GUIDELINE	
Vision and eye health	
Scope (Staff):	Community health staff
Scope (Area):	CAHS-CH, WACHS

Child Safe Organisation Statement of Commitment

The Child and Adolescent Health Service (CAHS) commits to being a child safe organisation by meeting the National Child Safe Principles and National Child Safe Standards. This is a commitment to a strong culture supported by robust policy documents to ensure the safety and wellbeing of children at CAHS.

This document should be read in conjunction with this DISCLAIMER

Aim

To provide information on expected visual development in childhood, and the assessment and early identification of childhood vision impairment and/ or eye disease.

Risk

Delay in recognising and/or managing eye disease and vision impairment can have a significant effect on a child's health and wellbeing, educational progress, and long term social and vocational outcomes.[1, 2]

Background

Normal vision is vital to the development and wellbeing of children. When left untreated in early childhood, vision conditions have the potential to affect lifelong visual potential and, at worst, lead to blindness.[1, 2]

Along with allergies and asthma, eye disorders are one of the most common long-term health problems experienced by Australian children. Around 12% of children experience a vision disorder, including short-sightedness (4.5% of children) and long-sightedness (4.3%).[3] Recent research on short-sightedness showed that increasing the time that children spend outside can slow the onset of short-sightedness. About one in six 10-14 year olds wear glasses or contact lenses to correct sight.[3]

The 2011 Australian Institute of Health and Welfare (AIHW) Eye Health in Aboriginal and Torres Strait Islander people Social Survey found that 7% of Aboriginal* children aged 0–14 years experienced eye or sight problems. Infections such as trachoma, as well as eye-related head injuries, are more common among Aboriginal children.[4] In Australia, trachoma is found almost exclusively in remote Aboriginal communities, and can lead to irreversible blindness if untreated.[5] The prevalence of active trachoma among 5–9 year olds has decreased from 14% in 2009, but plateaued in recent years. In 2017 the prevalence rate was 3.8%.[6]

*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.

Amblyopia is the most common cause of decreased vision in a single eye among children and younger adults. The eye itself is healthy but because of strabismus or a difference in vision between each eye, the brain has either suppressed or failed to develop the visual function. If left untreated, the vision loss will become permanent.[7]

Children often do not complain if their vision is blurred or they see double. Screening in early childhood is offered to avoid many vision issues remaining undetected.[2] Additionally, assessment may also facilitate early detection of neurological, metabolic or genetic disorders for which loss of vision is a symptom.[1, 8]

Key Points

- Vision screening should only be performed by community health staff who have undertaken appropriate CAHS-CH 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.
- Staff will conduct screening in accordance with the vision procedures in the Clinical Nursing Manual.
- Vision risk factors are identified at each universal contact.
- Vision and eye health assessments are offered at all universal contacts. They can also be conducted for any children as a Universal Plus contact in child health or a targeted vision assessment in primary school and secondary school settings, in response to concerns from families, clients or teachers.
- Children with identified concerns are offered referral, liaison, and advocacy as required.

Development of vision

Development of the visual system starts early in foetal life and begins with the physical structure of the eye. The neuro-components of the system develop towards the end of gestation and continue into the early neonatal period. Development of the basic structures of the eye, including the cornea, lens, iris, pupil and eyelids, gradually enable the infant to begin limiting light exposure.[8] At 27 weeks, a foetus can blink in response to bright light, shone on the abdomen. At 30 weeks, pupils can constrict and expand to let in more or less light.[9]

At birth, infants are sensitive to light and will turn their head towards large diffuse sources of light and away from sudden bright light.[7] Rapid visual development occurs in the first three months of life. Visual acuity rises from about 6/120 at birth to adult values by the age of 6 years.[10] From a very young age, babies will often watch faces and contrasting patterns, if within their range of vision of around 30cm.[11]

Normal visual function is critically linked with a number of other developmental milestones such as fine motor skills, gross motor movements and social interaction.[7] The expected milestones for vision development in young children are shown in **Table 1** below. This table provides a brief summary to guide age-appropriate vision surveillance questions.

