Using BMI to Determine Cardiovascular Risk in Childhood: How Do the BMI Cutoffs Fare?

PEDIATRICS Vol. 124 No. 5 November **2009**, pp. e905-e912

ARTICLE

Asheley Cockrell Skinner, PhD[a,b], Michelle L. Mayer, PhD, MPH[a,c], Kori Flower, MD, MS, MPH[d], Eliana M. Perrin, MD, MPH[e] and Morris Weinberger, PhD[a,f]

[a] Department of Health Policy and Management
[b] School of Nursing
[c] Cecil G. Sheps Center for Health Services Research
[e] Division of General Pediatrics and Adolescent Medicine, Department of Pediatrics, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina
[d] Charles Drew Community Health Center, Piedmont Health Services, Burlington, North Carolina
[f] Center for Health Services Research in Primary Care, Durham Veterans Affairs Medical Center, Durham, North Carolina

OBJECTIVE: Although adverse health outcomes are increased among children with BMI above the 85th (overweight) and 95th (**obese**) percentiles, previous studies have not clearly defined the BMI percentile at which adverse health outcomes begin to increase. We examined whether the existing BMI percentile cutoffs are optimal for defining increased risk for dyslipidemia, dysglycemia, and hypertension.

METHODS: This was a cross-sectional analysis of the National Health and Nutrition Examination Survey from 2001 to 2006. Studied were 8216 children aged 6 to 17 years, representative of the US population. BMI was calculated by using measured height and weight and converted to percentiles for age in months and gender. Outcome measures (dyslipidemia, dysglycemia, and hypertension) were based on laboratory and physical examination results; these were analyzed as both continuous and categorical outcomes.

RESULTS: Significant increases for total cholesterol values and prevalence of abnormal cholesterol begin at the 80th percentile. Significant increases in glycohemoglobin values and prevalence of abnormal values begin at the 99th percentile. Consistent significant increases in the prevalence of high or borderline systolic blood pressure begin at the 90th percentile.

CONCLUSIONS: Intervening for overweight children and their health requires clinical interventions that target the right children. On the basis of our data, a judicious approach to screening could include consideration of lipid screening for children beginning at the 80th percentile but for dysglycemia at the 99th percentile. Current definitions of overweight and **obese** may be more useful for general recognition of potential health problems and discussions with parents and children about the need to address childhood obesity.