

# 152 Low Head Circumference (Infants and Children < 24 Months of Age)

## Definition/Cut-Off Value

Low head circumference for infants and children < 24 months of age is defined as follows:

Age	Cut-Off Value
Birth to < 24 months	$\leq$ 2.3rd percentile head circumference-for-age as plotted on the Centers for Disease Control and Prevention (CDC) Birth to 24 months gender specific growth charts (1) (available at: <a href="http://www.cdc.gov/growthcharts">www.cdc.gov/growthcharts</a> ).*
<p><i>* Based on 2006 World Health Organization international growth standards (2). CDC labels the 2.3<sup>rd</sup> percentile as the 2<sup>nd</sup> percentile on the Birth to 24 months gender specific growth charts. For more information about the percentile cut-off, please see Clarification.</i></p> <p><u>Note:</u> For premature infants and children (with a history of prematurity) up to 2 years of age, assignment of this risk criterion will be based on adjusted gestational age. For information about adjusting for gestational age see: <a href="#">Guidelines for Growth Charts and Gestational Age Adjustment for Low Birth Weight and Very Low Birth Weight Infants</a>.</p>	

## Participant Category and Priority Level

Category	Priority
Infants	I
Children (< 24 months of age)	III

## Justification

The American Academy of Pediatrics recommends that all children have a head-circumference measurement at each well-child visit until 2 years of age (3). It is recommended that the measurements be plotted on gender specific growth charts to identify children with a head size or growth pattern that warrants further evaluation (3). Low head circumference (LHC) is associated with pre-term birth and very low birth weight (VLBW) as well as a variety of genetic, nutrition, and health factors (4). Head size is also related to socioeconomic status and the relationship is mediated in part by nutrition factors (4). LHC is indicative of future nutrition and health risk, particularly poor neurocognitive abilities (4). LHC among VLBW children is associated with lower IQ and poorer academic achievement (5). Some studies suggest that interventions to improve antenatal and postnatal head circumference growth may contribute to better scholastic outcomes (5).

## Implications for WIC Nutrition Services

LHC alone does not necessarily indicate an abnormal head size. The diagnosis of LHC must also be based on the presence of other evidence and knowledge of the causes of LHC (5). Although WIC agencies may

choose not to take head circumference measurements, referral data that indicates LHC may be used to assign this risk.

Through client-centered counseling, WIC staff can assist families in making nutritionally balanced food choices to promote adequate growth. Also, the foods provided by the WIC Program are scientifically-based and intended to address the supplemental nutritional needs of the Program's target population, and can be tailored to meet the needs of individual participants

In addition, WIC staff can greatly assist families by providing referrals to medical providers and other services, if available, in their community. Such resources may provide the recommended medical assessments, in order to rule out or confirm medical conditions, and offer treatment when necessary and/or in cases where growth improvement is slow to respond to dietary interventions.

## References

1. Centers for Disease Control and Prevention. Use of World Health Organization and CDC growth charts for children aged 0-59 months in the United States. MMWR 2010; 59(No. RR-9). Available at: [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5909a1.htm?s\\_cid=rr5909a1\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5909a1.htm?s_cid=rr5909a1_w). Accessed September 2010.
2. World Health Organization. WHO child growth standards: Length/height-for-age, weight-for-age, weight for height and body mass index-for-age: Methods and development. Geneva, Switzerland: World Health Organization; 2006. Available at: [http://www.who.int/childgrowth/publications/technical\\_report\\_pub/en/index.html](http://www.who.int/childgrowth/publications/technical_report_pub/en/index.html). Accessed September 2010.
3. Hagan JF, Shaw JS, Duncan PM, editors. Bright futures: Guidelines for health supervision of infants, children and adolescents. 3rd ed. Elk Grove, IL: American Academy of Pediatrics; 2008.
4. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996.
5. Peterson J, Taylor HG, Minich N, Hack M. Subnormal head circumference in very low birth weight children: neonatal correlates and school-age consequences. Early Hum Dev. 2006 May; 82(5):325-34.

## Clarification

The cut-off for LHC is 2.3; however, for ease of use, CDC labels it as the 2<sup>nd</sup> percentile on the hard copy Birth to 24 months growth charts. Electronic charts should use the 2.3<sup>rd</sup> percentile as the cut-off.