PROCEDURE

Distant vision testing (Lea Symbols Chart)

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<thead>
<tr>
<th>Scope (Staff):</th>
<th>Community health staff</th>
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<td>Scope (Area):</td>
<td>CACH, WACHS</td>
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This document should be read in conjunction with this DISCLAIMER

Aim
To identify amblyopia and unequal refractive errors in young children using the 15 line Lea Symbols Chart.

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
Alignment of the eyes during the early years of life is considered critical for development of binocular vision.\(^1\) 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.\(^2\) 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.\(^3\)

Amblyopia is unique to children and is preventable if the child receives adequate treatment in childhood. The prevalence of amblyopia is approximately 1% - 4% of preschool children.\(^2\) The Lea Symbols Chart has been shown to have a high sensitivity for amblyopia.\(^4\)

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.\(^5\)

The National children’s vision screening project\(^6\) conducted in 2008, recommended that a vision screen should be conducted for all children at around 4 years of age, with an allowable range from 3.5 to 5 years. In the community health setting, this is currently achieved by using the 15 line (3 metre) Lea Symbols Chart (#250100). The Lea Symbols Chart consists of lines of four different symbols, arranged in combinations of five symbols per line. The symbols on each line are smaller than those on the line above. The Lea Symbols Chart distance visual acuity test has been shown to be successfully used in 76% of children 3 years and over and more than 90% of children 4 years and over.\(^4\)

For further information on vision refer to the Community Health Manual (Internet link or HealthPoint link):

- 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 testing** should be offered to all children from the age of 3.5 years as a component of the School Entry Health Assessment, unless there is evidence of the child being under the care of an optometrist or ophthalmologist.

**Targeted testing** may be performed from 3 years of age if there are early concerns about eye problems or family history of amblyopia, myopia, hypermetropia or astigmatism. Children who are tested at age 3 years should still have their vision re-assessed in school when they are closer to 4 years of age. The Lea Symbols Chart may also be used to test the visual acuity of older children or adults who are not literate in English.

**Key Points**

- Visual acuity screening should be undertaken by staff with appropriate training only.
- Prior to performing the test, it is important to obtain the history from the parent/caregiver. The child health *Personal Health Record*, *School Entry Health Assessment record* (CHS 409) and the Enhanced Aboriginal Child Health Schedule (EACHS) all contain questions which aim to highlight parental/caregiver concerns and any existing interventions related to their child’s vision.
- The Cover Test (CT) and Corneal Light Reflex (CLR) Test should be performed prior to the distance vision testing and contribute to the overall assessment of the eye.
- The Lea symbols test should be presented as whole lines not isolated symbols, as the crowding phenomenon enhances the detection of amblyopia.
- The visual acuity test is conducted initially with both eyes uncovered and then each eye is tested separately by occluding the other eye.
- Visual acuity screening may not exclude the presence of other treatable eye conditions. Any child with a vision concern despite a normal visual acuity screening result should always be referred to an eye health professional for more comprehensive assessment.
- Children with prescribed glasses will not be offered visual acuity screening.
- Community health staff should practice overarching infection prevention and management. Hand hygiene is to be performed at all appropriate stages of the procedure.

**Equipment**

- 15 line (3 metre) Lea Symbols Chart (#250100) and the 4 picture/symbol Lea recognition card
- pointer (preferably telescopic)
- tape measure and marker
- two pairs of occlusion glasses
- appropriate size chair for child
- swivel chair for the nurse
Distance vision testing (Lea Symbols Chart)

Procedure

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1. Engagement and consent

- Explain the procedure to the child, and parent/caregiver if present.
- Ensure either written or verbal parental/caregiver consent has been obtained prior to proceeding with testing if parent/caregiver is not present.
- Refer to ‘Special circumstances’ section in *Universal contact 4 years (School entry health assessment)* guideline if screening is indicated and consent not able to be obtained for a school aged child.

2. Preparation

- Set up Lea chart at correct height.
- Stand or sit the child comfortably, with an accurately measured distance of 3 metres from the child’s eyes to the chart, to ensure validity of testing.
- Observe the child’s eyes, head posture and alignment while child is in a relaxed state.
- Place the Lea recognition card/s in front of the child and establish a method of communication with the child.
- Show all the symbols to the child to ‘practice’ before using the chart. The child should respond by either naming the picture/symbol or pointing to the same picture/symbol on the key card.
- The nurse should use a swivel chair to keep the whole body aligned.
- Familiarise younger children with the symbol/picture chart. It may help to introduce the chart up close, before testing at the 3 metre distance. For school aged children, practice with the symbols and then switch directly to the 3 metre chart.

Allow sufficient time for discussion of concerns.
Encourage parent/caregiver support and involvement with the procedure where appropriate.
If obtaining verbal consent, discuss with the parent/caregiver whether they consent to sharing of information with relevant school staff.
Section 337(1) of the Health Act 1911 authorises nurses specified in the schedule to examine a child without parent/caregiver consent if required.

