

Promoting Maternal Health in Rural and Underserved Areas

Darcy Nikol Bryan, MD

October 2019

Maternal and newborn health in rural America suffers from a lack of obstetrical care, which is currently at crisis levels. To address this problem, Senator Tina Smith recently introduced the Rural Maternal and Obstetric Modernization of Services Act,¹ and the Department of Health and Human Services launched the Rural Maternity and Obstetrics Management Strategies program.² However, these initiatives are limited in scope and often focus on supporting academic research of rural deficiencies to increase provider training and communication. The root causes of the rural obstetrical care crisis go deeper than education grants can successfully address. Many state-level public policies have exacerbated or even initiated barriers to quality and access in rural healthcare. Such policies include certificate-of-need (CON) laws, scope-of-practice restrictions, state medical licensing requirements, and limits to telemedicine implementation. These regulatory roadblocks need to be critically reconsidered in light of poor outcomes. Supporting innovative technological strategies that leapfrog over existing rural obstacles, such as geographic distance and limited hospital care, promises to accelerate productive change and should be supported at the policy level. This brief will present and analyze the diverse causes behind the rural obstetrical care crisis and discuss how judicious public policy and technological innovation can help improve healthcare quality and access in rural America.

RURAL HEALTHCARE ACCESS AND QUALITY

The reasons behind the lack of provider access and poor quality outcomes in rural health are complex. Even the definition of a rural community lacks uniformity, making research on the outcomes of reform initiatives difficult. The Census Bureau defines rural as “any other area not included within an urban area,”³ with urbanized areas containing 50,000 or more people. This definition can manifest itself in a vast diversity of environments, as highly varied as the United States itself. However,

broadly speaking, rural Americans are poorer and have shorter life expectancy than their urban counterparts. Two-thirds of rural counties have poverty rates equal to or greater than the national average of 14.4 percent.⁴ Women in the United States have higher rates of pregnancy-related mortality in rural areas with provider shortages.⁵ New Centers for Disease Control and Prevention data released in 2018 show rural life expectancy continuing to decline.⁶ To live in a rural area often means to be underserved and under stress, isolated from critical healthcare infrastructure.

The number of people living in rural counties decreased by nearly 200,000 between 2010 and 2016.⁷ This population exodus has placed tremendous financial pressure on rural hospitals, which are failing at a record rate. The National Rural Hospital Association reports that “currently one in three rural hospitals is in financial risk. At the current rate of closure, 25% of all rural hospitals will close within less than a decade.”⁸ Small hospitals have fixed costs with narrow margins of profitability and are sensitive to loss of revenue from population decline.

Within the United States, the vast majority of healthcare deliveries occur in a hospital setting. Closures of obstetrical units in rural hospitals have accelerated, with low patient volume and staffing difficulties being the most frequently cited reasons.⁹ This has placed huge challenges on reproductive-age women living in rural settings. Loss of hospital-based obstetric services has been associated with decreased prenatal care, increased out-of-hospital births and preterm births, low birth weight, and high infant mortality.¹⁰ Women and newborns in rural America are under threat.

Two important factors in morbidity and mortality in rural America are healthcare access and healthcare quality. However, rural job scarcity, poverty, and environmental quality have the greatest impact on overall physical and mental health. America’s Health Rankings has established four health-determinant categories with weights assigned by an expert panel: personal health behaviors (36 percent); community and environment (25 percent); public and health policies (18 percent); and clinical care (21 percent).¹¹ That being said, access to obstetrical care is critical for women, especially given the unpredictable nature of childbirth. Even low-risk pregnancies can suddenly become dangerous.

Access can be defined both geospatially and in terms of healthcare provider availability. Physician-to-population ratios are a popular measure of healthcare access, but they do not account for important issues such as physician productivity, patient-related demand for care, and impact of nonphysician providers.¹² Access barriers such as provider shortages, prohibitive travel distances to hospitals or clinics, inconvenient clinic hours with long wait times, cultural mistrust of the healthcare system, and lack of awareness of healthcare availability are also not captured in physician-to-population ratios.¹³ Provider shortages have played a large role in the closure of rural obstetrical hospital units. Nurses, anesthesiologists, certified registered nurse anesthetists, delivering physicians, and nurse-midwives are required for successful unit function. Many providers are unwilling to practice in rural areas because professional isolation results in high workloads,

after-hours responsibilities, lack of cross-specialty support from colleagues, and loss of continuing education and professional growth opportunities. Rural populations tend to be poorer and underinsured, reducing provider income. Nonphysician providers are equally impacted by these factors and choose to practice in more urban environments. In 1981, 27 percent of physician assistants practiced in communities with populations of fewer than 10,000, but by 2008, this number had declined to 15 percent.¹⁴