Table 1: Expected milestones for vision development [7,12,13]

Age (months)	Observable visual development
Newborn	Should blink to sudden bright light and turn eyes towards diffuse light. Briefly fixates on nearby face or close object.
1 - 2	In first month, should show special interest in human face and stare at objects held close to face. From 4-6 weeks, regards human face with intense preoccupation and smiles in social response. Prefers black and white contrasts. At 6-8 weeks, fixes and turns head and eyes to briefly follow faces and objects 15-30cm from face in arc 30° from midline. Moves eyes mostly in unison.
3 - 4	By 3 months watches own hands, and by 4 months watches an adult at 1.5 metres. Scans immediate surroundings when held upright. Very alert, is attracted to human face and follows its movement. Fixates and follows slowly moving object 15-30cm from face in an arc 90° from midline. Attracted to both black and white and coloured (red and yellow) contrasts. Regards own hands. Holds toy but cannot yet co-ordinate hands and eyes.
5 - 9	Should fixate on 2.5cm cube at 30cms by 5 months and then 1.5mm object (e.g. 100's & 1000's) at 30cm by the end of 9 months. Many functional vision features are now in place. Infant avoids obstacles when crawling due to depth perception. Has relative perception of size and distance of objects, and coordinated tracking of hands and eyes when reaching for moving objects.
12 - 18	Should recognise familiar people from across a room. Shifts between far and near vision tasks. Tracks an object across a 180° arc. Looks in correct place for toys which roll out of sight. Points with index finger at interesting objects. Enjoys simple picture books. Picks up small objects with pincer grasp.
24 - 30	Can match pictures of reducing sizes. Recognises self and familiar people in photographs.
40 - 48	Can match letters and shapes. Reaches near-adult visual acuity.[10]

Disorders of eyes and vision

See **Appendix A** for information on amblyopia, strabismus, nystagmus, congenital cataracts and glaucoma, blocked tear ducts and conjunctivitis, retinoblastoma, retinopathy of prematurity (ROP), trachoma and colour vision deficiency.

Risk Factors

In children, vision impairment or loss is most likely to be attributed to:

- Family history of congenital or hereditary eye/vision conditions
- Maternal infections experienced during pregnancy (e.g., rubella, cytomegalovirus, syphilis, herpes, toxoplasmosis, or any other illness with fever or rash during pregnancy)[2]
- Prematurity under 37 weeks[1]
- Birth complications[14]
- Consequences of disease (e.g. diabetes, glaucoma, trachoma)[1, 4, 14]
- Birth weight less than 1250g is associated with ROP.[15, 16]

Red-flag signs of possible vision problems[11]

- Not looking at carer's face or bright object when held close, by six weeks
- Not making eye contact by eight weeks
- Not fixing on and following objects 20-25cm from face by 4 months
- Abnormal head posture
- Not showing interest or attempting to pick up small toys by 5 months
- Absence of sharp visual fixation to 1.5mm objects after 9 months
- Erratic eye movements
- Eyes that cross, turn in or out or move independently
- Only using one eye to look at things.

Vision and eye health history and assessment

The early identification of eye disease and/or vision impairment facilitates timely intervention, enabling children to achieve positive developmental and functional health outcomes. Vision assessment is most meaningful when community health staff undertake a systematic enquiry of parental concerns, gather information about the child's current abilities and functions, identify risk factors, use appropriate tools for vision surveillance screening and act on professional judgement.

Children born prematurely or children with multiple disabilities are at greater risk of developing vision conditions including strabismus, congenital cataracts and high prescription long-sightedness.[1]

Screening questions (see **Table 2**) are suggestions for asking age-appropriate questions of parents or caregivers to gather history about children's vision and eye health. Further health history may be relevant for individual children as based on risk factors (see page 3).

