Rural-Urban Migration for Pediatric Inpatient Care

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Children's hospitals serve a diverse set of patients, reflecting their dual mission as both community acute care hospitals for children as well as regional centers of excellence for subspecialty care with referrals from far distances. In some parts of the United States, children, such as those living in rural areas, may have to travel scores of miles to reach such specialty hospitals. The concentration of hospital resources in urban and metropolitan areas often forces rural residents to seek specialty and hospital care out of their geographic area, and may result in hospitalizations in freestanding children's hospitals, nonfreestanding children's hospitals, or general acute care hospitals. Peltz et al,[1] in a study appearing in this month's *Pediatrics*, tackle an important question: who are these children who arrive at the doors of freestanding children's hospitals? What is their risk profile? And how is their utilization characterized? It's surprising that relatively little is known about these questions given that ~18% of children live in rural areas. The authors take advantage of a unique source of data, the Pediatric Health Information System database, a proprietary repository of claims and other health information compiled on children who have been hospitalized in freestanding children's hospitals.

The study's results are not altogether surprising, but the findings do provoke other questions. Consistent with what we know about children residing in rural areas, the authors found that, compared with urban hospitalized children, rural children hospitalized in freestanding children's hospitals were much more likely to be from lower-income areas with greater shortages of health professionals. These children also had a 7% absolute percentage difference (44% vs 37%) in the prevalence of complex chronic conditions and were more likely to be technology dependent. These latter findings were likely a result of "filtering" of patients through the health system and reflect referral patterns of more complex children out of the rural community where local hospitals focus on serving the acute care needs of less complex patients. Children from rural areas were also likely to have higher mean inpatient charges and a slightly higher rate of readmission after discharge. From an actuarial perspective, these findings indicate that this population of rural children is at higher risk for adverse utilization and financial outcomes. At least 1 outcome, an increased risk of hospital readmission, is also shown to be associated with rural residence, but other patient-oriented outcomes are not available from this study, given the limited nature of the data source.

The authors duly note the important limitations stemming from this study; perhaps the most important are the following. (1) Rurality is a blunt classification that encompasses a broad spectrum of geographic density and human conditions. The 2011 publication *The Health and Well-Being of Children in Rural Areas* (compiled from the 2007 National Survey of Children's Health) demonstrated that variation exists in comparing large and small rural areas with urban areas when measuring children's health.[2] Further research is needed

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to understand these substrata and the generalizability of these findings to the spectrum of rural populations. (2) It is unclear if we can generalize these findings to all rural children hospitalized in urban centers. Freestanding children's hospitals may attract a different group of referred children than nonfreestanding hospitals; we simply don't know at this point. (3) There is likely wide heterogeneity in referral patterns and in the filtering of rural pediatric patients in each region and state in the United States. The flow of patients through the health system is uniquely determined by the local health care environment and market.[3]

Who should care about these findings? As the authors point out, these findings will whet the appetite of hospitals that care for children referred from distant areas and especially those that are being held accountable for costs and outcomes. This is not the first article to suggest that distance could be a proxy for severity of illness; sometimes this occurs by design and others by evolution.[4] Health policy experts will also find interest in this article as it relates to the organization of health services for children. The current regionalization of trauma care in the United States recognizes the full spectrum of hospitals caring for injured patients, as defined by the American College of Surgeons, and defines a role for each, along with resource requirements and triage expectations for referrals. Regionalization of trauma care has been documented to result in better outcomes for injured patients.[5]

Although an informal network of regional centers of excellence in pediatric care has evolved, we have yet to formally define the roles of various hospitals in the care of acutely ill and chronically ill children, based on expertise, quality of care, and outcomes. This article confirms some filtering of patients from rural areas, but doesn't tell us about those who didn't arrive at the freestanding children's hospitals. Were too few or too many children referred? What is the role of the rural critical access hospital? How can telemedicine be used to improve care in the community? In short, can we better organize, and evaluate, our pediatric hospital care system to improve outcomes, reduce waste, and improve the patient experience for rural children in the United States?[6] This is a job not only for freestanding children's hospitals, or just children's hospitals, but our entire health system.

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