Are Rural Family Physicians Comfortable Performing Cesarean Sections?

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BACKGROUND. Provision of obstetric care in the United States requires the capacity to perform cesarean sections. It is unknown who actually performs these procedures in rural hospitals and whether nonobstetricians feel comfortable performing cesarean sections.

METHODS. We conducted a telephone survey of the 41 rural hospitals in Washington State, asking about the obstetric services offered and the composition and obstetrical practices of physician staff. A supplementary questionnaire was sent to the 112 family physicians providing obstetric services in the subset of hospitals with 50 or fewer beds, asking whether they performed cesarean sections. Eighty-six responded, for a response rate of 75%.

RESULTS. Thirty-one (75%) of the rural hospitals provide obstetric services; of the 31 hospitals, 19 (61%) had no obstetricians on staff. In these hospitals the majority of physicians on staff both practice obstetrics and perform cesarean sections. Family physicians performed the majority of cesarean sections in all but the eight largest rural hospitals; even in these large hospitals (mean annual deliveries, 785), family physicians performed 28% of the cesarean sections. Most family physicians who performed cesarean sections felt very comfortable performing these operations. There was a strong association between the number of cesarean sections performed in formal residency training settings and the family physician's comfort level.

CONCLUSIONS. Cesarean sections remain an important service in those rural hospitals providing obstetric services. Most Washington State rural hospitals depend on family physicians for this operative intervention. Physicians' comfort in doing cesarean sections appears to be closely related to prior formal training during residency. This relationship suggests that training programs preparing future rural physicians need to ensure adequate training in this area for their residents.

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Rural communities require ready access to high-quality obstetric care.[1,2] Advances in the care of pregnant women and newborn infants have improved pregnancy outcomes for women and children, but these advances have also increased the cost and complexity of providing obstetric services to rural women.[3] The economic fragility of rural health systems, closure of many rural hospitals, persistent shortages of providers in some rural areas, and a decline in the proportion of family physicians practicing obstetrics have contributed to the disappearance of obstetric services in some rural communities.[4-6]

Despite these challenges, many rural communities have clung tenaciously to their obstetric services.[7] Hospitals that provide routine obstetric services are usually required to maintain staff who can perform cesarean sections. Because smaller rural hospitals may have no obstetricians on staff, family physicians often must perform cesarean sections.[8] Although previous studies have shown that the quality of obstetric

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TABLE 1

Obstetrical Services Provided in Rural Washington Hospitals, by Whether There Was an Obstetrician on Staff

Characteristic	Hospitals with Obstetricians on Staff mean (range) (n = 12)	Hospitals with No Obstetricians on Staff mean (range) (n = 19)	Total Hospitals mean (range) (n = 31)
Beds for acute care	68.1 (20-137)	32.1 (16-68)	46.1 (16-137)
Deliveries, 1993	579.3 (129-1383)	135.9 (15-436)	307.5 (15-1383)
Cesarean sections, 1993	104.3 (31-234)	22.9 (0-84)	52.7 (0-234)
Hospital cesarean section rate (%)	18.3 (6-36)	17.4 (0-34)	17.7 (0-36)
Obstetricians on staff	2.9 (1-8)	0 (0)	1.1 (0-8)
Family physicians			
On staff	15.4 (5-45)	5.9 (2-16)	9.4 (2-45)
Practicing obstetrics	8.9 (2-22)	4.2 (1-12)	6.0 (1-22)
Performing cesarean sections	3.5 (0-10)	3.2 (0-12)	3.3 (0-12)

care in rural hospitals is comparable to that of urban hospitals,[9-18] little is known about which physicians actually perform the cesarean sections in these rural facilities or how comfortable family physicians feel about doing this procedure.

As reported in the following descriptive study, this issue was explored by surveying rural hospitals and rural family physicians in Washington State. We hypothesized that physicians in the smallest hospitals might be uncomfortable with the responsibility of performing cesarean sections because of the relatively low volume of such procedures in these facilities.[9]

METHODS

This study had two components: a telephone survey of all 41 rural hospitals in Washington State, and a mail survey that was sent to all the family physicians who practice obstetrics in hospitals with fewer than 50 beds.

HOSPITAL SURVEY

Our study sample included the 41 general short-term hospitals located outside the metropolitan statistical areas in the state of Washington. We developed a telephone survey designed to elicit selected information about obstetric practice in each facility and pilot-tested the questions at rural hospitals in Idaho and Montana. After revising the instrument, the survey was administered by telephone by one of the investigators (J.W.R.).

The questions were asked of the hospital administrator, obstetrical charge nurse, or medical records director; in some cases more than one person was contacted to obtain complete information. Every rural hospital in the state cooperated, and we received complete information from each of them.

PHYSICIAN SURVEY

As part of the telephone survey, we obtained the names of every family physician providing obstetric services in the 31 hospitals that had 50 or fewer beds for patients needing acute care. A second survey instrument (available from the corresponding author) was designed and pilot-tested among a group of Idaho and Washington family physicians who actively practice obstetrics and who were not part of our sampling frame. The questionnaires were then mailed to the physicians or, if an address could not be found, to the hospital where the physician practiced. Eighty-six of the 112 eligible physicians returned usable questionnaires after one mailing, for a 77% response rate.