Table 2: Vision surveillance questions, observations and assessments

0 – 14 days **Universal contact child health**	Are you worried about your baby's vision? Do they briefly stare at your face? Does your baby blink to sudden bright light and turn towards soft light? Has your baby had any severe eye infection or injury? <u>Observations and assessments</u> • Observe eyes and visual behaviours
8 weeks **Universal contact child health**	Are you worried about your baby's vision? Do they watch your face and make eye contact with you? Does your baby blink to sudden bright light, and turn towards soft light from a window? Has your baby had any severe eye infection or injury? <u>Observations and assessments</u> • Observe eyes and visual behaviours • Red reflex • Corneal light reflex
4 months **Universal contact child health**	Are you worried about your baby's vision? Do they follow a small object up and down, side to side with their eyes? Does your baby watch you move around the room? Has your baby had any severe eye infection or injury? <u>Observations and assessments</u> • Observe eyes and visual behaviours • Red reflex • Corneal light reflex
12 months **Universal contact child health**	Are you worried about your child's vision? Do they look at pictures with interest? Does your child point to objects of interest at a distance? Has your child had any severe eye infection or injury? <u>Observations and assessments</u> • Observe eyes and visual behaviours If concerns, • Red reflex • Corneal light reflex

2 years **Universal contact child health**	Are you worried about your child's vision? Do they turn or tilt head to use only one eye to look at objects? Does your child hold objects too close to their eyes to look at them? Have you noticed any abnormal eye movement? <u>Observations and assessments</u> • Observe eyes and visual behaviours If concerns, • Red reflex • Corneal light reflex test
3 years **Universal Plus contact child health, as appropriate**	Are you worried about your child's eyes or vision? Do they turn or tilt head to use only one eye to look at objects? Does your child hold objects too close to their eyes to look at them? Have you noticed any abnormal eye movement? <u>Observations and assessments</u> • Observe eyes and visual behaviours • Corneal light reflex • Cover test • Distance vision (Lea 15 line 3M)[b]
4 years **Universal contact school health,** **and** **Targeted school-aged assessments** **(Screening questions as used in CHS409)[a]**	Has anyone in your family had childhood vision problems? Has your child had a vision test with a doctor/ophthalmologist, nurse, optometrist or orthoptist? Has your child had poor sight, squint, turned eye, eye injury, operation on eyes? Has your child been prescribed glasses? If so, when should they be worn? Has your child had any medical care for eyes/eyesight? Do you have any concerns or worries about your child's eyes or eyesight? <u>Observations and assessments</u> • Observe eyes and visual behaviours • Corneal light reflex • Cover test • Distance vision (Lea 15 line 3m[b] or Snellen[c])

a. Screening questions include asking teacher about concerns for individual children.
b. Distance vision (Lea 15 line 3M) used as developmentally appropriate for children from 3 years.
c. Distance vision (Snellen) for targeted assessment of children over 7 years of age.

A summary of vision and eye health screening tests is available in **Appendix B**: Schedule of vision and eye health screening

In accordance with the WACHS Enhanced Child Health Schedule (WACHS only), additional screening will be conducted for vulnerable clients aged 0-5 years.

Referral and follow-up pathway

Staff will comply with the specific referral and follow-up processes identified in the individual vision and eye health procedures. Where available, refer to culturally appropriate services.

