# Prevalence of Obesity Among US Preschool Children in Different Racial and Ethnic Groups

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**Objective:** To estimate the prevalence of obesity in 5 major racial/ethnic groups in 4-year-old US children.

**Design:** Cross-sectional secondary data analysis.

**Setting:** Nationally representative sample of US children born in 2001.

**Participants:** Height and weight were measured in 2005 in approximately 8550 children who participated in the Early Childhood Longitudinal Study, Birth Cohort.

**Main Exposure:** Racial/ethnic group.

**Outcome Measure:** Prevalence of obesity, defined as body mass index at or above the 95th percentile for age of the sex-specific Centers for Disease Control and Prevention growth charts.

**Results:** Obesity prevalence among 4-year-old US children (mean age, 52.3 months) was 18.4% (95% confidence interval [CI], 17.1%-19.8%). Obesity prevalence differed by racial/ethnic group ($P<.001$): American Indian/Native Alaskan, 31.2% (95% CI, 24.6%-37.8%); Hispanic, 22.0% (95% CI, 19.5%-24.5%); non-Hispanic black, 20.8% (95% CI, 17.8%-23.7%); non-Hispanic white, 15.9% (95% CI, 14.3%-17.5%); and Asian, 12.8% (95% CI, 10.0%-15.6%). All pairwise differences in obesity prevalence between racial/ethnic groups were statistically significant after a Bonferroni adjustment ($P<.005$) except for those between Hispanic and non-Hispanic black children and between non-Hispanic white and Asian children.

**Conclusions:** Racial/ethnic disparities in obesity are apparent in 4-year-old US children. The highest prevalence is in American Indian/Native Alaskan children, in whom obesity is twice as common as in non-Hispanic white or Asian children.

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I N THE UNITED STATES THERE ARE disparities in the prevalence of adult obesity across racial/ethnic groups, especially among women,[1,2] and these disparities may contribute to racial/ethnic disparities in diabetes and hypertension.[3-5] Addressing such health disparities is a major national health goal.[6] One approach to identifying the underlying causes of the racial/ethnic disparities in obesity is to determine the age at which these disparities first appear.

Based on measured height and weight data obtained in nationally representative samples of US children, there is evidence that racial/ethnic disparities in obesity, particularly for females, are clearly established by adolescence[7,8] and that they may begin to emerge by 6 to 11 years of age. For preschool-aged children, national estimates of obesity prevalence, which are based on measured height and weight, are only available from the National Health and Nutrition Examination Surveys (NHANES).[8] However, because of the relatively small sample sizes of children in NHANES (1770 children be-

tween the ages of 2 and 5 years were studied between 2003 and 2006 in NHANES),[8] there is limited ability to determine from these data whether racial/ethnic disparities in obesity prevalence are present among preschoolers or to estimate the prevalence of obesity in more than 3 racial/ethnic groups: non-Hispanic white, non-Hispanic black, and Mexican American.

Using measured height and weight data collected in 2005 on a large nationally representative sample of 4-year-old US children, we sought to estimate the prevalence of obesity in each of the 5 major racial/ethnic groups in the United States—non-Hispanic white, Hispanic, non-Hispanic black, Asian, and American Indian/Native Alaskan—and to determine whether there were differences in the prevalence of obesity between these groups at this age.

## METHODS

### SAMPLE AND STUDY DESIGN

We analyzed data from the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B),

which was designed to provide information about the learning environments, health, and development of young US children.[9] The ECLS-B was conducted by the National Center for Education Statistics (NCES), and the ethics review board at the NCES approved the study. Parents provided written informed consent. The Ohio State University has a license agreement with NCES for analysis of restricted-use data from the ECLS-B. In accordance with NCES reporting guidelines, all unweighted sample sizes are rounded to the nearest 50.

The NCES designed ECLS-B to contain a nationally representative sample of children born in the United States in 2001 while excluding children born to mothers younger than 15 years of age and children who died or were adopted before 9 months of age. To develop the study sample, NCES used a clustered list-frame design with data from the vital statistics system of the National Center for Health Statistics. Based on the designation of children's race on their birth certificates, NCES oversampled children in the following 3 groups: American Indian/Native Alaskan, Chinese, and other Asian/Pacific Islander. Using this sampling method, approximately 14 000 births were selected; from these sampled births, the final study cohort of about 10 700 children was formed when the children were aged approximately 9 months. Participants were assessed in their homes when they were aged approximately 9 months, 2 years, and 4 years. The assessments consisted of a computer-assisted interview with the child's mother (or, in approximately 5% of cases, the father or other guardian) and direct measurements and observations of children.[9] This article reports on our analysis of obesity prevalence calculated from measured height and weight data collected in 2005 when the children were aged approximately 4 years. Of the approximately 8750 children assessed at this age, about 200 were missing height and/or weight data, leaving a final analytic sample of about 8550. Analysis weights that adjust for survey nonresponse and undercoverage are calculated by NCES for each wave of the ECLS-B; all analyses we describe have been weighted and are representative of US children born in 2001 and assessed in 2005.

