abnormal head posturing may indicate a visual difficulty. • Be aware of normal convergence of eyes if the light is closer than 30cm due to accommodation.

Steps	Additional Information
3. CLR assessment • Attract the child's attention towards the pen torchlight by holding a small toy on top of the torch. • Shine the light briefly onto both eyes simultaneously and observe the position of the light reflections on the cornea. • Identify the location of the light reflexes relative to the center of the pupil: ○ Where the position of the reflection of the light in both eyes is symmetrical and located just slightly nasal to the centre of the pupil, the CLR is negative, and no strabismus is present. ○ where the light reflections are positioned asymmetrically, the CLR is positive, and strabismus is suspected. [8] To view diagrams, See Appendix A.	• The object used to attract child's attention must remain still. • The child needs to look toward the light or toy for accurate CLR assessment. • Both eyes must be in the sphere of the light to ensure accurate testing. • A normal light reflex is slightly towards the nose and not central, due to the position of the maculae in the retina. • CACH: Record on CDIS using the terms: ○ unequal/asymmetrical for a positive result for each eye. ○ equal/symmetrical for a negative result for each eye. • WACHS: Record on CHIS using the terms: ○ no concerns if negative ○ concerns if positive ○ if concerns record a summary of results in progress notes • **Note:** In some young children, especially of Asian descent, a wide, flat nasal bridge with prominent epicanthal folds can obscure the medial sclera and give the eyes a crossed appearance. This is pseudostrabismus (false squint) and is not strabismus. False squints have symmetrical corneal light reflexes.[8, 9]
4. Interpreting results • If CLR is unequal on the initial screen, recheck of the CT, CLR and visual acuity is required within 3 months, or as soon as practical. • For infants less than 3 months of age: ○ If asymmetry is constant, refer to GP. If asymmetry is intermittent, this should be noted and rechecked as soon as practical. If still asymmetrical on recheck,	• If reliable initial testing shows constant CLR asymmetry, use clinical judgment regarding urgent referral rather than re-check within 3 months. • If initial testing not felt to be reliable, staff should use clinical judgment to determine the timing of re-check within three months. Examples may be an uncooperative, distracted, or unsettled child. • If any other anomalies are observed during vision assessment, nurses should

Steps	Additional Information
refer to GP. • After 3 months of age, any constant or intermittent asymmetry of CLR is abnormal. If present when rechecked within 3 months, referral is required.	use their clinical judgment to determine review or referral, e.g. ptosis of the eye or reluctance to have one eye covered.[4] • An urgent referral is required if there's a sudden onset of asymmetry.
5. Communicate results with parent/caregiver • Discuss results with parent/caregiver (if present) or by telephone or in writing. • If parent/caregiver not present: ○ Contact to discuss if there are any concerns and need for recheck/referral if applicable. ○ Provide results in writing using CHS409-6A *Results for parents* or other relevant form. • If unable to perform: ○ If there are no risk factors/concerns, perform CLR at next contact. ○ If there are risk factors/concerns present, reschedule within 2 weeks and/ refer to GP.	• Refer to *Language Services* policy for information on accessing interpreters. • It is recommended that staff use the correct terminology when discussing any vision results with the parent or caregiver. The use of the term 'lazy eye' can be misleading as it can relate to several different eye conditions. The accurate term for strabismus is a 'squint'. • SEHA: Provide a copy of the results to the school on completion of the health assessment. • For risk factors and concerns, refer to *Vision and eye health guideline*.
6. Referral and follow-up • Seek consent for referral from parent/caregiver. • Include all vision tests results in the referral. • Refer children with an /positive CLR to a medical practitioner for a re-check. See Appendix A to view diagrams. • For at risk clients, 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.	• Refer to *Vision and eye health guideline* Appendix A: Vision assessment and referral pathway – universal and targeted. • Adherence to CACH and WACHS clinical handover processes is required when handing over, or referring a client within, or outside of, the health service. • WACHS nurses should follow local processes as required; this may involve referral to a medical practitioner or an optometrist for further assessment. • CACH nurses should refer to a medical practitioner. ○ The medical practitioner will assess and consider referral to either an ophthalmologist or optometrist for further investigation.

Documentation

Staff maintain accurate, comprehensive, and contemporaneous documentation of assessments, planning, decision making and evaluations in electronic and/or MR600 child health records, according to CAHS-CH and WACHS processes.