See Appendix C: Vision assessment and referral pathway – universal and targeted

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Related policies, procedures and guidelines
The following documents can be accessed in the **Clinical Nursing Manual** via the HealthPoint link, Internet link, or for WACHS staff via the WACHS Policy link.
Ages and Stages Questionnaires ™
Child Health Services
Clinical handover - nursing
Corneal light reflex
Cover test
Distance vision testing (Lea Symbols Chart)
Distance vision testing (Snellen)
Physical assessment 0 - 4 years
Red reflex test
Universal Contact - School Entry Health Assessment
Universal Contacts – 0-14 days, 8 weeks, 4 months, 12 months, 2 years
Vulnerable Populations
The following documents can be accessed in the CAHS-CH Operational Manual
Infection Control manual

The following documents can be accessed in WACHS Policy
Enhanced Child Health Schedule
The following documents can be accessed in the Department of Health Policy Frameworks
Clinical Governance, Safety and Quality
Clinical Handover Policy (MP0095)
Clinical Incident Management Policy (MP 0122/19)

Related CAHS-CH forms
The following resources can be accessed from the CAHS-Community Health Forms page on HealthPoint
Clinical Handover/Referral Form
School Entry Health Assessment (SEHA) Kit

Related CAHS-CH resources
The following resources can be accessed from the CAHS-Community Health Resources page on HealthPoint
Community health staff
Aboriginal Child Health Matrix
How children develop 0-12 years
Practice guide for community health nurses
Consumers
Colour blindness - Primary school resource

Related resources to assist service provision to Aboriginal clients
CAHS-CH staff
The resources below can be accessed on CAHS-Aboriginal Health page via HealthPoint
Patient Care and Cultural Learning Guidelines
Aboriginal Health and Wellbeing
The following resource can be accessed from the CAHS-CH Aboriginal Health Team page on HealthPoint

Cultural Information Directory
WACHS staff
WACHS Strategic Plan 2019-24 – Online version
WACHS Aboriginal Health Strategy 2019-2024

Related WACHS resources
The following resources can be accessed from WACHS Learning Management System Capabiliti
RAHC Trachoma Module TRAWA EL2
WACHS Trachoma intranet site

Related external resources
Book: Mary Sheridan's From Birth To Five Years Children's Developmental Progress. 2014. Ajay Sharma and Helen Cockerill
Book: From Birth To Five Years Practical Developmental Examination. 2014. Ajay Sharma and Helen Cockerill
Indigenous Eye Health - https://www.vision2020australia.org.au/our-work/indigenous-eye-health/
Lions Institute - https://www.lei.org.au/
Nursing and Midwifery Board of Australia. Code of conduct for nurses and Code of conduct for midwives. 2018.
Nursing and Midwifery Board of Australia. Registered Nurses Standards for Practice. 2016
The Royal Children's Hospital Ophthalmology Factsheets
Optometry Australia - Clinical Practice Guide: Paediatric Eye Health and Vision Care. 2016

Appendix A: Common childhood eye disorders

Disorder	Main causes	Signs and Symptoms
Strabismus[17] *A condition in which the eyes are not aligned in parallel, causing a cross-eyed appearance.* *May be constant or intermittent, and in any direction.* *The lay term for strabismus is 'squint.'*	• Abnormalities in the muscles and nerves surrounding the eyes	• Misaligned eyes • Double vision • Uncoordinated eye movements • Vision loss • Loss of depth perception • Abnormal head position
Amblyopia[18] *The preventable loss or lack of potential to see clearly in one or both eyes, due to deviation, defocus or deprivation during the formative years.* *Commonly known as 'lazy eye'.*	• Untreated strabismus • Uncorrected refractory errors	• Underdevelopment of 3D vision • Loss of vision
Congenital cataract[19]	• Congenital anomalies • Maternal infections in pregnancy, such as rubella, toxoplasmosis • Adverse reaction to certain drugs in-utero	• Opacity of the lens
Congenital glaucoma[20]	• Congenital anomalies with incorrect development of eye's drainage system lead to optic nerve damage from increased pressure in eye	• Enlarged eyes • Cloudiness of the cornea • Photosensitivity
Lacrimal system blockage[21] *Also known as a blocked tear duct or watery eyes.*	• Congenital condition where membrane that seals nasolacrimal duct in utero fails to open at birth or soon after • Conjunctivitis • Chronic sinusitis • Nose trauma	• Production of tears in the neonate • Watering eye • Discharge of pus • Crusted mucus along the eyelashes • Increased susceptibility to eye infections