## HIGH BODY MASS INDEX FOR AGE

The ECLS-B interviewers measured children's height and weight using a standardized protocol. Interviewers were certified to take these measurements after attending training sessions in which they received hands-on practice with the equipment and were tested on the measurement and recording procedures. With children dressed in light clothing and without shoes, height was measured with a portable stadiometer and weight was measured with a digital scale. Measurements were taken twice and entered by the interviewer into the computer-assisted interview instrument. The computer-assisted interview instrument determined whether these measurement values were within 5% of each other, and interviewers repeated the measurements if this criterion was not met. The 2 height measurements were highly correlated ($r = 0.99$), as were the 2 weight measurements ($r = 0.99$), and for each pair of measurements, the average value was used in the analysis.[9] Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared and converted into percentiles for age and sex, based on the 2000 Centers for Disease Control and Prevention growth charts for the United States.[10] Following recent suggestions about nomenclature,[11,12] we refer to all children at or above the 95th percentile as obese.

## RACE AND ETHNICITY

At the 9-month interview, mothers were asked to confirm the child's sex, as reported on his or her birth certificate, and to designate the child's race and ethnicity using the categories established for the decennial US census.[13,14] Mothers were allowed to choose more than 1 race designation for their child. These race and ethnicity data were combined to make a single race/ethnicity variable for our analysis. We used an ordered, stepwise process to place each child in 1 of 5 mutually exclusive categories. First, children designated as American Indian/Native Alaskan by their mother were categorized as such whether or not they were also designated as white, black, Hispanic, Asian, or Pacific Islander. Next, children who were designated as Hispanic were categorized as Hispanic regardless of race. Then, children designated as black were categorized as non-Hispanic black. Following that, children designated as Asian were categorized as Asian. Then, children designated as white, and not yet captured by any of the prior 4 categories, were categorized as non-Hispanic white. This algorithm, which we used to establish mutually exclusive racial/ethnic categories, is similar to the one used by NCES during ECLS-B sample selection.[9] Children designated as Pacific Islander and not captured in 1 of the 5 racial/ethnic groups described (<50 children) and children who were missing information on race and/or ethnicity (<50 children) were excluded from analyses stratified by racial/ethnic group but were included in analyses of the total population.

## STATISTICAL ANALYSIS

Analyses were conducted with SAS (version 9.1; SAS Institute Inc, Cary, North Carolina). Using survey sample weights that include adjustments for unequal selection probabilities at the child level as well as unit nonresponse, we report the prevalence of obesity in 5 racial/ethnic groups at 2 BMI cutoffs, at or above the 95th and 97th percentiles. We report the percentage of children at or above the 97th percentile to allow comparisons with recent analyses of NHANES.[8] We also stratified the prevalence estimates by sex to facilitate these comparisons. All prevalence estimates are representative of US children born in 2001.

Standard errors and 95% confidence intervals were estimated with the Taylor expansion method in SAS using survey procedures (SURVEYMEANS and SURVEYFREQ) that account for the complex sample design. The statistical significance of differences by sex and racial/ethnic group in the prevalence of high BMI for age was determined using design-adjusted Pearson $\chi^2$ tests (Rao-Scott likelihood ratio $\chi^2$ tests). An $\alpha$ level of .05 was used to establish statistical significance of the overall test. We used a Bonferroni adjustment when assessing statistical significance of the difference in prevalence for the 10 pairwise comparisons between racial/ethnic groups, requiring $P < .005$ before declaring any difference to be statistically significant. To determine whether there was a statistically significant ($P < .05$) interaction between sex and racial/ethnic group, we used logistic regression models (PROC SURVEYLOGISTIC; SAS, version 9.1) for both obesity cutoffs.

