Impact of Rural Training on Physician Work Force: The Role of Postresidency Education

David A. Acosta, M.D.

ABSTRACT: *Many innovative strategies have been developed over the years to improve the recruitment and retention of physicians in the shortage areas of rural America. These strategies have met with varying success. Postresidency education, or fellowship training, for family physicians is yet another strategy that has been developed for the same purpose. Most applicants have been interested in obstetrical and rural health fellowship programs as a means for preparing for rural practice. This paper describes these programs (demographics, funding, applicant pool, curriculum) and reviews their graduate outcomes (practice location after matriculation, clinical privileges). Twenty-nine obstetrical and nine rural health fellowships are currently operational in the United States. Fellows who complete a rural health fellowship have a higher tendency to locate in rural settings. Almost all graduates from obstetrical and rural health programs attain general hospital privileges in family practice, including low-risk obstetrics. A significant number of graduates from both types of programs attain privileges in high-risk and operative obstetrics as well. Fellowship training can play an integral role in the preparation of family physicians for rural practice.*

Medical institutions that have been involved in the training of residents over the years have developed a number of different and innovative strategies to entice and prepare these trainees for rural practice. These efforts have included rural practice rotations (both required and elective), rural training tracks (RTTs) and rural satellite clinics (Bowman and Penrod, 1998; Connor, et al., 1994; Foley, 1994; Norris and Norris, 1988; Rosenthal, et al., 1997). All of these efforts have been developed for the sole purpose of improving the chances that residents would eventually settle in physician shortage areas located in the United States after matriculation. Indeed, some of these efforts have seen success, whereas others have never reached the potential that was originally envisioned.

Primary care physicians make up the majority of physicians (54 percent) who now practice in rural America (Office of Rural Health Policy, 1997). They include family physicians, internists and pediatricians. Family physicians comprise the vast majority in rural practice. According to the Accreditation Council on Graduate Medical Education (ACGME) (1999), family physicians are three times as likely as general internists, and five times as likely as general internists or general pediatricians, to practice in nonmetropolitan areas (Office of Rural Health Policy, 1997). Now, 479 family practice residency programs exist in the United States, with 3,265 first-year positions offered through

the 1999 National Resident Match Program. On Match Day 1999, 2,697 of these positions were filled for a fill rate of 82.6 percent (Kahn, et al., 1999). One hundred fifty of these family practice residency programs have a rural mission statement (Bowman and Penrod, 1998) and provide an emphasis on preparing residents for rural practice. Of these, 69 programs have measured their success by the placement of more than 50 percent of their graduates in rural practice (Bowman, 1999). According to one recent study, 13 family practice residency programs had implemented RTTs in the United States (Rosenthal, et al., 1997), and 76 percent of their graduates were in rural practice. Despite these efforts, a critical shortage of family physicians remains in rural America.

Fellowship programs are yet another strategy undertaken by some family practice residency programs to address this issue. The ACGME defines a fellow as a "participant(s) in subspecialty GME programs" (1999). Most fellowship programs are defined as "private arrangements made between an institution and the individual who trains in them" (American Academy of Family Physicians [AAFP] & Society of Teachers of Family Medicine [STFM], 1998). Most fellowship programs for family physicians are not accredited by the Residency Review Committee (RRC) for Family Practice and do not lead to certification (Certificate of Added Qualification) by the American Board of Family Practice. Only two types of fellowships are accredited by the RRC: geriatrics and sports medicine.

More recently, attention has been focused on post-residency training with the development of a number of fellowship programs for family physicians. Fellowship programs that provide opportunities for residency graduates to enhance their cognitive and procedural skills have not only become popular among those who have the desire to practice in a rural setting, but also among those individuals who have not developed the confidence or competence desired during their residency training. Programs attracting these physicians include fellowship training in obstetrics, maternal health and rural health. This paper will discuss the current status of these fellowship programs that have been developed to prepare those family physicians interested in rural practice.

Methods

According to the AAFP, a total of 164 fellowship programs are available in the United States (Table 1)(AAFP, 1998). A variety of programs are available to family physicians. Faculty development (40), sports medicine (37), obstetrical (20) and geriatric (19) fellowship programs comprise the majority of programs available. Most residency graduates pursuing further training for rural practice have demonstrated interests in the following types of fellowship programs: maternal health, obstetrical, procedural skills and rural health fellowship programs. These programs were included in this study.

Table 1. Fellowship Programs in the United States in 1998.

Type of Fellowship	Number of Programs
Faculty development	40
Sports medicine	37
Obstetrics	20
Geriatrics	19
Research	8
Occupational/environmental medicine	5
Rural health	5
Women's reproductive health	5
Family practice/systems	3
Health policy	3
Preventive medicine	3
Emergency medicine	2
Academic medicine	1
Adolescent medicine	1
Behavioral medicine	1
Flexible	1
International	1
Maternal health	1
Medical education	1
Medical informatics	1
Multicultural community primary care	1
Palliative care	1
Practice management	1
Public/urban health	1
Online	1
Border health/research	1

Source: Information adapted from the American Academy of Family Physicians.