Conjunctivitis [22]	• Bacterial or viral infections	• Irritated, red eye • Excessive tear production • Pus discharge • Swollen eyelids • Photophobia
Nystagmus[23] *Rapid, involuntary eye movements in one or both eyes.* *May be side to side, up and down, or in circles.*	• Abnormal function of the areas of the brain which control eye movement due to congenital anomalies, trauma or infection	• Blurred vision • Abnormal head posture
Retinoblastoma[24] *The most common primary malignant intraocular tumor in children.*	• Congenital anomalies • Genetics	• Whitening of red reflex in flash photos • Strabismus • Eye redness or pain • Poor vision
Retinopathy of Prematurity (ROP)[15, 16] *Abnormal development of retinal blood vessels after birth in some premature infants.* *Previously known as Retrolental fibroplasia.*	• Birthweight less than 1250g • Premature birth at less than 31 weeks	• None - only detected by an ophthalmologic examination
Trachoma[6] *Untreated infection of the eyes can result in scarring, in-turned eyelashes (trichiasis) and blindness.*	• Chlamydia trachomatis	• Mild itching and irritation of the eyes and eyelids • Mucus or pus discharge from the eyes • Eyelid swelling • Photophobia • Eye pain
Colour vision deficiency[25] *Results from one or more of the types of retinal colour cone cells being absent, not working, or detecting a different colour than normal.* *Previously known as colour blindness*	• Genetics, affecting 5 to 10% of all males, and rarely females May sometimes arise later in life due to: - glaucoma or macular degeneration, - Eye or brain injuries - exposure to toxins - Alzheimer's or multiple sclerosis	• Trouble identifying colours, and sorting by colour • using the wrong colours for object – e.g. purple leaves on trees • low attention span when colouring in work sheets • smelling food before eating

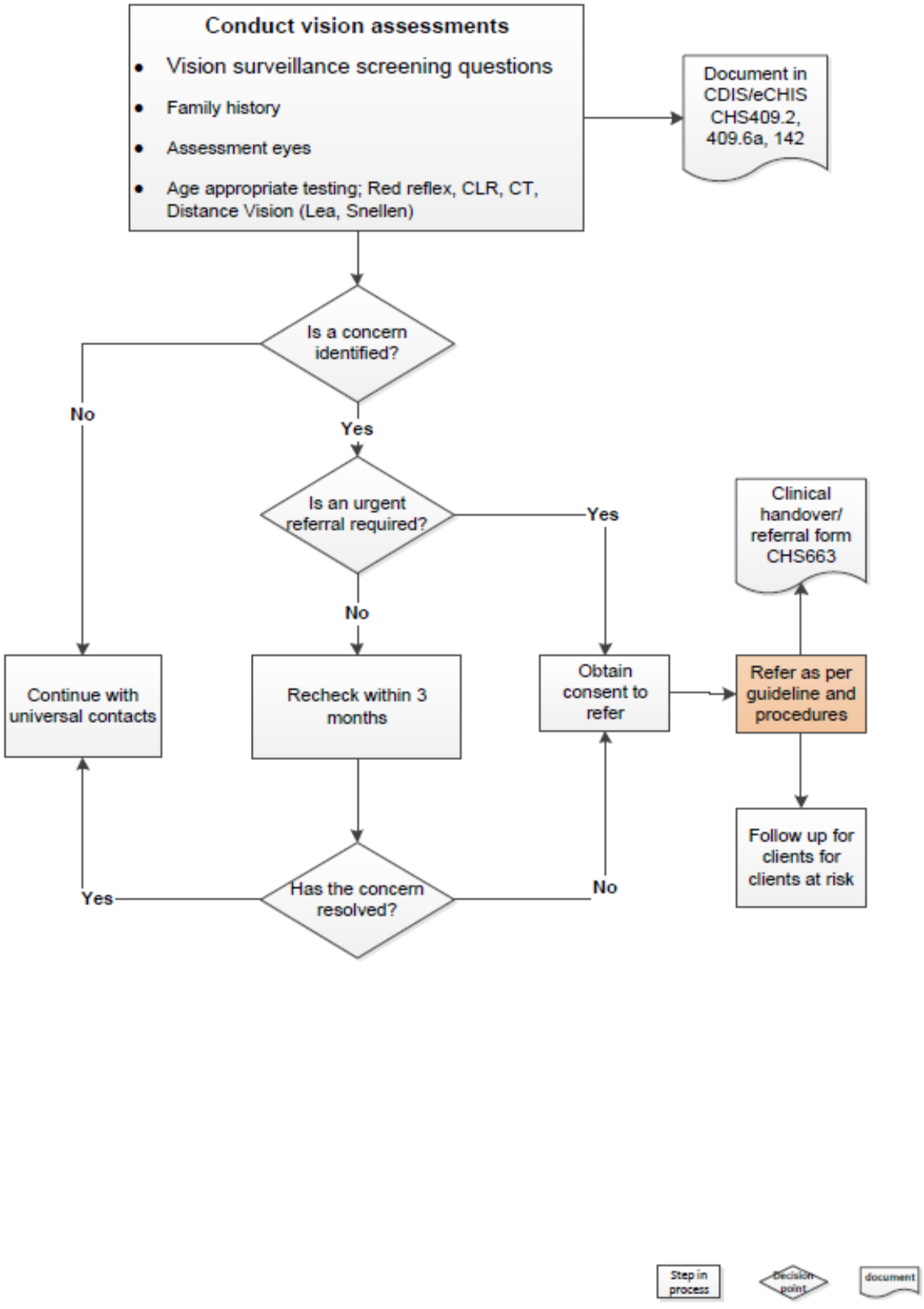
Appendix B: Schedule of vision and eye health screening