## RESULTS

Children were assessed at a mean age of 52.3 months (SE, 0.07; range, 44.0-65.3 months). The sample sizes in all analytic strata defined by racial/ethnic and sex groups were sufficiently large to produce stable estimates of obesity prevalence at both BMI cutoffs (**Table 1**).[15] The weighted sample was 2.4% American Indian/Native Alaskan, 3.4% Asian, 15.6% non-Hispanic black, 24.1% Hispanic, 54.0% non-Hispanic white, and 0.2% Pacific Islander. Less than 1% of the sample (0.3%) was missing information on racial/ethnic group.

**Table 1. Sample Sizes of Children by Sex and Racial/Ethnic Group[a]**

| Racial/Ethnic Group[b] | Boys | Girls | Total |
|---|---|---|---|
| American Indian/Native Alaskan | 350 | 350 | 650 |
| Hispanic | 800 | 750 | 1550 |
| Black, non-Hispanic | 750 | 750 | 1450 |
| White, non-Hispanic | 1900 | 1850 | 3750 |
| Asian | 550 | 500 | 1050 |
| **Total** | **4350** | **4200** | **8550** |

[a] Sample sizes have been rounded to the nearest 50 to conform to National Center for Education Statistics guidelines. Each value has been rounded individually and as a result of this rounding, the totals may not equal the sum of the values.
[b] Not all categories (eg, Pacific Islander and those missing information on race/ethnicity) are shown owing to small values in these categories. Pacific Islanders and those missing information on racial/ethnic group are included in the total.

The overall prevalence of BMI at or above the 95th and 97th percentiles was 18.4% and 13.8%, respectively (**Table 2**). An overall significant difference ($P < .001$) in prevalence by racial/ethnic group was evident at each cutoff. At both cutoffs, American Indian/Native Alaskan children had the highest prevalence of obesity, followed by Hispanic and non-Hispanic black children. The groups with the lowest prevalence were non-Hispanic white and Asian children. At both BMI cutoffs, the overall prevalence of obesity was between 15% and 20% higher in boys than in girls ($P = .02$ at each cutoff), but there was no evidence for an interaction between racial/ethnic group and sex ($P > .2$ in each model). Therefore, pairwise comparisons of obesity prevalence between different racial/ethnic groups were only conducted for boys and girls combined. For all of these pairwise comparisons at both BMI cutoffs, the differences in obesity prevalence were statistically significant ($P < .005$) with 2 exceptions. At both the 95th and 97th percentiles, there were no statistically significant differences in obesity prevalence between Hispanic and non-Hispanic black children, nor were the differences between non-Hispanic white and Asian children significant.

## COMMENT

In our analysis of measured BMI data collected in 2005 from a large nationally representative sample of US preschool children, significant differences in the prevalence of obesity between racial/ethnic groups were evident at 4 years of age. Among US preschool children, there appear to be 3 tiers of obesity prevalence by racial/ethnic group, with the highest prevalence among American Indian/Native Alaskan children, the lowest prevalence among non-Hispanic white and Asian children, and an intermediate prevalence among Hispanic and non-Hispanic black children. To our knowledge, this is the first comparison of obesity prevalence in US preschool children across all 5 major racial/ethnic groups using nationally representative data. National estimates of obesity prevalence among preschool children have never been reported for American Indian/Native Alaskans or Asians.

The estimates of obesity prevalence calculated from the NHANES 2003-2006 data[8] are the most comparable with our estimates from the ECLS-B data that were collected in 2005. Our overall estimates of prevalence of BMI at or above the 95th and 97th percentiles for 4-year-old children (18.4% and 13.8%, respectively) were higher than the estimates for 2- to 5-year-old children in NHANES (12.4% and 8.5%, respectively) and closer to the estimates for 6- to 11-year-old children in NHANES (18.0% and 11.4%, respectively). Our prevalence estimates from ECLS-B were also higher than those from NHANES for 2- to 5-year-old children in the 2 racial/ethnic groups that are reported similarly in both studies: non-Hispanic white (BMI $\geq$ 95th percentile, 15.9% vs 10.7%; BMI $\geq$ 97th percentile, 11.6% vs 6.7%) and non-Hispanic black (BMI $\geq$ 95th percentile, 20.8% vs 14.9%; BMI $\geq$ 97th percentile, 16.0% vs 10.8%).

