



| PROCEDURE | |
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| Head circumference assessment | |
| Scope (Staff): | Community health staff |
| Scope (Area): | CAHS - CH, WACHS |
| <p>Child Safe Organisation Statement of Commitment</p> <p>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 policies and procedures to ensure the safety and wellbeing of children at CAHS.</p> | |

This document should be read in conjunction with this [DISCLAIMER](#)

Aim

To correctly measure and interpret the head circumference of infants and young children.

Risk

The accurate measuring of head circumference is an integral part of a holistic growth assessment. Failure to undertake head circumference assessment or obtaining inaccurate head circumference measurements may delay the identification of children with health and developmental concerns associated with deviations in head size.

Background

Assessment of growth identifies whether a child has age appropriate growth or is deviating from normal parameters. For assessment of growth to be meaningful, serial measurements should be taken and plotted onto a growth chart over a period of time.¹ Growth assessment is especially important during infancy to detect and monitor slow or excessive growth, check the impact of illness and treatment, and to identify or monitor those at higher risk.²

Head circumference assessments are undertaken as part of a holistic assessment to identify deviations in head growth and brain development. The most dramatic increase in brain volume occurs during the period from the last 3 months in utero and the first two years of life.³ Therefore, serial head circumference growth measuring is relevant in the first two years of life⁴ because changes in head circumference during this period may be predictive of later developmental outcomes.³

A child's head circumference increases rapidly prior to thirty-six (36) months of age and then growth slows.⁵ Growth deviations in head circumference are not usually related to nutritional intake (except in extreme cases) but are more likely due to non-nutritional factors.⁶ When head circumference measurements are outside the expected norm, possible deviations may include achondroplasia, microcephaly, hydrocephalus, craniosynostosis (craniostenosis) and Autism Spectrum Disorder (ASD). Refer to the *Physical assessment 0-4 years* guideline for more information.

Microcephaly (usually defined by a head circumference below the 3rd centile) and macrocephaly (head circumference above the 97th centile) may be evident at birth or become apparent in the first years of life. ³

Evidence shows that some infants with autism spectrum disorder (ASD) have deviations from normal in their head circumference. It has been observed that head circumference at birth is smaller than healthy infants, followed by a period of sudden rapid growth (between 6 – 14 months) before the head circumference stabilizes. Accelerated head growth in the first year of life is found in approximately 70% of children with ASD. ^{7, 8} This growth pattern may serve as an early signal of risk for autism.

Key Points

- Head circumference assessments are undertaken at the 8 week, 4 month and 12 month universal scheduled contacts.
- A head circumference assessment should also be completed as part of a holistic assessment when concerns regarding growth or any other identified risk are raised by nurse or parent at any Universal Plus contact or drop in session.
- Accelerations or decelerations in head circumference growth are indications for further review and/or referral.
- Head circumference alone is not diagnostic of disorders.
- To ensure head circumference measurement accuracy, reliable equipment should be used, along with good technique. Small errors during the measuring, recording or plotting can have a significant impact on the infant's/child's growth assessment results and subsequent care planning.
- Community health nurses must follow the organisation's overarching Infection Control Policies and perform hand hygiene in accordance with WA Health guidelines at all appropriate stages of the procedure.

Equipment

- Clean, flexible, non-stretchable measuring tape or disposable paper tape.
- The tape should have increments of 0.1 centimetres (cm) and a width of 0.5 – 1.0cm.
- Check tape against a static measure for accuracy and replace regularly as required.

Procedure

| Steps | Additional Information |
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| <p>Explanation</p> <p>Discuss the procedure with the parent and child, where appropriate. Allow sufficient time for discussion of parental concerns.</p> | <p>Encourage parent support and involvement with the procedure.</p> |

