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Comparison of US Birth Weight References and the International Fetal and Newborn Growth Consortium for the 21st Century Standard

ONLINE ONLY

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ABSTRACT

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Importance This study introduces how the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st) international birth weight standards alter our previous understanding and interpretations of fetal growth restriction as represented by small for gestational age (SGA) status.

Objectives To compare the birth weight distributions of the INTERGROWTH-21st international standard to commonly used US references and examine the differences in the prevalence and neonatal mortality risk of SGA status (below the 10th percentile of a population reference).

Design, Setting, and Participants We analyzed data from 16 prospective cohorts of newborns on gestational age, birth weight, and systematic mortality follow-up through 28 days from 10 low- and middle-income countries. The studies included were conducted between 1983 and 2008. The analysis was conducted in 2014. Infants were categorized as SGA using the 1991 US birth weight reference, the 1999-2000 US birth weight reference, and the new INTERGROWTH-21st standard. For each study, we compared the SGA prevalence and the risk ratio between SGA status and neonatal mortality, calculated using Poisson regression with robust error variance.

Main Outcomes and Measures We examine neonatal mortality (death within the first 28 days after birth) as the main outcome measure.

Results The pooled SGA prevalence was 23.7% (95% CI, 16.5%-31.0%) using the INTERGROWTH-21st standard compared with 36.0% (95% CI, 27.0%-45.0%) with the US 2000 reference. The relative decrease in prevalence was larger among infants born at 33 to less than 37 weeks' gestation compared with term infants. The pooled neonatal mortality risk did not differ significantly; the adjusted risk ratios were 2.13 (95% CI, 1.78-2.54; $P < .001$) for the INTERGROWTH-21st standard and 2.12 (95% CI, 1.81-2.48; $P < .001$) for the US 2000 reference.

Conclusions and Relevance To our knowledge, INTERGROWTH-21st is the first international newborn standard for size for gestational age for healthy fetal growth. We observed a greater-than-one-quarter reduction in SGA prevalence and no significant change in the associated neonatal mortality risk, resulting in a decrease in the percentage of neonatal death attributable to SGA. Our study sheds light on how previously published studies on SGA status may be reinterpreted with the introduction of this new birth weight standard.

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