The main difficulty with healthcare quality in rural America is fragmentation and poor patient care coordination among providers.¹⁵ There is often minimal access to specialists, leaving patients in the hands of a clinician who is either inadequately trained to manage complex health problems or cross-covering from a separate medical specialty, or both. Cesarean deliveries, the purview of obstetricians, were performed by general surgeons in 58.1 percent of low-volume rural hospitals surveyed from November 2013 to March 2014; none were performed by general surgeons in high-volume hospitals.¹⁶ Patients also contribute to poor outcomes by avoiding preventive services with their primary care providers, favoring emergency care.¹⁷ Loss of obstetrical services in a community has been linked to a 5 percent increase in preterm births over baseline rates. Katy Kozhimannil et al. hypothesize that this is partly the result of reduced clinical prenatal care, as well as women's stress and anxiety from living a long distance from a hospital.¹⁸ In rural Georgia, pregnancy-induced hypertension and hemorrhage (both considered preventable sources of maternal mortality) were the most common causes of pregnancy-related deaths but were less common in urban and metropolitan areas.¹⁹

HEALTHCARE INNOVATION

What can be done in the face of so much need and suffering? In foundational works such as “Fortress and Frontier in American Healthcare” and the Healthcare Openness and Access Project, Robert Graboyes and other scholars at the Mercatus Center at George Mason University focus optimistically on the importance of innovation in healthcare provision.²⁰ Baseline rural infrastructure deficiencies, economic stressors, and poor population health are unlikely to improve anytime soon. Accelerating positive change by “leapfrogging” across infrastructure developmental stages with new information and communication technologies has been seen in developing nations such as some in Africa.²¹ Technological innovation provides hope for addressing health disparities affecting rural communities. There are three major drivers that make technological change probable in healthcare provision: increases in patient consumerism, growth in ambulatory care, and personalization of medicine.²² More patients expect healthcare that is flexible, mobile, and responsive. Traveling to a physical clinic or hospital, possibly waiting hours to be seen for 10 minutes or less by a harried provider, all the while losing time from work or other important tasks, will not be well tolerated by a younger generation used to having its needs addressed in the virtual space of the internet. Fewer and fewer surgical procedures (the mainstay of inpatient medicine) require hospitalization as surgeons embrace minimally invasive procedures. Molecular-level medicine is

becoming more common, with treatments tailored to patients' unique responses to medications, environmental challenges, and risk factors at the cellular level.

Telehealth is already used in a wide array of rural settings. In the more distant future, artificial intelligence, hologram house calls with a virtual image of the healthcare provider interacting with patients in their homes, and lab-on-a-chip technology that performs a series of laboratory tests with one drop of blood may someday become widely available.²³ In the meantime, there are excellent examples of telehealth improving rural health outcomes. Telehealth, as defined by James Marcini, Ulfat Shaikh, and Robin Steinhorn, “includes telemedicine, as well as other health-related services using electronic information and communications technologies, such as health information sharing, health profession and patient education, and remote or mobile patient monitoring.”²⁴ Telemedicine is a subcategory of telehealth and includes live videoconferencing, transmission of medical images and information, and remote patient monitoring (i.e., vital signs or laboratory data).²⁵

The Mayo Clinic published a study on remote prenatal care within the United States in which 300 women deemed to have low-risk pregnancies were randomly assigned either to 12 planned office visits with a physician or midwife or to the Mayo Clinic’s “OB Nest” model of care consisting of 8 planned clinic visits with a physician or midwife, 6 virtual visits with a nurse by phone or email, home monitoring with automatic blood pressure cuff and a hand-held fetal Doppler monitor, and access to an online prenatal community.²⁶ Patient satisfaction was significantly higher in the OB Nest group and there were no differences in patient outcomes. Telemedicine can also be used to access the expertise of subspecialists, such as providers in maternal fetal medicine, in the management of high-risk pregnancies, in interpretation of fetal monitoring, and in provision of care during delivery.²⁷ The use of telemedicine in rural Arkansas has aided collaboration with maternal fetal medicine specialists and reduced the need for patients to travel long distances to a tertiary care center for in-person visits by 50 percent.²⁸ Impressively, the University of Arkansas telemedicine program has decreased deliveries of very-low-birth-weight infants in nine participating hospitals without neonatal intensive care units from 13.1 to 7.0 percent and was associated with an overall decrease in statewide infant mortality.²⁹