Ensure Lea chart is in good condition.
The Lea chart should be vertical and mounted on the wall or an easel. The middle of the chart should be at the child’s eye level.
Do not set up in front of bookstands or on walls with surrounding posters.
Ensure adequate room lighting with the light dispersed evenly throughout the area of testing.
Note any abnormalities with the child’s eyes.
Abnormal head posturing may indicate a visual difficulty.
Ensure an appropriate size chair for child during procedure so they are not using a stool or sitting on the floor).
The cards contain large examples of a house, apple, circle and square.
Providing the teacher or child with a copy of the picture/symbols may assist the child to become familiar with them. A mat session run by the nurse may also be very useful for this. This is especially helpful for young children or children with disabilities.
If the child does not spontaneously name
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<td>• Always test well within the visual sphere of the child. If the child loses interest and you cannot re-engage them, abort the test and recheck at a later date.</td>
<td>the symbols, let the child decide their own names for the symbols and the method of responding, either verbally or pointing.</td>
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### 3. Testing

- During testing, it is acceptable to briefly point to the picture/symbol using a telescopic pointer.
- Once 4 symbols/pictures have been identified, move to the next line.
- Continue with the testing until the child is not able to correctly identify at least 4 symbols in one line.
- If a child loses concentration during testing, a whole line of another triangle may be used to verify a child’s vision.

**Additional Information:**
- Do not leave the pointer close to the picture/symbol because it makes fixation easier.
- Skipping symbols may be a sign of other vision anomalies but is not a finding that requires follow-up or referral if noted in isolation.
- Frequent prompting a child to repeat several symbols on a line cannot accurately determine that child has identified the symbols.

### 4. Testing process: Binocular vision

Always test binocular vision first.

- Briefly point to some of the larger symbols in descending order and ask the child to name the picture/symbol or match the correct picture/symbol on the card in front of them.
- If the child fails to identify a symbol, move up the chart to the next larger line. If the child is unable to identify symbols in this line continue up the chart until you find a picture/symbol that the child can correctly match. Move down the chart again until the child fails to correctly identify 4 out of 5 symbols on the line.
- Choose one of the smaller lower charts (starting from 6/12) to test the binocular visual acuity.
- Move down until the child hesitates or is unable to correctly identify 4 out of 5 symbols on that line.
- Children of all age groups should be tested to the 6/6 line or until they fail a line.

**Additional Information:**
- Professional judgement may be used as to which size symbols to start familiarising the child.
- When tested at 3 metres, the visual acuity value is found in the right side margin adjacent to that line.
- Having reached their visual acuity threshold, the child may identify all the symbols as circles, an indicator to the examiner the visual acuity threshold has been exceeded.
### Steps

- Visual acuity is recorded as the last line on which at least 4 of the 5 symbols are identified correctly across the line.

### Additional Information

Alternatively, the child may hazard a guess at the picture/symbol when they can no longer definitively recognise it. Observation of the child’s behaviour should contribute to the clinical picture.

### 5. Testing process: Unilateral vision

Proceed to test each eye separately using the same progression as with binocular vision testing.

- Test the right eye first (occluding the left eye), unless there is an obvious negative response to this order of process.
- Use a different lower chart for each eye. This eliminates the risk of memorising.
- To pass a line, the child must correctly identify at least 4 of the 5 symbols in the line. The correctly identified symbols do not need to be consecutive. Continue testing across the smaller lines until 2 or more errors are made in a line or it is too difficult for the child to continue.
- Repeat the procedure to test the left eye, covering the right eye, and test to the 6/6 line if the child is able.

The eye not being tested must be occluded completely. When testing, be mindful of observing the child. Children can be very skilful at subtly ‘peeking’ with the better eye.

Encourage the child to keep both eyes open during the testing.

Use clinical judgement to determine if refamiliarising the child is required for each component of the test. This will also depend on the individual practitioner’s skill and experience.

### 6. Results

- The child passes the test when visual acuity (VA) for each eye is 6/9.5 or better and there is less than a two-line difference between the eyes.

A VA of 6/19 or worse requires an urgent referral.