References

1. Lee EY, Sivachandran N, Isaza G. Five steps to: Paediatric vision screening. Paediatrics & child health. 2019;24(1):39-41.
2. Dmitri Model ME. An Automated Hirschberg Test for Infants ResearchGate 2010.
3. Simons K, National Research Council . Committee on V. Early visual development, normal and abnormal: Oxford University Press; 1993.
4. Royal Children's Hospital. Amblyopia Melbourne: RCH; 2020 [cited 2020 3 September]. Available from: https://www.rch.org.au/ophthal/patient_information/Patient_info/.
5. Coats D, Paysse E. Evaluation and management of strabismus in children. In: UpToDate. Waltham, 2012.
6. Pai AS, Rose KA, Leone JF, Sharbini S, Burlutsky G, Varma R, et al. Amblyopia prevalence and risk factors in Australian preschool children. Journal of Ophthalmology. 2012;119:138-44.
7. Siu CR, Murphy KM. The development of human visual cortex and clinical implications. Eye Brain. 2018;10:25-36. eng.
8. Hu K. Alignment Assessment (Hirschberg). In: Center ME, editor. Utah: University of Utah; 2016.
9. Timothy T. Xu CEB, Tina M. Hendricks, Sasha A. Mansukhani, Erick D. Bothun, David O. Hodge, Brian G. Mohney,. Pseudostrabismus in the First Year of Life and the Subsequent Diagnosis of Strabismus,. American Journal of Ophthalmology; 2020.

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
- Cover test
- Distance vision testing (Lea Symbols Chart)
- Factors impacting on child health and development
- Red reflex test
- Universal contact 0-14, 8 weeks, 4 months, 12 months, 2 years, School Health Entry Health Assessment
- 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
Hand Hygiene
Health Record Management
Home and Community Visits in Remote Community Setting
Infection Prevention Control
Management of Medical Equipment
Patient Identification
Work Health and Safety Policy
WACHS Engagement Procedure
The following documents can be accessed in the CACH Operational Policy Manual
CDIS Client Health Record Management
Change of Client Details
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
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
Fitness for Work
Open Disclosure
Work Health and Safety

Related CACH forms
The following forms can be accessed from the CAHS-Community Health Forms page on HealthPoint
Clinical handover/Referral
Referral to Community Health Nurse
SEHA Results for parents
SEHA Parent Questionnaire
SEHA Results for staff

Related resources to assist service provision to Aboriginal clients
The following resources can be accessed from the CAHS-Aboriginal Health page on HealthPoint.
Aboriginal Health and Wellbeing
Effective and appropriate communication with Aboriginal people
Working with Aboriginal families and consumers
The following resources can be accessed from the CAHS-CH Aboriginal Health Team page on HealthPoint.
Cultural Information Directory
WACHS staff
WACHS Aboriginal Health Strategy 2019-2024
WACHS Strategic Plan 2019-2024

Related external resources
Keeping our Mob healthy: Strabismus
Raising Children Network: Lazy Eye or amblyopia, Ophthalmologist, Optometrist, Orthoptist,

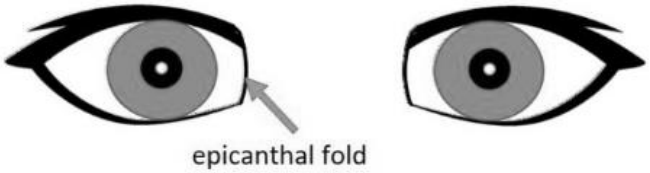
Squint, Vision Impairment

Appendix A: Alignment assessment [8]

Normal (Negative CLR)

Normal corneal reflex

Pseudostrabismus (false squint)



Pseudostrabismus

Positive CLR - Asymmetrical (Left)

Esotropia (eye turned inward)

Exotropia (eye turned outward)

Hypertropia (eye turned upward)

Hypotropia (eye turned downward)

This document can be made available in alternative formats on request for a person with a disability.

Document Owner:	Nurse Director, Community Health		
Reviewer / Team:	Clinical Nursing Policy Team		
Date First Issued:	December 2014	Last Reviewed:	12th January 2021
Amendment Dates:		Next Review Date:	22nd March 2027
Approved by:	Community Health Clinical Nursing Policy Governance Group	Date:	22nd March 2024
Endorsed by:	Executive Director Nursing	Date:	5th April 2024
Standards Applicable:	NSQHS Standards:  Child Safe Standards: 1, 2, 3, 4, 7, 9, 10		

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