| Steps | Additional Information |
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| <p>Preparation</p> <ul style="list-style-type: none"> Remove any hair or head accessories. Lay the child supine on the assessment bench. | <p>Children may need to be held firmly (yet comfortably) to prevent unexpected movement.</p> <p>Older children may prefer to stand or be seated on the parents lap facing the health professional.</p> |
| <p>Measuring</p> <ul style="list-style-type: none"> Place the tape above the child's eyebrows, above the supraorbital ridge and around the occipital prominence at the back of the head. Pull the tape gently to compress the hair to yield a measure that 'approximates' head circumference. Note the measurement to the nearest 0.1cm. | <p>Staff may wish to repeat measurement a number of times, to enable consistency in technique and accuracy with results.</p> |
| <p>Recording</p> <ul style="list-style-type: none"> Record measurements on relevant head circumference growth charts, specific for age and gender. Infants born after 37 completed weeks should be plotted on the WHO birth to 2 year growth charts. The actual age for these infants commences at birth. Growth measurement plotting begins at birth at "0" and continues according to actual age. Infants born less than 37 weeks gestation should be plotted onto the WHO birth to 2 year growth charts using their age corrected for their prematurity until 2 years of age. | <p>Age is plotted in completed weeks/months/years as appropriate.</p> <p>For full term infants less than fourteen (14) weeks of age who have been identified as having head circumference concerns, use the WHO Birth to thirteen (13) weeks head circumference charts to record serial measurements.</p> <p>A child born before 37 completed weeks gestation is considered preterm. Once a corrected age of 40 weeks is reached, the WHO standards can be used to monitor ongoing growth. Corrected age should be used until 2 years of age. If this child catches up before this then actual age can be used.</p> <p>Fenton Preterm Growth Charts can be used from 20 - 40 weeks gestation or up to 50 weeks of age, as these babies may not be old enough to be plotted from week 0 on the WHO growth charts.</p> |
| <p>Interpretation</p> <ul style="list-style-type: none"> Interpret the head circumference measurements on the chart, noting any changes in growth trajectories. Discuss findings and growth patterns with parents | <p>In some cases, a single measurement is sufficient to confirm a size increase that requires further assessment. However more often, serial measurements of the head circumference over a period of time and a holistic assessment are required to confirm that a deviation from the normal</p> |

| Steps | Additional Information |
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| | <p>pattern of growth has occurred.</p> <p>Serial measurements showing changes in the growth trajectories or unexpected movement on the curves, requires additional assessment and/or referral.</p> |

Referral

If required, refer to a medical practitioner for further assessment.

Documentation

Nurses maintain accurate, comprehensive and contemporaneous documentation of assessments, planning, decision making and evaluations; according to CAHS-CH and WACHS processes.

References

1. Dietitians of Canada, Canadian Paediatric Society, The College of Family Physicians of Canada, Community Health Nurses of Canada. Promoting optimal monitoring of child growth in Canada: Using the new World Health Organization growth charts – Executive Summary. Paediatrics & Child Health. 2010;15(2):77-9.
2. World Health Organization. Training course on child growth assessment Geneva: World Health Organization; 2006 [Available from: http://www.who.int/nutrition/publications/childgrowthstandards_trainingcourse/en/].
3. Australian Institute of Health and Welfare. National Maternity Data Development Project: Baby head circumference. Canberra: AIHW; 2016.
4. Duderstadt K. Pediatric physical examination: an illustrated handbook: Elsevier Health Sciences; 2013.
5. Lee R, DC N. Nutritional Assessment. 5th ed. New York: McGraw-Hill; 2010.
6. The Royal Children's Hospital Melbourne. Child Growth Learning Resource. Height or weight. 2013 [
7. Courchesne E, Carper R, Akshoomoff N. Evidence of brain overgrowth in the first year of life in autism. Jama. 2003;290(3):337 - 44.
8. Muratori F, Calderoni S, Apicella F, Filippi T, Santocchi E, Calugi S, et al. Tracing back to the onset of abnormal head circumference growth in Italian children with autism spectrum disorder. Research in Autism Spectrum Disorders. 2012;6(1):442-9.

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 in the [WACHS Policy](#) link

Body Mass Index assessment – child health

Body Mass Index assessment – primary school

Growth birth – 18 years

Growth faltering

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| Height assessment 2 years and over |
| Length assessment 0 - 2 years |
| Overweight and obesity |
| Physical assessment 0 - 4 years |
| Universal contact guidelines |
| Weight assessment 0 - 2 years |
| Weight assessment 2 years and over |
| The following documents can be accessed in the CAHS-CH Operational Manual |
| Infection control policies |

Related CAHS-CH forms

The following forms can be accessed from the [CAHS-Community Health Forms](#) page on HealthPoint

Body Mass Index Boys (CHS430B)

Body Mass Index Girls (CHS430A)

World Health Organization Charts (CHS8000A series)

Related CAHS-CH resources

The following resources can be accessed from the [CAHS-Community Health Resources](#) page on HealthPoint

How children develop

Practice guide for Community Health Nurses


Related external resources

[Royal Children's Hospital Melbourne Child Growth learning resource](#)

[Preterm Fenton Growth Charts](#)

[World Health Organization Charts 0 – 6 months](#) (external link)

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

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