	Observations and assessments
0-14 days Universal child health contact	• Observe eyes and visual behaviours
8 weeks Universal child health contact	• Observe eyes and visual behaviours • Red reflex • Corneal light reflex
4 months Universal child health contact	• Observe eyes and visual behaviours • Red reflex • Corneal light reflex
12 months Universal child health contact	• Observe eyes and visual behaviours If concerns, conduct: • Red reflex • Corneal light reflex
2 years Universal child health contact	• Observe eyes and visual behaviours If concerns, conduct : • Red reflex • Corneal light reflex
3 years Universal Plus child health contact **(if indicated)**	• Observe eyes and visual behaviours • Corneal light reflex • Cover test • Distance vision (Lea 15 line 3M) [a]
School Entry Health Assessment Universal school health contact	• Observe eyes and visual behaviours • Corneal light reflex • Cover test • Distance vision (Lea 15 line 3M)[a]
Targeted Assessment school health contact	• Observe eyes and visual behaviours • Corneal light reflex • Cover test • Distance vision (Lea 15 line 3M [a] or Snellen 6M [b])

a. Distance vision (Lea 15 line 3M) used as developmentally appropriate for children from 3 years.
b. Distance vision (Snellen 6M) for targeted assessment of children over 7 years of age.

In accordance with the WACHS Enhanced Child Health Schedule (WACHS only), additional screening will be conducted for vulnerable clients aged 0-5 years.

Appendix C: Vision assessment and referral pathway – universal and targeted



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Document Owner:	Nurse Director, Community Health		
Reviewer / Team:	Clinical Nursing Policy Team		
Date First Issued:	December 2014	Last Reviewed:	12 January 2021
Amendment Dates:		Next Review Date:	12 January 2024
Approved by:	Community Health Clinical Nursing Policy Governance Group	Date:	6 January 2021
Endorsed by:	Executive Director Nursing	Date:	12 January 2021
Standards Applicable:	NSQHS Standards:  Child Safe Standards: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10		

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