Although both NHANES and ECLS-B are nationally representative surveys, there are a number of differences between these 2 studies, which could account for differences in prevalence estimates. These include differences in the methods used to measure children's weights, the ages of the preschool children at assessment, the sampling strategies, and the patterns of nonresponse. We think that a combination of the first 2 factors is the most likely explanation for the difference in obesity prevalence estimates. Children in NHANES were measured while wearing a disposable paper gown, underwear, and foam slippers,[16] while children in ECLB-B were measured while dressed in light clothing without shoes, which would make the estimates of obesity from ECLS-B somewhat higher than those from NHANES. To investigate the potential effect of this difference in methodology, we conducted a sensitivity analysis in which we estimated a child's clothing as weighing 0.5 kg.[17,18] After subtracting 0.5 kg from each child's weight in ECLS-B, the prevalence estimates of BMI at or above the 95th and 97th percentiles, respectively, were 14.3% and 10.7%, estimates that are closer to those obtained in NHANES for 2- to 5-year-old children (12.4% and 8.5%). Another explanation for the difference in obesity prevalence estimates between ECLS-B and NHANES may be the ages of the children studied. The prevalence of obesity tends to increase with age through the preschool years,[19-22] and this would make the NHANES estimate of obesity prevalence for 2- to 5-year-old children lower than our estimate for 4-year-old children.

The ECLS-B and NHANES produce different but complementary information about the obesity epidemic in US preschool children. Although measuring children in light clothing in ECLS-B might have overestimated the prevalence of obesity, this anthropometric protocol reflects how BMI is assessed in many clinical and public health settings. We think the important findings of our study are the differences in the prevalence of high BMI that we observed between racial/ethnic groups, especially for American Indian/Native Alaskan and Asian children, on whom there are no other available prevalence estimates based on nationally representative data. When we reran our entire analysis using body weights that subtracted 0.5 kg for clothing weight, there were no substantive changes in our findings about differences be-

**Table 2. Prevalence of BMI at or Above the 95th and 97th Percentiles in US Preschool Children by Sex and Racial/Ethnic Group in 2005**

| Race/Ethnicity[a] | % (95% Confidence Interval) | | | P Value[b] |
|---|---|---|---|---|
| | **Boys** | **Girls** | **Both Sexes** | |
| | **BMI ≥ 95th Percentile[c]** | | | |
| American Indian/Native Alaskan | 37.0 (27.0-47.0) | 25.8 (16.2-35.4) | 31.2 (24.6-37.8) ⎤ | |
| Hispanic | 22.2 (19.2-25.3) | 21.8 (17.9-25.7) | 22.0[d] (19.5-24.5) | |
| Black, non-Hispanic | 22.5 (18.4-26.6) | 19.0 (14.9-23.0) | 20.8[d] (17.8-23.7) | <.001 |
| White, non-Hispanic | 17.4 (15.1-19.8) | 14.3 (12.0-16.5) | 15.9[e] (14.3-17.5) | |
| Asian | 15.8 (11.5-20.2) | 10.0 (5.9-14.0) | 12.8[e] (10.0-15.6) ⎦ | |
| **All** | **19.8 (18.1-21.5)** | **17.0 (15.1-18.9)** | **18.4 (17.1-19.8)** | |
| | **BMI ≥ 97th Percentile[c]** | | | |
| American Indian/Native Alaskan | 32.6 (23.0-42.3) | 16.6 (8.1-25.1) | 24.4 (18.5-30.3) ⎤ | |
| Hispanic | 18.6 (16.0-21.2) | 15.0 (12.0-18.0) | 16.9[d] (14.9-18.8) | |
| Black, non-Hispanic | 16.7 (12.5-20.9) | 15.1 (11.5-18.7) | 16.0[d] (13.2-18.7) | <.001 |
| White, non-Hispanic | 12.4 (9.9-14.9) | 10.8 (8.9-12.7) | 11.6[e] (10.0-13.3) | |
| Asian | 11.3 (7.5-15.2) | 5.2 (2.2-8.2) | 8.1[e] (5.7-10.6) ⎦ | |
| **All** | **15.1 (13.2-17.0)** | **12.5 (11.1-13.9)** | **13.8 (12.6-15.0)** | |

Abbreviation: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared).

[a] Not all categories (eg, Pacific Islander and those missing information on race/ethnicity) are shown owing to small values. Pacific Islanders and those missing information on race/ethnicity are included in the estimate for all children.

[b] Rao-Scott likelihood ratio $\chi^2$ test P value for overall difference between racial/ethnic groups. Statistical significance of pairwise comparisons between racial/ethnic groups (both sexes combined) was determined using the Bonferroni method.

