



The Obstetric Care Workforce in Critical Access Hospitals (CAHs) and Rural Non-CAHs

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Key Findings

- In the nine states we studied, almost two-thirds of the 244 rural hospitals (64.3%) had more than one type of clinician providing obstetric care. The most frequent combinations were obstetricians working with certified nurse midwives (CNMs) (17.2% of hospitals) and obstetricians working with family physicians (15.6%).
- Critical Access Hospitals (CAHs) were significantly more likely than rural non-CAHs to have family physicians and general surgeons attending deliveries, and significantly less likely to have obstetricians attending deliveries.
- When asked about the challenges they face staffing rural obstetric units, survey respondents most frequently cited census variability, retention and recruitment, maintenance of skills and competencies, and staffing arrangements (scheduling, taking call, unit coverage, etc.).

Purpose

This policy brief describes obstetric staffing patterns in rural hospitals in nine states by Critical Access Hospital (CAH) status. The purpose of this study was to examine current obstetric practice models in rural hospitals, with a goal of providing timely and useful information to rural hospitals with obstetric care units regarding the obstetric workforce and to inform policymakers involved in shaping healthcare about the context in which rural hospitals operate.

Background and Policy Context

Over the past 30 years, closure of obstetric units in rural hospitals has become increasingly common, especially among smaller rural hospitals, raising concerns about access to obstetric services.^{1,2} In 2010, both CAHs and rural non-CAHs that provided obstetric services had significantly higher annual inpatient admissions and surgery volume than those without obstetrics.³ That is, rural hospitals with obstetric units were generally larger and busier than rural hospitals that did not provide obstetric care.

While obstetrician-gynecologists provide the vast majority of obstetric care in the U.S., their supply in rural areas is limited.⁴ Family physicians, who have historically provided maternity care in many rural settings, are providing prenatal care and attending deliveries less frequently overall.^{5,6} Nationwide, women increasingly report care from multiple types of clinicians during pregnancy, with the largest growth among advanced practice nurses, including midwives;⁷ however, U.S. birth certificate data show that the percentage of births attended by midwives varies widely across states and practice settings.

Although these emerging trends may have implications for access and quality of obstetric care, limited research explores obstetric care practice models in the context of rural hospitals in the U.S., especially in CAHs.

Approach

The primary data for this study came from a telephone survey of all CAHs and rural non-CAHs that provide obstetric services in nine states: Colorado, Iowa, Kentucky, New York, North Carolina, Oregon, Vermont, Washington, and Wisconsin. The survey sample consisted of all 306 CAHs and rural hospitals

in these nine states with at least ten births in the 2010 Health Care Cost and Utilization Project (HCUP) Statewide Inpatient Databases (SID). These all-payer databases contain information on 100% of patient discharges in these hospitals; obstetric deliveries were identified using a validated methodology.⁷ The nine states were chosen because they had a sizeable rural population and number of rural hospitals providing obstetric care (allowing adequate sample size for analysis), U.S. regional distribution, and the availability of SID data that allow linkage with American Hospital Association (AHA) Annual Survey data. CAHs were identified using the Flex Monitoring Team CAH database. Rural areas were defined based on the Office of Management and Budget non-metropolitan county definition.

The survey included closed and open-ended questions about the hospital's obstetric services, including delivery volume, staffing for obstetrics, and policies regarding labor and delivery. Survey questions were developed based on a review of the literature, with input from an advisory committee of obstetric nurse managers from eight rural hospitals in the states of Pennsylvania, Wisconsin, Montana, and Washington.

The survey questions were revised

following initial field testing with three advisory committee members and a family physician with rural obstetric experience. Minor changes were made following a second field test with a random sample of ten hospitals from the survey sample; results from these hospitals were included in the final survey results.

terms of organizational characteristics including size, number of births, accreditation, or system affiliation.

At the rural hospitals with obstetric services, the vast majority of survey respondents (95%) had a managerial role in the obstetrics or women's health department (e.g., Director or Nurse Manager); less than 5% of respondents had a broader managerial role in the hospital (e.g., Chief Nursing Officer, Vice President for Patient Care), or were designated by the Obstetrics Director/Nurse Manager to complete the survey.

The survey data were merged with SID data for these nine states and FY 2011 AHA Annual Survey data. The data were analyzed using descriptive and bivariate statistics. Chi-square tests were used to compare hospital characteristics between CAHs and non-CAHs, and across birth volume categories.