- If the VA is at, or worse than, 6/19 in either eye but there is a possibility that
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<tr>
<td>7. Recheck process</td>
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<td>• All components of the vision assessment should be reassessed, including corneal light reflex and cover test.</td>
<td>the results were unreliable, arrange a recheck within the same day or within one week of initial screen so that an urgent referral can be arranged.</td>
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<tr>
<td>• It is recommended to recheck the eye with the poorer visual acuity first and the better eye second.</td>
<td>If there is a two-line (or more) difference in VA between the child’s eyes, the child’s vision should be reassessed within three months.</td>
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<td>8. Communicate results</td>
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<td>• Explain results to parent/caregiver (if present) or inform parent/caregiver over the phone or in writing.</td>
<td>It may not be necessary to repeat the visual acuity binocular (VAB) on recheck unless this is useful to help re-familiarise the child.</td>
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<td>9. Documentation</td>
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<tr>
<td>Documentation of the Lea Symbols Chart should include the following descriptors:</td>
<td>For outcome and referral pathway see below.</td>
</tr>
<tr>
<td>• Test used - Lea chart, 15 line, 3m</td>
<td>Document findings according to local processes.</td>
</tr>
<tr>
<td>• Visual acuity (VA) is the smallest line where the child has correctly recognised at least 4 of the 5 symbols.</td>
<td>Documentation may include electronic records.</td>
</tr>
<tr>
<td>• VA is recorded as a Snellen notation equivalent e.g., 6/9.5, 6/6 (found in the right margin of the Lea Symbols Chart).</td>
<td>Note any additional observations e.g. ‘turning head when right eye covered’; or ‘reluctant to perform testing when left eye covered’.</td>
</tr>
<tr>
<td>• Record visual acuity binocular (VAB), visual acuity right eye (VAR), visual acuity left eye (VAL).</td>
<td></td>
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<tr>
<td>• The number of line differences between the right and left eye visual acuity e.g., 0 or 1 or 2 lines difference. For example: VAR = 6/12; VAL = 6/7.5. This is a 2 line difference.</td>
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<td>10. Chart storage</td>
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<tr>
<td>The Lea chart should be stored with a sheet of paper placed between the surfaces. This</td>
<td>If necessary, the chart can be cleaned with a non-abrasive cleaner.</td>
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<td></td>
<td>The chart should not be exposed to high</td>
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<td>may prevent ghosting of the images onto the other side of the chart over time</td>
<td>temperatures. Avoid storing the chart in the boot of the car.</td>
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</table>

**Outcome**

No further action is required if the child’s visual acuity is better than or equal to 6/9.5 in either eye and there is less than a two line difference between the eyes.

**Recheck**

Any child with any of the following results should be rechecked within three months:

- VA greater than 6/9.5 but less than 6/19 in either eye
- A two line (or more) difference between eyes
- If any other anomalies are observed during the assessment, clinical judgement should be used and the child monitored or referred, e.g., turning of the head during testing, reluctance to cover one eye, ptosis of eye, etc
- Any child who is not attentive or not able to perform the testing. These children have been shown to have an increased likelihood of a vision problem.

**Referral pathway**

Any child with any of the following results should be referred for ongoing assessment:

- Any child on recheck with a VA greater than 6/9.5 in either eye or if there is a two line difference between the eyes.
- Any child with a VA of 6/19 or worse in either eye requires urgent immediate referral. In this situation, discussion with the parents/caregivers should highlight the necessity for the medical practitioner or optometrist to make contact with the ophthalmologist to arrange a timely appointment.

It is recommended that staff use the correct terminology when discussing any vision results with the parent/caregiver. 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.

If a vision concern is detected, inform the classroom teacher. This may include recommendations on seating or other strategies to support the child in the classroom whilst awaiting referral follow-up. A copy of the results should be provided to the teacher on completion of the health assessment.

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. 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.

**Occupational Health and Safety considerations**

The following risk mitigation strategies should be observed to minimise any risk of musculoskeletal injuries when using the Lea Symbols Chart. Additionally, staff must comply with the **CAHS Fitness for Work** policy, and discuss the impact of any existing injuries with their manager.

Individual staff are to perform no more than 10 Lea tests per day. It is important to ensure community health staff rotate between assessment, documentation and liaison tasks frequently.

The use of a swivel chair when performing Lea chart testing is strongly recommended. This may be negotiated in the **School Level Agreement**. Sitting forward on the swivel chair, with feet flat on the floor, will allow greatest use of the chairs’ swivel mechanism, and will help reduce neck and/or neck and trunk rotation.

If accessing a swivel chair is not possible, staff are to alternate between sitting or standing on the left or right side of the chart and switch using the pointer between the left and right hand.

Staff are to adjust the telescopic pointer to ensure the arm remains in a relaxed position, with the elbow by the side of the body.

Plan to complete the majority of kindergarten screening from Term 2 onwards, as the test will generally take less time and is more likely to be accurate with an older child.

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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:

- Corneal light reflex test (Hirschberg Test)
- Cover test
- Universal contact 4 years (School Entry Health Assessment)
- Vision

Related internal resources and forms

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

- CAHS Fitness for Work Policy
- Clinical handover/Referral form (CHS 663)
- Clinical handover – Operational procedure for internal or external referrals

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

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<thead>
<tr>
<th>Document Owner:</th>
<th>Director Clinical Services Community Health</th>
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<tr>
<td>Reviewer / Team:</td>
<td>Clinical Nursing Policy Team</td>
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<td>Executive Director CACH</td>
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<tr>
<td>Standards Applicable:</td>
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