[c] Percentiles relative to sex-specific Centers of Disease Control and Prevention BMI-for-age growth charts.

[d] Not statistically significant different from one another. Comparisons between other estimates are statistically significant after a Bonferroni adjustment for 10 comparisons ($P<.005$).

[e] Not statistically significant different from one another. Comparisons between other estimates are statistically significant after a Bonferroni adjustment for 10 comparisons ($P<.005$).

tween racial/ethnic groups. We were able to make comparisons between 5 racial/ethnic groups because of the large sample size of ECLS-B, in which approximately 5 times as many preschool children were assessed in 2005 than were assessed in NHANES between 2003 and 2006, and because of the planned oversampling of some smaller racial/ethnic groups.

There is an emerging consensus that children with BMI levels at or above the 95th percentile for age and sex be referred to as obese rather than overweight.[11,12] Thus, we report the prevalence of obesity rather than overweight. However, we acknowledge that there are shortcomings to the use of BMI as a measure of obesity prevalence in young children and for comparing the prevalence of obesity between racial/ethnic groups. Body mass index is only a proxy measure for adiposity,[23] and our study involved neither direct assessments of adiposity nor adiposity-related morbidity. In addition, the tracking of BMI from childhood to adulthood is weaker among preschoolers than older children.[24] Furthermore, among children, there are differences related to racial/ethnic group in the extent to which high BMI is associated with high levels of adiposity.[25] Despite these limitations in the use of BMI for assessing obesity, BMI remains the most feasible way to compare differences in obesity prevalence between populations.

The methods of obtaining data on racial/ethnic group used in ECLS-B conformed to recommended guidelines[13] by using parental report and allowing more than 1 racial designation. Because more than 1 racial designation was permitted for each child, we detailed our method of establishing mutually exclusive racial/ethnic categories. Not enough Pacific Islanders were assessed

in the ECLS-B to estimate the prevalence of obesity within that racial/ethnic group. These analyses did not attempt to explain what biologic, social, structural, or economic factors might explain the racial/ethnic disparities in obesity that we identified among preschool children. However, previous research suggests that these differences in preschool children would not be significantly attenuated by adjusting for socioeconomic variables.[26]

We have demonstrated that racial/ethnic disparities in obesity are apparent in US children as young as 4 years. The highest prevalence is in American Indian/Native Alaskan children, in whom obesity is twice as common as in non-Hispanic white or Asian children. To help arrest the trends in childhood obesity, both the Surgeon General[27] and the Institute of Medicine[11] have recommended that obesity-prevention efforts begin early in life. These efforts might benefit from a better understanding of how differences in obesity risk between racial/ethnic groups emerge early in the life course. Because families are the social units with the greatest influence on very young children, future research might focus on racial/ethnic differences in household behaviors that affect obesity and how these behaviors are influenced by the community context.

**Author Contributions:** Dr Anderson had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Anderson and Whitaker. *Ac-*

quisition of data: Whitaker. *Analysis and interpretation of data:* Anderson and Whitaker. *Drafting of the manuscript:* Anderson and Whitaker. *Critical revision of the manuscript for important intellectual content:* Anderson and Whitaker. *Statistical analysis:* Anderson and Whitaker. *Study supervision:* Whitaker.