POLICY BARRIERS

Unfortunately, public policy decisions often throw roadblocks in the path of positive innovation, indirectly costing patient lives and physical and mental well-being. These policy decisions frequently are executed at the state level, significantly influencing the health of a state’s residents. The Mercatus Center’s Healthcare Openness and Access Project evaluates state policy’s impact on the ability of states’ residents to access healthcare and on their freedom of choice in healthcare decision-making. Public policies contributing significantly to worsening healthcare scarcity in rural America include CON laws, scope-of-practice restrictions, medical licensing barriers, and telemedicine regulations.

CON laws were initiated to control costs of healthcare by restricting access to the market of new healthcare services. Such access is allowed only when a state's department of health approves a "certificate of need" for the new service (i.e., the purchase of a new MRI scanner or the construction of a new hospital or urgent care center). In order to protect rural hospitals, many states mistakenly try to regulate the entry and expansion of "hospital substitutes," including ambulatory surgical centers, with the belief that hospital substitutes will skim profits from challenged rural hospitals. However, research evaluating the impact of CON programs on rural hospitals shows that the presence of a CON program in a state is correlated with both fewer community hospitals per capita and fewer ambulatory surgical centers per capita across an entire state and particularly within a state's rural communities.³⁰ Ironically, the presence of a CON program in a state was associated with 30 percent fewer rural hospitals.³¹ CON laws have been shown to decrease patient access to hospitals, lengthen the distance residents must travel for care, increase the cost of care, and worsen racial healthcare disparities.³²

Scope-of-practice restrictions also worsen access to healthcare by restricting the tasks advanced healthcare professionals such as physician assistants, certified nurse-midwives, and nurse practitioners can perform. Many health issues, such as a low-risk pregnancy, are straightforward and do not require a medical doctor for management. Research has shown that nurse practitioners and physician assistants can independently and effectively provide primary care with equal quality, patient satisfaction, and outcomes to primary care physicians.³³ However, when states significantly limit the care these providers can give under their licenses, patients in rural settings are hurt the most. According to the 2019 Centers for Medicare & Medicaid Services issue brief *Improving Access to Maternal Health Care in Rural Communities*,³⁴ certified nurse midwives have been shown to improve maternal and infant health outcomes, with midwives attending over 30 percent of deliveries in rural hospitals. The brief further highlights the scope-of-practice barriers to midwifery across the states, calling attention to the complexity of midwifery certification in the United States: "While all 50 states allow Certified Nurse Midwives (CNMs) to practice legally, many states require supervision or a collaborative agreement from a partnering physician rather than allowing them to practice independently, and only six states recognize certified midwives (CM). Although seven states limit the services covered, all states provide coverage of certified nurse midwife services through Medicaid."³⁵

State-level medical licensing curtails the free flow of healthcare labor across state borders and hinders telemedicine by requiring out-of-state providers to apply and pay for medical licenses from each state in which they will remotely conference. The cost of a physician medical license can range from \$100 to \$800 per state every two years, and the time from the application for to the granting of licenses ranges from two to six months. State medical licensing prohibits in healthcare the creation of a temporary or part-time workforce. Such a workforce has proven important in other industries for flexible response to shifting labor demands. Recognizing this, as of 2019 23 states have joined an interstate medical licensure compact to facilitate physician multistate licensure.³⁶

Telemedicine has already saved lives, time, and money by allowing patients to connect directly with providers through the internet. Unfortunately, significant policy barriers exist to telemedicine's broad implementation. One has already been mentioned: individual state medical licensure requirements. However, some states have restricted telemedicine consultations to doctors a patient has already met in person, while other states require a telepresenter (such as a nurse) to be present with the patient or on site during the call. Some third-party payers or Medicaid programs do not cover videoconferencing or telemonitoring or do not reimburse for telemedicine consultations at parity with in-person visits. Some states will not allow for online prescribing by a telemedicine provider.³⁷ These barriers are usually the result of past fears that telemedicine would not be safe, effective, and secure. Those concerns should now be significantly allayed, since there is strong and growing evidence from multiple clinical trials that, in the proper clinical scenario, telemedicine can deliver care of a quality comparable to in-person clinic visits.