Table 1. Rural hospital survey respondents with obstetric services by state, birth volume, and CAH status (n = 244 hospitals)

	CAHs (n=125)	Rural non-CAHs (n=119)
<i>State</i>		
Colorado	9 (47.4%)	10 (52.6%)
Iowa	40 (76.9%)	12 (23.1%)
Kentucky	0 (0%)	20 (100%)
North Carolina	6 (17.1%)	29 (82.9%)
New York	0 (0%)	19 (100%)
Oregon	15 (71.4%)	6 (28.6%)
Vermont	5 (55.6%)	4 (44.4%)
Washington	16 (80%)	4 (20%)
Wisconsin	34 (69.4%)	15 (30.6%)
<i>Annual Number of Births</i>		
1-50	15 (100%)	0 (0%)
51-100	25 (100%)	0 (0%)
101-250	60 (78.9%)	16 (21.1%)
251-500	24 (28.9%)	59 (71.1%)
More than 500	1 (2.2%)	44 (97.8%)

The survey interviews were conducted by the Office of Measurement Services at the University of Minnesota from November 2013 to March 2014. A total of 263 hospitals (86%) responded to the survey. Of those, 244 hospitals were currently providing obstetrics services, and 19 hospitals had stopped providing obstetric services since 2010. Hospitals that responded to the survey did not differ significantly from non-respondents in

Results

Characteristics of CAHs and Rural Non-CAHs

Table 1 shows the distribution of the surveyed rural hospitals with obstetrics services by state, birth volume, and CAH status. Just over half (51.2%) of the hospitals were CAHs. The distribution of CAHs and rural non-CAHs varied by state. All of the hospitals with 100 or fewer

births annually were CAHs, but 68% of the CAHs had more than 100 births per year.

Compared to rural non-CAHs, CAHs were significantly less likely to be accredited or affiliated with a system, and had significantly fewer hospital beds (CAHs are limited to 25 hospital beds), bassinets, and operating rooms (Table 2). Their average daily census and annual inpatient days were less than half of what was reported by rural non-CAHs.

Clinicians Providing Obstetric Care in CAHs and Rural Non-CAHs

Almost two-thirds of the surveyed rural hospitals had more than one type of clinician providing obstetric care (Figure 1). The most frequent combinations were obstetricians working with CNMs (17.2% of hospitals) and obstetricians working with family physicians (15.6%).

CAHs were significantly more likely than rural non-CAHs to have family physicians and general surgeons attending deliveries, and significantly less likely to have obstetricians attending deliveries (Table 3, next page).

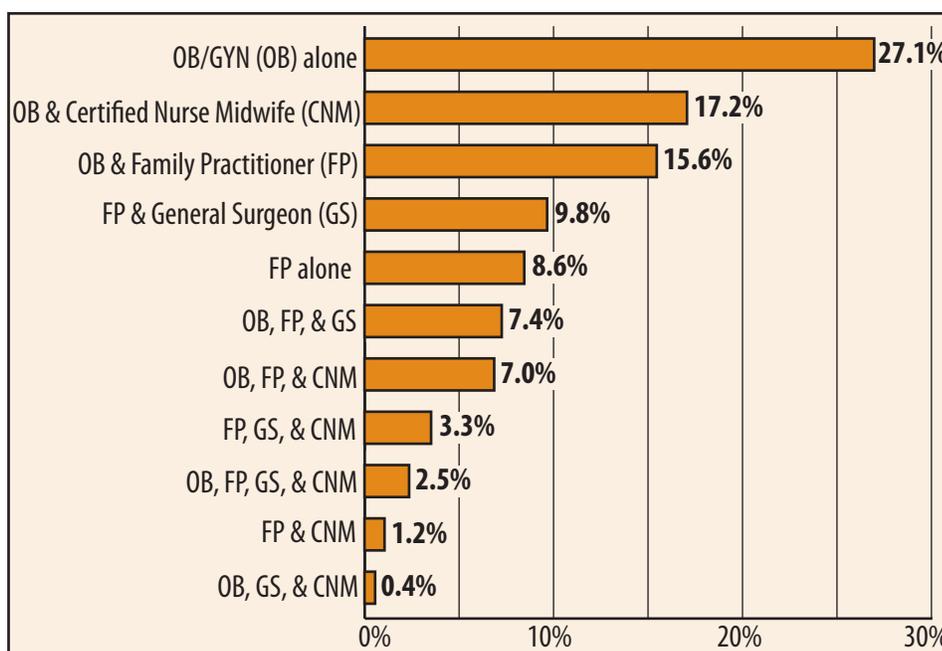
The majority of CAHs had family physicians providing obstetric care, either alone (15.2%) or with other types of clinicians (65.6%) (Figure 2, page 5). Obstetricians attended deliveries in over half of CAHs (58.4%). A substantial percentage of CAHs also had general surgeons (41.6%) and CNMs (27.2%) attending deliveries. The vast majority of rural non-CAHs had obstetricians providing obstetric care (96.6%),