## REFERENCES

1. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*. 2006; 295(13):1549-1555.
2. Wang Y, Beydoun MA. The obesity epidemic in the United States—gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. *Epidemiol Rev*. 2007;29:6-28.
3. Must A, Spadano JL, Coakley EH, Field AE, Colditz GA, Dietz WH. The disease burden associated with overweight and obesity. *JAMA*. 1999;282(16):1523-1529.
4. Winkleby MA, Robinson TN, Sundquist J, Kraemer HC. Ethnic variation in cardiovascular disease risk factors among children and young adults: findings from the Third National Health and Nutrition Examination Survey, 1988-1994. *JAMA*. 1999;281(11):1006-1013.
5. Cossrow N, Falkner B. Race/ethnic issues in obesity and obesity-related comorbidities. *J Clin Endocrinol Metab*. 2004;89(6):2590-2594.
6. US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Washington, DC: US Government Printing Office; November 2000.
7. Gordon-Larsen P, Adair LS, Popkin BM. The relationship of ethnicity, socioeconomic factors, and overweight in US adolescents. *Obes Res*. 2003;11(1):121-129.
8. Ogden CL, Carroll MD, Flegal KM. High body mass index for age among US children and adolescents, 2003-2006. *JAMA*. 2008;299(20):2401-2405.
9. Snow K, Thalji L, Derecho A, et al. *Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Preschool Year Data File User's Manual (2005–06) (NCES 2008-024)*. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, US Department of Education; 2007.
10. Kuczmarski RJ, Ogden CL, Guo SS, et al. 2000 CDC Growth Charts for the United States: methods and development. *Vital Health Stat 11*. 2002;(246):1-190.
11. Institute of Medicine Committee on Prevention of Obesity in Children and Youth. *Preventing Childhood Obesity: Health in the Balance*. Washington, DC: Institute of Medicine; 2005.
12. Barlow SE; Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007;120(suppl 4):S164-S192.
13. Office of Management and Budget. Standards for maintaining, collecting, and presenting federal data on race and ethnicity. *Federal Register*. 1997;62:58781-58790.
14. Winker MA. Measuring race and ethnicity: why and how? *JAMA*. 2004;292(13):1612-1614.
15. Human Nutrition Information Service/National Center for Health Statistics Analytic Working Group. *Joint Policy on Variance Estimation and Statistical Reporting Standards on NHANES III and CSFII Reports: HNIS/NCHS Analytic Working Group Recommendations*. Hyattsville, MD: National Center for Health Statistics; 1993.
16. National Health and Nutrition Examination Survey. Anthropometry and physical activity monitor procedures manual. January 2005. http://www.cdc.gov/nchs/data/nhanes/nhanes_05_06/BM.pdf. Accessed December 22, 2008.
17. Simopoulos AP. Obesity and body weight standards. *Annu Rev Public Health*. 1986;7:481-492.
18. Pett LB, Ogilvie GF. The Canadian Weight-Height Survey. In: Brozek J, ed. *Body Measurements and Human Nutrition*. Detroit, MI: Wayne University Press; 1956:67-78.
19. Sherry B, Mei Z, Scanlon KS, Mokdad AH, Grummer-Strawn LM. Trends in state-specific prevalence of overweight and underweight in 2- through 4-year-old children from low-income families from 1989 through 2000. *Arch Pediatr Adolesc Med*. 2004;158(12):1116-1124.
20. Whitaker RC. Predicting preschooler obesity at birth: the role of maternal obesity in early pregnancy. *Pediatrics*. 2004;114(1):e29-e36.
21. Ong KK, Preece M, Emmett P, Ahmed M, Dunger D; ALSPAC Study Team. Size at birth and early childhood growth in relation to maternal smoking, parity and infant breast-feeding: longitudinal birth cohort study and analysis. *Pediatr Res*. 2002;52(6):863-867.
22. Cole N, Fox MK. *Diet Quality of American Young Children by WIC Participation Status: Data From the National Health and Nutrition Examination Survey, 1999-2004*. Alexandria, VA: US Department of Agriculture, Food and Nutrition Service, Office of Research, Nutrition, Analysis; 2008.
23. Must A, Anderson SE. Body mass index in children and adolescents: considerations for population-based applications. *Int J Obes (Lond)*. 2006;30(4):590-594.
24. Guo SS, Chumlea WC. Tracking of body mass index in children in relation to overweight in adulthood. *Am J Clin Nutr*. 1999;70(1):145S-148S.
25. Freedman DS, Wang J, Thornton JC, et al. Racial/ethnic differences in body fatness among children and adolescents. *Obesity (Silver Spring)*. 2008;16(5):1105-1111.
26. Whitaker RC, Orzol SM. Obesity among US urban preschool children: relationships to race, ethnicity, and socioeconomic status. *Arch Pediatr Adolesc Med*. 2006;160(6):578-584.
27. US Department of Health and Human Services. *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*. Rockville, MD: US Dept of Health and Human Services, Public Health Service, Office of the Surgeon General; 2001.

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## *Correction*

**Text Error.** In the article titled "Neonatal Sepsis: Looking Beyond the Blood Culture: Evaluation of a Study of Universal Primer Polymerase Chain Reaction for Identification of Neonatal Sepsis," by DeCamp et al, published in the January issue of the *Archives* (2009;163[1]: 12-14), a statement error occurred. On page 13, left column, "Determining the Test's Importance" section, paragraph 2, lines 4 through 6, should have read as follows: "The LR reflects the sensitivity and specificity of the test in a single number, but unlike positive and negative predictive value, does not depend on disease prevalance."

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