Child and Teen Checkups (C&TC) FACT Sheet

For Primary Care Providers

Physical Growth and Measurements

C&TC Requirements:	Qualified Personnel	Documentation
Physical Growth and Measurements • A child's height and weight must be measured and the results plotted, as appropriate, on a standardized growth grid based on National Center for Health Statistics (NCHS) data. • The head circumference of a child from birth to 24 months of age (or who appears to have a deviation from the norm) must be measured and plotted on a standardized growth grid based on NCHS data. • Blood pressure must be measured starting at three years of age. • Children determined to have nutritional risks must be referred as appropriate for further clinical assessment, nutritional counseling or be referred to a nutritional program such as Women, Infants, and Children (WIC); food stamps; Mothers and children (MAC) or HeadStart.	Anyone with adequate training (e.g.,nursing assistant, certified medical assistant, nurse) such as found on the CDC website* or MDH 1-day C&TC training	Record numerical values for height, weight, head circumference (up to 24 months) and blood pressure (beginning at age 3 years). Growth information should be plotted on standardized growth grids based on NCHS data as appropriate.

***http://www.cdc.gov/nccdphp/dnpa/growthcharts/index.htm*.**

Facts about the Importance of Physical Growth and Measurements:

- The prevalence of overweight children is increasing and has been associated with impaired fasting glucose, type II diabetes mellitus and the development of cardiovascular risk factors [1].
- Evidence supports the concept that the roots of essential hypertension extend back to childhood. Of particular importance is the documentation that elevated blood pressure in childhood often correlates with hypertension in early adulthood, thereby supporting the need to track blood pressure in children [2].

Key Points:

- Body Mass Index (BMI) is an anthropometric index of weight and height. The CDC recommends the use of BMI-for-age for children aged 2 years and older [3]. Results of the Bogalusa Heart Study indicate that overweight children and adolescents are at a substantially increased risk for adverse levels of several cardiovascular risk factors [4].
- Children who watch 4 or more hours of television per day have significantly greater BMI, compared to those watching fewer than 2 hours per day [5].
- Body size is the most important determinant of blood pressure in children. The National High Blood Pressure Education Program Working Group on Hypertension Control in

Children and Adolescents has released tables of blood pressure percentiles that consider height, in addition to age and sex [2].

Screening Tools / Procedures:

Length/Height:

- Under 2 years (recumbent) - use a measuring board with a stationary headboard and a sliding vertical foot piece if available [6].
- Over 2 years (standing) - a stadiometer is preferred, however, accurate measurements may be obtained by using a graduated ruler or tape attached to a wall and placing a flat-surfaced object horizontally on top of the child's head at a 90° angle to the wall.
- Measurements obtained by marking the position of child's head and heels while recumbent and measuring the distance, or using height measuring rods that are attached to weight scales tend to be inaccurate.

Weight:

- Use balance beam or electronic scales. Spring-type scales are not sufficiently accurate for this use.
- Check scales regularly for accuracy and ensure scale is zeroed before each use.
- The infant or child should wear only a dry diaper or light undergarment while being weighed to ensure consistency for each subsequent measurement.

Blood Pressure:

- In recognition of the environmental hazard posed by mercury-column sphygmomanometers, the American Hospital Association and the U.S. Environmental Protection Agency have set a goal to eliminate mercury in healthcare by 2005. As a result, healthcare facilities are [being encouraged] to replace mercury-based equipment. [7].
- Cuff bladder should be 40% of the arm circumference measured at the midpoint between the olecranon and acromion [2].
- Place bell of stethoscope lightly on antecubital fossa over brachial artery [2].

Professional Recommendations:

American Academy of Pediatrics and Bright Futures – Height and weight should be measured at each preventive pediatric health care visit. Measure head circumference through 24 months. Begin blood pressure screening beginning at age three and continue to measure at each preventive health care visit.

Resources: (Accessed June 18, 2007)

- Green, M., (2001) Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents (2nd ed.). Arlington, VA: National Center for Education in Maternal and Child Health. . [On-line], available: http://www.brightfutures.org

- U. S. Public Health Service. (1998). Clinician's Handbook of Preventive Services (2nd ed.) McLean, VA: International Medical Publishing. [On-line], available: http://www.ahcpr.gov/clinic/ppiphand.htm

- National Center for Health Statistics Growth Charts
  - CDC Clinical Growth Charts - United States, (2000) Centers for Disease Control and Prevention. National Center for Health Statistics; Division of Data Services

- CDC Growth Chart Training Module; Centers for Disease Control and Prevention [On-line], available: http://www.cdc.gov/growthcharts

- Minnesota Department of Health, Maternal and Child Health Section. For questions, training, or additional information, contact the C&TC Support Staff at (651) 201-3760. Website: http://www.health.state.mn.us/divs/fh/mch/candtc.html.

- Minnesota Department of Human Services C&TC Documentation Forms, Criteria Guidelines for C&TC Provider Documentation (2006). C&TC FACT Sheets [Online] available: http://www.dhs.state.mn.us/provider/ctc

References: (Accessed June 18, 2007)

1. Williams DE, Cadwell BL, Cheng YJ, Cowie CC, Gregg EW, Geiss, LS, et al. (2005). Prevalence of impaired fasting glucose and its relationship with cardiovascular disease risk factors in US adolescents, 1999-2000. PEDIATRICS**;** 116(5): 1122-1126.

2. National High Blood Pressure Education Program Working Group on Hypertension Control in Children and Adolescents. Update on the 1987 Task Force Report on High Blood Pressure in Children and Adolescents: A Working Group Report for the National High Blood Pressure Education Program. Bethesda, MD: National Institutes of Health; 1996. US Department of Health and Human Services publication NIH 96-3790 [On-line], available: http://www.nhlbi.nih.gov/health/prof/heart/hbp/hbp_ped.htm

3. Body Mass Index. Centers for Disease Control and Prevention (CDC). About BMI for children and teens. [Online], available: http://www.cdc.gov/nccdphp/dnpa/bmi/childrens_BMI/about_childrens_BMI.htm#How%20is%20BMI%20used%20with%20children%20and%20teens.

4. Freedman DS, Dietz WH, Srinivasan SR, Berenson GS. (1999) The relation of overweight to cardiovascular risk factors among children and adolescents: The Bogalusa Heart Study. PEDIATRICS; 103(6):1175-1182.

5. AAP Committee on Nutrition. (2003) Policy Statement. Prevention of pediatric overweight and obesity. PEDIATRICS; 112(2):424-430.

6. Rifas-Shiman SL, Rich-Edwards JW, Scanlon KS, Kleinman KP, Gillman MW. (2005). Misdiagnosis of overweight and underweight children younger than 2 years of age due to length measurement bias. MedGenMed. 2005; 7(4): 56. [Online], available http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=1488725#id2327453.

7. Health Devices. 2003 Mar. 32(3): 109-17.