transportation is a known barrier to children attending well care visits and receiving preventive health services.\(^2\) Nationally, regardless of insurance status, 4% of children (approximately 3 million) missed a health care appointment each year because transportation was unavailable; this includes 9% of children in families with incomes less than $50,000. Thirty-one percent later used a hospital emergency department for the health condition associated with that missed appointment. Rural areas are especially affected, having significantly fewer available public transit resources compared with metropolitan areas. Low-income households may not own a working vehicle, further limiting their options.\(^3\)

Many rural areas experience severe and protracted health professional workforce shortages. In a study of federal health professional shortage area (HPSA) designations over time, 85% of rural counties were HPSA-designated at some point during a 7-year period. One-third were designated a full-county HPSA for at least 6 of the 7 years.\(^4\) An estimated 10.5 million US children live in an HPSA.\(^5\)

Methods | Using a newly developed and validated tool, the Health Transportation Shortage Index (HTSI),\(^3\) we quantified and stratified the degree of risk for transportation-related access barriers for each of the 82 counties in Mississippi, which was selected as a rural state with high child poverty rates. Numeric HTSI scores (from 0-14) reflect factors associated with health care access barriers. A score of 8 or higher indicates highest risk of transportation barriers. Each county was geo-mapped with Geographic Information Systems software to precisely locate population centers by Census Bureau blocks, and federally qualified health centers and rural health clinics (“clinics”) by longitude and latitude. Straight-line distances were calculated from population centers to the nearest clinic, including those in contiguous counties. Census Bureau data were used to ascertain county demographics.

Results | Based on its HTSI score, 55 Mississippi counties (67%) were identified as being at the highest risk for transportation barriers to health care access (mean score, 9.1; range, 8-13). All but 2 had full-county HPSA designation; 18% had populations less than 10,000 and 71% had populations between 10,000 and 30,000. All had no (13%) or limited (87%) public transit resources. The mean child population was 4709 (range, 281-9103); mean child poverty rate was 31.8% and uninsured rate was 11.8%. In 78% of these counties, the most populous areas were within 6 miles of a clinic. Mean distances from outlying population centers to clinics ranged from 6 to 14 miles.

Discussion | These results suggest that for most families in this very rural state with high child poverty rates and health workforce shortages, nonemergency medical transportation to facilitate child health care access would involve transports within a relatively narrow radius from a clinic. Additional planning would be needed to assist residents of outlying areas. While there are costs associated with the development of new transportation services, these could be offset over time by savings associated with reduced emergency department use. In a 2005 study done for the Transportation Research Board of the Na-
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Solving these barriers with new transportation resources will free uninsured children, geospatial barriers will persist. Only by resolving these barriers with new transportation resources will children reliably benefit from health reform.

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Author Contributions: Mr Grant had full access to all of the data in the study and takes responsibility for the integrity of the data and accuracy of the data analysis. Study concept and design: Grant, Gracy, Goldsmith. Acquisition of data: Grant, Gracy, Goldsmith. Analysis and interpretation of data: Grant, Gracy, Goldsmith, Sobelson. Drafting of the manuscript: Grant, Gracy. Critical revision of the manuscript for important intellectual content: All authors. Statistical analysis: Grant, Goldsmith. Obtained funding: Johnson.

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Correction: This article was corrected on February 11, 2014, to update the corresponding author’s e-mail address.


COMMENT & RESPONSE

Parent-Infant Bedsharing Is Not Recommended

To the Editor The recently published study by Colson et al1 on the increasing trends of bedsharing highlights the challenges faced by the pediatric community in preventing sudden and unexpected infant deaths (SUIDs). Unfortunately, the accompanying editorial2 by Bergman undermines the message and importance of the article. Bergman cites his work from the early 1990s3 to question epidemiological risk factors, noting that there was no difference between the control group and the “classic sudden infant death syndrome (SIDS)” group. Unfortunately, the Haas et al study4 failed to address the single most important risk factor—the child’s sleep environment.

Since the early 2000s when Child Fatality Review (CFR) Teams helped improve death scene investigations and review cases of SUIDs looking for modifiable risk factors, the sleep environment has become the number one most significant risk. Even though there are differences in classification of these deaths as noted by Bergman2 (SIDS, sudden unexpected death in infancy, undetermined, asphyxia, accidental suffocation and strangulation in bed), the single most prevalent underlying risk factor for all of these types is an unsafe sleep environment. Sleep-related deaths account for up to 90% of postnatal SUID deaths (see annual CFR reports from New Jersey, Arizona, and Michigan, for example), and the majority of these infants are dying in adult beds and many from bedsharing. In the 10-year period from 2003 to 2012 in Baltimore County, Maryland, approximately 100,000 infants were born. Before their first birthday, 119 died suddenly and unexpectedly after discharge from the hospital. Of these 119, 65% (77) died in an unsafe sleep environment and more than half were in an adult bed. In that same period, only 3 infants died alone, on their back, in a crib (following the ABCs of safe sleep)—what I would call “classic SIDS.” A 25-fold increase in risk speaks to the importance of using the ABC safe sleep message and discouraging bedsharing as much as possible. More impressive than local statistics, Carpenter et al5 recently published a very large case-control study that demonstrated a 2.7 adjusted odds ratio for bedsharing.

Any time an infant dies suddenly and unexpectedly it is a tragedy for the family as well as the care team in the emergency department that so often is unable to resuscitate the infant. Providing parents with a consistent message about reducing the risk of sudden death that includes avoidance of bedsharing is one that all pediatricians should promote and in no way places blame on the parent. Fortunately, the improved death scene investigations and CFR Teams have led to a positive step toward preventing these tragedies.

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