RESULTS

HOSPITAL SURVEY

Thirty-one (76%) of the 41 rural hospitals in Washington State routinely provide obstetric services (Table 1). Respondents at the 10 hospitals

that were no longer providing obstetric services gave the following three main reasons for this change: an inadequate number of deliveries, an insufficient number of physicians actively practicing obstetrics, and the excessive costs of providing obstetric services.

Those rural hospitals that do provide obstetric services can be divided into two groups, those with and those without obstetricians on staff (Table 1). Hospitals with obstetricians are over twice as large and perform almost four times as many deliveries annually as those staffed only by family physicians.

The survey found that family physicians are actively practicing obstetrics in all the rural hospitals in the state, whether or not obstetricians are also on the hospital staff. In rural hospitals without obstetricians, most of the family physicians on staff practice obstetrics, and almost every family physician who practices obstetrics also performs cesarean sections. By contrast, in those rural hospitals with obstetricians, only about one half of the family physicians on staff practice obstetrics, and fewer than one half of those perform cesarean sections. The range of cesarean section rates between the two groups of hospitals is quite narrow.

In hospitals without obstetric specialists, family physicians were found to have performed 94% of the cesarean sections. Even in those hospitals with obstetricians, some family physicians continued to perform sections, and in the aggregate were responsible for 29% of all the cesarean sections done in that group of hospitals.

To further investigate the relationship between obstetrical volume and patterns of care, we divided the 31 hospitals providing obstetrics into quartiles, based on the total number of deliveries performed in 1993. As seen in Table 2, family physicians performed the majority of cesarean sections in all except the largest quartile of hospitals; the smaller the hospital, the more likely that family physicians performed cesarean sections. The cesarean sections ranged from 15.1% to 20.0% for the four quartiles, differences that were not statistically significant using analysis of variance. When the chief obstetric nurses were asked to assess the quality of obstetric care in their hospitals, they tended to give their hospitals relatively high ratings: 4 on a scale of 1 to 5. There was little difference across the four hospital quartiles.

Physician Survey

Fifty-one (59.3%) of the 86 physicians who responded reported that they currently perform cesarean sections. As seen in Table 3, two thirds of this group learned how to perform sections during residency training. The rest learned either as part of their on-the-job training in the communities or in some other nonresidency setting.

There was wide variability in the number of cesarean sections that respondents performed during their training, both in formal educational settings and in post-residency experiences. In Table 4, we examine the influence of practitioner age on the total number of supervised cesarean sections performed in both formal educational and practice settings.

For every group of providers under 55 years of age, more supervised cesarean sections were performed as part of formal residency training than during the informal training period following residency. It is interesting to note that those under 55 performed about three times as many cesarean sections in supervised training settings than those physicians over 55.

Most of the respondents felt either very comfortable (59.2%) or extremely comfortable (35.3%) in performing cesarean sections. Table 5 examines the relationship between comfort level and previous training and experience. The most important correlate of comfort level is the number of cesarean sections performed during residency training. Physicians who feel either very or extremely comfortable performing cesarean sections performed on average over 30 cesarean sections during residency training; by contrast, those who were less confident performed fewer than 10 sections during their residency training.

DISCUSSION

Three quarters of rural hospitals in Washington State provide obstetric services to the populations they serve. Previous studies have demonstrated that small rural hospitals can provide high-quality obstetric care if they are integrated into regional perinatal care systems. The local availability of obstetric care may also reduce overall costs of care, particularly for higher risk women who would otherwise be forced to receive prenatal and intrapartum care in distant urban hospitals.[2]

TABLE 2

Physician Staffing and Cesarean Section Rates in Obstetrically Active Rural Hospitals in Washington State, by Obstetrical Volume in Quartiles

Characteristics	Hospital Volume Quartiles: Highest (n = 8)	Next to Highest (n = 7)	Next to Lowest (n = 8)	Lowest (n = 8)	All (n = 31)
Annual deliveries, mean no. (range)	785.4 (436-1378)	288.1 (195-417)	117.4 (80-181)	36.8 (15-67)	307.5 (15-1378)
Beds, mean no. (range)	81.8 (28-137)	44.9 (38-54)	32.6 (20-68)	24.9 (16-48)	46.1(16-137)
Cesarean sections performed by FPs mean% (range)	27.9 (0-96)	65.5 (6-100)	75.0 (0-100)	87.5 (0-100)	63.9 (0-100)
Cesarean section, mean% (range)	16.0 (6-22)	20.0 (13-36)	15.1 (10-28)	19.7 (0-34)	17.7 (0-36)
Nurse appraisal of quality of care, mean (range)*	4.5 (4-5)	4.1 (3-5)	4.6 (4-5)	4.9 (4-5)	4.5 (3-5)

* 0 = poor, 5 = excellent.