Table 2. Characteristics of rural hospital survey respondents with obstetric services (n = 244 hospitals)

	CAHs (n=125)	Rural non-CAHs (n=119)	P-value
Accreditation ¹	49 (39.2%)	103 (86.6%)	P<.001
System affiliation	52 (41.6%)	70 (58.8%)	0.003
	<i>Mean (Std. Dev)</i>	<i>Mean (Std. Dev)</i>	
Number of hospital beds	23.7 (3.3)	107.5 (74.0)	P<.001
Number of bassinets	4.8 (2.1)	11.8 (6.0)	P<.001
Number of operating rooms ²	2.6 (1.1)	6.1 (3.0)	P<.001
Adjusted average daily census ³	87.8 (106.6)	192.8 (154.5)	P<.001
Adjusted annual inpatient days	32,078 (38,907)	70,369 (56,372)	P<.001
Adjusted annual inpatient days	32,078 (38,907)	70,369 (56,372)	P<.001

- 1. Joint Commission or American Osteopathic Association
 - 2. 26 hospitals do not have data on this measure.
 - 3. Estimated average number of inpatients and outpatients.
- Data Sources: SID databases 2010, AHA Annual Survey FY 2011

Figure 1. Percentage of rural hospitals by type(s) of clinicians attending deliveries, 2013-14



either alone (44.5%) or with other types of clinicians (52.4%); two hospitals only had family physicians attending deliveries (Figure 3, page 5).

Other differences in rural hospital obstetric staffing include reliance

on Certified Registered Nurse Anesthetists (CRNAs) for obstetric anesthesia, especially in CAHs, where over 80% of hospitals have only CRNAs performing obstetric anesthesia. In contrast, in rural non-CAHs, just 17.6% of hospitals have

Table 3. Types of clinicians delivering babies in rural hospitals by CAH status (n = 244 hospitals)

Hospitals with any:	CAHs (n=125)	Rural non-CAHs (n=119)	P-value
Obstetricians			
Number (Percent) of Hospitals	73 (58.4%)	115 (96.6%)	P<.001
Mean (SD) of clinician type in hospitals	2.1 (1.1)	4.1 (2.2)	P<.001
Family Physicians			
Number (Percent) of Hospitals	101 (80.8%)	34 (28.6%)	P<.001
Mean (SD) of clinician type in hospitals	4.8 (3.0)	3.6 (2.8)	0.040
Certified Nurse Midwives			
Number (Percent) of Hospitals	34 (27.2%)	43 (36.1%)	0.036
Mean (SD) of clinician type in hospitals	1.3 (0.6)	2.1 (1.5)	0.003
General Surgeons			
Number (Percent) of Hospitals	52 (41.6%)	5 (4.2%)	P<.001
Mean (SD) of clinician type in hospitals	1.9 (1.1)	2.6 (0.5)	0.151

CRNAs only. Another difference is nurse staffing; more than 60% of rural non-CAHs have nurses who work exclusively in obstetric care, compared to fewer than one-fourth of CAHs.

Challenges Staffing Rural Obstetric Units

In response to an open-ended question about challenges their hospital faces in meeting their obstetric care staffing needs, nearly all

hospitals (n=238) described one or more challenges. Notably, no single theme was reported by the majority of respondents, indicating the diversity of the staffing challenges faced by rural obstetric units. The most frequently cited staffing challenges were related to scheduling of obstetric nurses, difficulty getting training and maintaining competencies in low-birth-volume settings, recruitment and retention of nurses

Table 4. Anesthesia services and nurse staffing for deliveries in rural hospitals by CAH status (n = 244 hospitals)

	CAHs (N=125)	Rural non-CAHs (N=119)	P-value
Anesthesia & pain management services for labor & delivery provided by:			
Anesthesiologists only	4 (3.2%)	25 (21%)	P<.001
CRNAs only	101 (80.8%)	21 (17.6%)	P<.001
Both Anesthesiologists & CRNAs	20 (16%)	73 (61.3%)	P<.001
Labor & delivery nurses who work:			
Exclusively in maternity and newborn care	30 (24%)	76 (63.9%)	P<.001
Also in other areas of hospital	95 (76%)	43 (36.1%)	P<.001

and clinicians, census fluctuation, and intra-hospital relationships (e.g., between the obstetric unit and other units within the hospital or hospital administration).