The author gratefully acknowledges Julie Arnett for making this work possible and for her assistance in the survey process for this manuscript. *For further information, contact: David A. Acosta, M.D., associate director, Tacoma Family Medicine Residency, 521 Martin Luther King Jr. Way, Tacoma, WA 98405; e-mail dacosta1@netzero.*

Table 2. Fellowship Programs That Attract Family Physicians Interested in Preparing for Rural Practice.

Type	Number of Programs in 1995—Revised*	Number of Programs in 2000
Obstetrics	40	29
Rural	13	9

Source: Adapted from Bowman, R.C. (1996).

Table 3. Reasons Cited by Program Directors for Closure of Obstetrical and Rural Fellowship Programs in the United States.

- Lack of continued funding
- Turf battles between local family physicians who have obstetrical privileges and OB/Gyns
- Lack of faculty availability
  - Not enough trained family physicians doing obstetrics
  - Not enough interest from OB/Gyns
- Poor strategic planning
- Lack of applicants (programs with practice commitment requirements, or who only recruited from their own residency program)

A number of resources were used to identify these programs and their operational status. These included the *1998 Directory of Fellowship Programs* (AAFP and STFM, 1998), *Facts About Family Practice 1998* (AAFP, 1998), *Directory of Graduate Medical Programs in the U.S.* (ACGME, 1999), AAFP Online (http://www.aafp.org, *Directory of Fellowship Programs* and *Directory of Residency Programs*) and an unpublished survey database of all family practice residency programs in the United States compiled in 1995 (Bowman, 1996).

All rural health and obstetrical fellowship programs (including maternal health and reproductive health) in the United States were identified by cross-referencing the resources mentioned above. Some limitations were found regarding these resources. Not all fellowship programs are listed in the *Directory of Fellowship Programs.* Only those programs that knew about the directory, and those that were able to meet the submission deadline, were included in the directory. In addition, 15 out of the 55 obstetrical fellowship programs from the 1995 database were mislabeled (of these, four were faculty development, three rural health, two sports medicine, two programs offered multiple fellowships other than obstetrics and four never offered an obstetrical fellowship). Six out of the 19 rural health fellowships were mislabeled (of these, three were obstetrical, two faculty development and one sports medicine).

All programs (40 obstetrical and 13 rural) were then contacted by either e-mail or telephone to confirm whether they were still operational. A survey questionnaire was sent to each operational program to be completed by the program director or their designee. The questionnaire covered the program's demographics, the curriculum components, the applicant pool characteristics and, finally, the graduate outcomes. Graduate outcomes included the size of communities where fellowship graduates established practice and the type of clinical privileges they attained. If the program no longer existed, the program directors were asked to explain what led to its closure. A second e-mail was sent approximately two weeks after the initial mailing. Telephone calls were then made two and four weeks later to those programs that did not respond.

In addition, a MEDLINE search was performed using the keywords "family practice," "fellowships," "rural health" and "obstetrical" to review the literature on fellowship training of this type for family physicians.

Results

A significant decline has occurred in rural and obstetrical fellowship programs since 1995 (Table 2). Eleven obstetrical fellowship programs and four rural fellowship programs are no longer operational. Directors of those programs that were no longer operational cited multiple factors for their closure (Table 3). The predominant factor leading to the closure of most programs was lack of continued funding. Other important themes included the lack of family practice faculty properly trained in obstetrics and other procedural skills, the lack of interest in teaching by the local obstetrical/gynecological attendings and the concern that the local obstetrical/gynecological attendings had over training family physicians in obstetrical skills that in the end would create a competitive edge for them. Fellowship programs that limited their recruitment to their own residency graduates and programs that re-

Table 4. Demographics of Obstetrical and Rural Health Fellowship Programs in the United States.

Demographics	Obstetrical	Rural
Total number of programs	29	9
Location		
Rural	25%	65%
Nonrural	75%	35%
Program existence		
1 to 5 years	16	6
6 to 10 years	9	2
11 to 15 years	3	1
>16 years	1	0
Duration of program		
1 year	25	9
2 years	4	0
Number of programs requiring a practice commitment	3	0
Number of positions offered per year		
1	18	4
2	5	2
3	2	1
4	2	1
5	1	1
6	1	0
Funding		
Institutional	65%	85%
State	25%	15%
Federal	10%	0%
Stipend offered		
Low	$25,000	$37,000
High	$75,000	$80,000
Median	$44,000	$56,000
Mean	$50,000	$58,500

quired a one-year practice commitment postfellowship cited the lack of applicants as a reason for their closure.