Maintaining viable obstetrical units in rural hospitals is not a simple task. Obstetrics is a demanding clinical discipline, requiring a set of cognitive and psychomotor skills and a commitment to the unpredictable timing with which deliveries occur. One of the most difficult aspects of obstetrics is that an unpredictable proportion of women, no matter how well screened for possible risk factors, will require emergency interventions because of fetal or maternal factors. In most cases this leads to an operative delivery, and virtually every rural hospital performing routine obstetrics must maintain the capability to perform cesarean sections.

The rate-limiting step in this process is often the physician. Even though the hospital may be committed to providing obstetrics, unless there is always a physician available who is willing to perform cesarean sections, obstetrics cannot be sustained. This study demonstrates that in the majority of rural hospitals without obstetricians on staff, this responsibility falls on family physicians. Even in those rural hospitals with obstetricians on staff, most family physicians continue to practice obstetrics, and about one fourth of them perform cesarean sections. Maintaining obstetric practice in rural areas that are similar to those in Washington State will require that family physicians are capable of and comfortable with performing cesarean sections, particularly on an emergent basis.

TABLE 3

Site of Training for Family Physicians Who Perform Cesarean Sections

Training Site	No. of Physician Respondents	%
Residency program	34	66.7
On the job (in community)	11	21.6
Special education program	3	5.9
Military or PHS	3	5.9
Foreign assignment	0	0
Missing	0	0
Totals	51	100.0

PHS denotes US Public Health Service.

Are family physicians adequately prepared for this task? The respondents to our survey had performed an average of 30 cesarean sections while in residency training and an additional 24 sections in informal training settings ranging from military or Public Health Service sites to on-the-job training in rural communities, usually under the tutelage of more experi-

TABLE 4

Mean Number of Cesarean Sections Performed Under Supervision

Physician Age, y	Formal Residency Training	Post-Residency Practice	Total	No. of Respondents
25-35	30.8	24.7	55.5	6
36-45	33.1	27.6	60.7	17
46-55	36.0	16.6	52.6	20
>55	10.8	31.3	42.0	8
Totals	30.3	23.6	53.9	51

enced physicians. Perhaps the most striking finding of the study is that the comfort level with this procedure is very closely related to the extent of formal training during residencies. Eighty-eight percent of the respondents felt either extremely or very comfortable performing a cesarean section, and all these physicians performed a substantial number of cesarean sections during residency. By contrast, physicians who were not comfortable performing the procedure had had little formal residency training in this area. These findings raise questions about the obstetrical training of future rural family physicians. How many of our residency programs currently provide adequate experience in the performance of cesarean sections? Is residency training enough, or will rural or obstetrical fellowships be needed? In view of their importance to rural practice, these questions deserve further study.

This study has some important limitations. It is limited to Washington State, a western state with many small towns that are relatively isolated from large urban areas. In locations where rural areas are closer to population centers, it may be possible for rural hospitals to practice low-risk obstetrics and transport patients requiring operative interventions, a practice that is followed in other parts of the world. There are also important regional differences in the extent to which family physicians are involved in obstetric practice, but in areas demographically and geographically similar to Washington State, findings similar to those in this study might be expected.[20] One corroboration of the generalizability of our data may be found in the observation that the number of cesarean sections performed in training in this study was almost identical to that found by Deutchman and his colleagues[21] in their recent 15-year retrospective study.

Although the respondents stated that they are generally comfortable with their ability to perform cesarean sections, we have no independent confir-

TABLE 5

Relationship Between Comfort Level and Previous Training and Experience in Performing Cesarean Sections

Comfort Level in Performing Cesarean Sections	Respondents No. (%)	Sections Performed During Residency (mean)	Sections Performed Post-Residency Practice (mean)	Total No. of Sections
Extremely comfortable	18(35.3)	41.4	8.3	49.8
Very comfortable	27(52.9)	27.3	32.7	59.5
Somewhat comfortable	4(7.8)	6.7	43.3	50.0
Somewhat uncomfortable	1(2)	10.0	0	10.0
Very uncomfortable	1(2)	0	25.0	25.0

mation of that assessment. That obstetric nurses corroborate physician assessment is consistent with an adequate quality of care but in no way constitutes proof. The observation that previous studies demonstrate that rural Washington State hospitals are scrupulous about intrapartum transfer of babies expected to be born at low birthweight, and the generally excellent birthweight-specific outcomes in these institutions, provide additional assurance. All of these, however, remain indirect measures of quality. The one chart-based review of the quality of cesarean sections performed by family physicians demonstrated that the physicians met established standards; but although the study covered 15 years and dealt with physicians from a variety of training programs, the number of hospitals and physicians was small.[21]

SUMMARY

The evidence suggests that family physicians who are adequately trained can perform the majority of cesarean sections in small rural hospitals and feel reasonably comfortable doing so. While limited measures of quality suggest that these procedures are safe and meet established standards, further outcomes research in this area is needed. The key is to ensure excellent and adequate training during residency training. The main policy implication of this study is that family medicine residencies need to make cesarean section training available to students who are planning to practice in rural areas.

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