Conclusions and Policy Implications

Obstetric Care Models in CAHs and Rural Non-CAHs

Our survey results indicate that rural hospitals are using a range of staffing models to provide obstetric care. Overall, the obstetric care models being used in the surveyed rural hospitals reflect some key national trends, such as the growing use of CNMs and the prevalence of multiple-specialty obstetric care.⁸⁻¹⁰

However, the obstetric care models used in these rural hospitals, especially in CAHs, also differ from those used in urban hospitals. A major difference is that many of the surveyed rural hospitals rely on clinicians such as family physicians, general surgeons, and nurses, for whom obstetric care is only part of their clinical practice.

Among the surveyed rural hospitals, the types and combinations of obstetric care clinicians varied by CAH status, with CAHs being more likely to have family physicians and general surgeons attending deliveries. It may be useful for rural hospitals to examine how their obstetric staffing is similar to or different from the distribution of hospitals with similar birth volume and/or CAH status across these nine states. Our findings suggest a range of potential clinician workforce arrangements that facilities may not have previously considered, but that may be feasible options in rural settings.

In addition to considering what particular types of clinicians and staff may be caring for obstetric patients in rural hospitals, it may be helpful for future research to focus on the specific skills necessary to meet demand for obstetric services. Clinical skills in obstetrics are not necessarily limited to one specialty or profession; thus examination of service and procedure utilization alongside discussion of staffing could provide valuable information on how to adequately plan for obstetric workforce in rural areas.

Policy Approaches to Address Obstetric Workforce Challenges

The range of obstetric care models used by the surveyed rural hospitals shows that they are strongly committed to adopting flexible workforce infrastructures in order to provide obstetric services. However, as noted by survey respondents, rural hospitals face a number of staffing challenges in providing obstetric care, including recruiting and retaining clinicians who are prepared for rural obstetric practice, dealing with census variability, and maintaining the skills and competencies of medical and nursing staff, especially in low-birth-volume units.

An adequate supply of clinicians trained to provide obstetric care in rural settings is essential to ensuring that rural women have access to quality maternity care. Our survey results suggest that policy initiatives to support this goal should target multiple types of clinicians in addition to obstetricians, including family physicians, CNMs, general surgeons, and nurses.

Figure 2. Combinations of clinicians providing obstetric care in CAHs (n =125 hospitals)

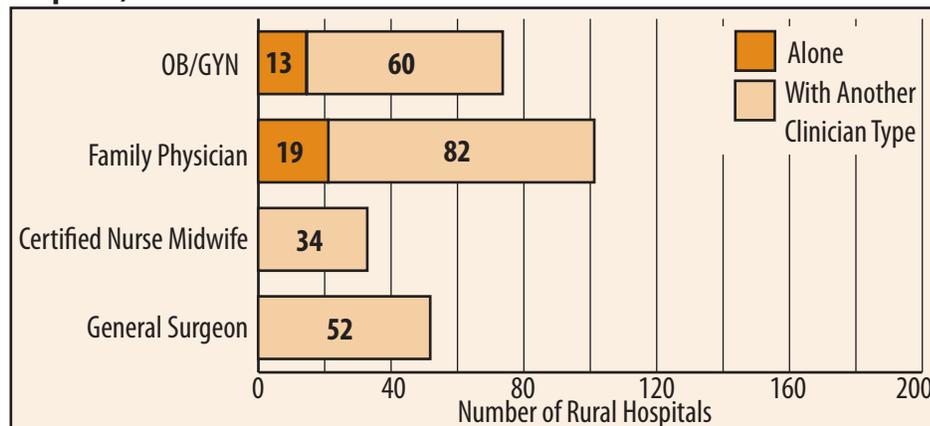
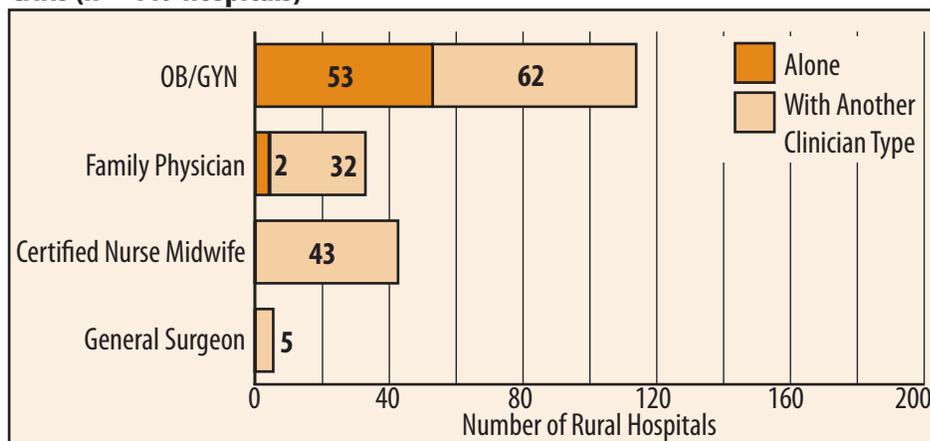