FUTURE POLICY CONSIDERATIONS

Women in rural America often lack adequate obstetrical care, seriously impacting their lives and the lives of their newborns. The reasons for the demise of obstetrical units and rural hospitals are complex and multifactorial, encompassing loss of available providers, economic challenges, population decline, and miscalculated public policy. However, with the example of underdeveloped nations in mind, positive strides can be made with technology in leapfrogging over these barriers. Traditional policy levers of reimbursement, health insurance, and demonstration programs devising new models of care have proven inadequate to the task. Despite Medicare paying critical-access hospitals 101 percent of reasonable costs to patients, rural hospitals continue to close at record rates.³⁸ Expanding health insurance coverage proves woefully inadequate in the face of healthcare workforce shortages and out-migration of services and specialties. Demonstration projects often focus on supporting conservative and recognized approaches such as developing rural residency programs, collaborative networks under academic leadership, and limited grants for proven models of care. These efforts are noble and well intentioned but are unlikely to strike at the core of the problem.

Public policy decisions proven to worsen rural health conditions must be reversed. A hostile economic environment can become more productive by eliminating stifling regulations. Real-world profitability surpasses grants and manipulation of government reimbursement models in terms of sustainability. Removing restrictive CON laws, expanding services through reassessment of prohibitive scope-of-practice restrictions, enabling free healthcare labor migration by elimination of state-level licensing barriers, and supporting telemedicine by letting that technology blossom and grow will help childbearing women in rural America find better care.

ABOUT THE AUTHOR

Darcy Nikol Bryan is an obstetrics and gynecology physician at Women's Care Florida. Her research encompasses public policy and the impact of technology on healthcare provision with a focus on women's health.

NOTES

1. Rural Maternal and Obstetric Modernization of Services Act, S. 2373, 116th Cong. (2019).
2. US Department of Health and Human Services, "HHS Awards \$9 Million to Develop New Models to Improve Obstetrics Care in Rural Communities," press release, September 10, 2019, <https://www.hhs.gov/about/news/2019/09/10/hhs-awards-9-million-new-models-obstetrics-care-rural-communities.html>.
3. Census Bureau, "2010 Census Urban and Rural Classification and Urban Area Criteria," November 26, 2018, <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html>; Census Bureau, "Geography Program," accessed September 19, 2019, <http://www.census.gov/geo/reference/ua/urban-rural-2010.html>.
4. Bill Bishop, "U.S. Recession Hikes Rates of Rural Poverty," *Daily Yonder*, January 31, 2012.
5. Amnesty International, *Deadly Delivery: The Maternal Health Care Crisis in the USA*, 2011.
6. Jessica Seigel, "Rural Life Expectancy Falls Further in New CDC Data," *RuralHealth Voices*, November 29, 2018.
7. "Rural America's Population Is Shrinking for the First Time Ever," *Rural America In These Times*, December 13, 2017.
8. National Rural Hospital Association, "Medicare Cuts Hurt Rural America," accessed September 19, 2019, www.ruralhealthweb.org/advocate/medicare-cuts-hurt-rural.
9. Kathleen Rice Simpson, "An Overview of Distribution of Births in United States Hospitals in 2008 with Implications for Small Volume Perinatal Units in Rural Hospitals," *Journal of Obstetric Gynecologic & Neonatal Nursing* 40, no. 4 (2011): 432-39.
10. Li Liu et al., "Global, Regional, and National Causes of Child Mortality in 2000-13, with Projections to Inform Post-2015 Priorities: An Updated Systematic Analysis," *Lancet* 385, no. 9966 (2015): 430-40.
11. David Kindig, Paul Peppard, and Bridget Booske, "How Healthy Could a State Be?," *Public Health Reports* 125 (2010): 161-67.
12. Ines Weinhold and Sebastian Gurtner, "Understanding Shortages of Sufficient Health Care in Rural Areas," *Health Policy* 118 (2014): 201-14.
13. Weinhold and Gurtner, "Understanding Shortages."
14. Connie Reimers-Hild, "Strategic Foresight, Leadership, and the Future of Rural Healthcare Staffing in the United States," *Journal of the American Academy of Physician Assistants* 31, no. 5 (2018): 44-49.
15. Ellen M. Rygh and Per Hjortdahl, "Continuous and Integrated Health Care Services in Rural Areas. A Literature Study," *Rural and Remote Health* 7, no. 766 (2007): 1-10.
16. Katy B. Kozhimannil et al., "The Rural Obstetric Workforce in US Hospitals: Challenges and Opportunities," *Journal of Rural Health* 31, no. 4 (2015): 365-72.
17. Weinhold and Gurtner, "Understanding Shortages," 206.
18. Katy B. Kozhimannil et al., "Association between Loss of Hospital-Based Obstetric Services and Birth Outcomes in Rural Counties in the United States," *Journal of the American Medical Association* 319, no. 12 (2018): 1239-47.