Figure 3. Combinations of clinicians providing obstetric care in rural non-CAHs (n = 119 hospitals)



Policy initiatives to address obstetric workforce challenges that are especially appropriate in a rural context include: 1) medical and nursing education to prepare clinicians for rural obstetric practice, including interdisciplinary training to help clinicians from different specialties work effectively together; 2) programs to help recruit and retain obstetric clinicians in underserved areas such as federal and state loan repayment programs (e.g., the National Health Services Corps; and 3) continuing education, including simulation training, to develop and maintain core competencies and skills among rural obstetric clinicians.

Examples of programs that have been successfully adopted and could potentially be replicated in rural non-CAHs and hospital networks include the Advanced Life Support in Obstetrics (ALSO) program, obstetric simulation training and teamwork initiatives such as those established by the Rural Wisconsin Health Cooperative and the Oregon State Obstetric and Pediatric Research Collaboration (STORC), and obstetric telemedicine programs in Arkansas and Tennessee (see Figure 4, next page).

Future Research

Staffing is a potential limitation

on rural hospitals' ability to adopt emerging recommendations for improving quality,¹¹⁻¹² as many of the suggestions are highly workforce-dependent.

Future work should focus on the quality of care provided in rural obstetric units staffed by different provider types and combinations, and may provide information on ways to flexibly address the logistical and financial challenges rural hospitals face in staffing their obstetric units. ■

Figure 4. Examples of obstetric teamwork, simulation training, and telemedicine programs

- The Advanced Life Support in Obstetrics (ALSO) program is an evidence-based multidisciplinary training program developed by the American Academy of Family Physicians to prepare maternity health care providers to better manage obstetric emergencies. Since 1993, the ALSO program has trained more than 70,000 maternity care providers in the U.S. since 1993 and more than 160,000 worldwide. <http://www.aafp.org/about/initiatives/also.html>
- The Rural Wisconsin Health Cooperative established a program to advance clinical competency for nurses working in rural Wisconsin hospitals, using HRSA grant funds to purchase simulation equipment. The program uses a mobile simulator run by a specially trained super user, provides customized workshops specific to organizational needs, and facilitates a simulator roundtable for super-users to practice, problem-solve and share experiences. http://www.rwhc.com/Portals/0/papers/RWHC_HRSA_Nursing_Grant.pdf
- With funding from an AHRQ grant, the Oregon State Obstetric and Pediatric Research Collaboration (STORC) conducts research and training on obstetrics teamwork and simulation, and has developed a toolkit that is available on its website. <http://www.obsafety.org>
- The Antenatal and Neonatal Guidelines, Education and Learning System (ANGELS) program, based at the University of Arkansas for Medical Sciences, integrates telemedicine to improve perinatal care for high-risk women throughout Arkansas. The program uses four key strategies: 1) high risk obstetrical consultation and case management; 2) 24/7 consultation availability; 3) weekly telemedicine conferences conducted with rural and urban providers and maternal fetal medicine specialists; and 4) continuing education for physicians, nurses and other health care professionals. <http://telehealthpolicy.us/best-practices-archives-arkansas-angels-program>
- The Solutions to Obstetrics in Rural Counties (STORC) program use video conferencing technology to improve access to high-risk pregnancy care in rural areas of Tennessee.
- With a \$1.8 million grant from the BlueCross BlueShield of Tennessee Healthcare Foundation, STORC is currently undertaking a three-year pilot program that will add 11 rural sites to a network of 55 sites already linked to specialists through a telehealth network. http://www.isitn.com/assets/1638/regional-obstetrical-consultants_health_care.pdf

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