19. Marissa Platner et al., "Pregnancy-Associated Deaths in Rural, Nonrural, and Metropolitan Areas of Georgia," *Obstetrics and Gynecology* 128, no. 1 (2016): 113–20.
20. Robert F. Graboyes, "Fortress and Frontier in American Health Care" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, 2014); Darcy N. Bryan, Jared Rhoads, and Robert F. Graboyes, "Healthcare Openness and Access Project," June 13, 2018, <https://www.mercatus.org/publications/healthcare-openness-and-access-project>.
21. Joseph Barjis, Gwendolyn Kolfshoten, and Johan Maritz, "A Sustainable and Affordable Support System for Rural Healthcare Delivery," *Decision Support Systems* 56 (2013): 223–33.
22. F. Randy Vogenberg and John Santilli, "Healthcare Trends for 2018," *American Health & Drug Benefits* 11, no. 1 (2018): 48–54.
23. Reimers-Hild, "Strategic Foresight," 46.
24. James P. Marcin, Ulfat Shaikh, and Robin H. Steinhorn, "Addressing Health Disparities in Rural Communities Using Telehealth," *Pediatric Research* 79, no. 1 (2016): 169–76.
25. Marcin, Shaikh, and Steinhorn, "Addressing Health Disparities," 169–70.
26. Christine Kilgore, "Remote Prenatal Care Monitoring Is a Hit with Patients," *Ob.Gyn. News* (MDedge), June 2, 2016.
27. Everett F. Magann et al., "Evolving Trends in Maternal Fetal Medicine Referrals in a Rural State Using Telemedicine," *Archives of Gynecology and Obstetrics* 286, no. 6 (2012): 1383–92.
28. Magann et al., "Evolving Trends."
29. Elizabeth W. Kim et al., "Telemedicine Collaboration Improves Perinatal Regionalization and Lowers Statewide Infant Mortality," *Journal of Perinatology* 33, no. 9 (2013): 725–30.
30. Thomas Stratmann and Christopher Koopman, "Entry Regulation and Rural Health Care: Certificate-of-Need Laws, Ambulatory Surgical Centers, and Community Hospitals" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2016).
31. Stratmann and Koopman, "Entry Regulation and Rural Health Care," 18.
32. Matthew D. Mitchell and Elise Amesz-Droz, "Increasing Access to Quality, Lower-Cost Healthcare in Vermont: A Policy Recommendation" (Mercatus Policy Spotlight, Mercatus Center at George Mason University, Arlington, VA, February 2019).
33. Mary O. Munding, Robert L. Kane, and Elizabeth R. Lenz, "Primary Care Outcomes in Patients Treated by Nurse Practitioners or Physicians: A Randomized Trial," *Journal of the American Medical Association* 283, no. 1 (2000): 59–68.
34. Centers for Medicare & Medicaid Services, *Improving Access to Maternal Health Care in Rural Communities*, September 2019.
35. Centers for Medicare & Medicaid Services, *Improving Access to Maternal Health Care*, 13–14.
36. Chad Saley, "Interstate Medical Licensure Compact States List [and Guide for 2019]," *CompHealth Blog*, September 26, 2019.
37. Bryan, Rhoads, and Graboyes, "Healthcare Openness and Access Project."
38. Bernd Rechel et al., "Hospitals in Rural or Remote Areas: An Exploratory Review of Policies in 8 High-Income Countries," *Health Policy* 120, no. 7 (2016): 758–69.