Twenty-nine obstetrical fellowships are currently operational in the United States. These programs have been in existence between one and 15 years. Twenty-five percent are located in rural settings (defined as having a population below 25,000 and located more than 30 miles from the nearest metropolitan area), and 75 percent are located in either suburban or urban settings (Table 4). Of the 53 total positions offered, 95 percent are successfully filled each year. The number of positions offered varies from program to program, but most offer only one position. These positions are restricted to family physicians who are graduates of an accredited family practice residency and board certified/eligible. Some programs are restricted to selecting graduates from their training institution. Others require a one-year practice commitment in a rural area of their state after completion of their training. The salaries offered to the fellows also vary by program and region. The annual median salary is approximately $44,000, with a mean salary of approximately $50,000. The majority of these programs are one year in duration.

In comparison, presently, nine rural fellowship programs are operational in the United States. Most of these programs have been in existence between three and 11 years. As one may predict, the majority of these programs are located in rural settings—70 percent are located in rural areas, and 30 percent are in nonrural. Collectively, 20 positions are offered each year, and approximately 18 positions were filled in 1999. Like the obstetrical fellowships, the number of positions offered varies from program to program, but most offer only one position. These positions are restricted to family physicians who are graduates of an accredited family practice residency and board certified/eligible. Some programs restrict their selection process to graduates from their training institution. Two rural programs require an in-state practice commitment. The salary range offered to rural fellows is somewhat more competitive than that offered to obstetrical fellows. The annual median salary is approximately $56,000, with a mean salary of approximately $58,500. Almost all rural programs are one year in length.

Curriculum. Obstetrics comprises the major curricular component of the obstetrical fellowship programs. This may encompass nine to 12 months of training in this area alone. Training focuses on the development of the participant's skills in the delivery of prenatal, antenatal and postnatal care. Some programs emphasize the development of skills in both high-risk and operative obstetrics, including cesarean sections. Several programs offer one to three months of elective time tailored to the individual's needs. The majority of the programs have their fellows participating in outpatient clinics on a routine basis (prenatal, procedure and continuity family practice clinics). Only two programs mention rural practice in their mission statement.

The rural fellowship programs vary considerably with regard to their curricular structure. Most rural programs not only offer obstetrics, but also offer a balanced curriculum reflecting the challenges of rural practice. For example, the University of Texas Medical

Branch program at Jasper Memorial Hospital (Jasper, Texas) offers 12 months training exclusively in a structured rural clinic setting (Crump and Bersch, 1999). The Louisiana State University—Willis Mountain North Caddo program (Vivian, La.) offers nine months training exclusively in a rural clinic setting (six months minimum) and three months of elective time designed to meet the particular needs of the fellow. Tacoma Family Medicine (Tacoma, Wash.) offers six months training in high-risk and operative obstetrics and six months of elective time (Norris and Acosta, 1997). The elective time is also tailored to each fellow. The MAHEC Regional Outreach Program (Asheville, N.C.) is more flexible and tailors all 12 months to each fellow's needs.

Sponsorship and Funding. Funding for these programs comes from a variety of resources, including institutional, state, federal, private foundations and clinic revenues. Of the obstetrical fellowship programs surveyed, 65 percent rely on institutional funding. Only 10 percent receive federal funds, whereas 10 percent receive funding from their state government. In contrast, 90 percent of the rural fellowship programs rely on institutional funding (25 percent rely on their clinic revenues), and only 10 percent have received state funding. No rural fellowship programs reported any support from federal funding.

Applicant Pool. All of the fellowship programs contacted felt that a substantial applicant pool was interested in postresidency training. Obstetrical programs with one to two positions available per year had approximately 10 to 25 applicants, and those with four to six positions available had approximately 25 to 75 applicants per year. By comparison, rural health programs with one to two positions available per year had approximately 11 to 20 applicants, and those with three to four positions available had approximately 25 to 35 applicants per year. Almost all applicants are interested in additional obstetrical training. Although male applicants predominate, most programs are finding increasing numbers of female applicants. The percentage of female applicants ranges from 10 to 60 percent. International medical graduates (IMGs) make up 5 to 25 percent of the applicant pool. Applicants from residency training predominate, with only a minority composed of physicians already in practice.

Program Outcomes

The success of these fellowship programs is best measured by their outcomes. In this study, outcomes were defined as rural placement of the fellowship graduates and the clinical privileges that fellowship graduates have been able to attain.

Rural Placement. Fellows who completed the rural health programs have a higher tendency to locate their practice in rural settings than do fellows who completed obstetrical programs. More than 75 percent of these fellowship graduates are practicing in rural communities with a population of less than 25,000. Only 25 to 35 percent of those who complete maternal health and obstetrical fellowships are practicing in rural communities of the same population size.

Clinical Privileges. All fellowship graduates from both rural and obstetrical fellowships attain general hospital privileges in family practice. Almost all graduates of both program types have attained low-risk obstetrical privileges (with the exception of one obstetrical fellowship program's graduates who have a 92 percent success rate). Obstetrical fellowships and rural fellowships differ, though, in the percentage of fellow graduates that are able to attain privileges for high-risk obstetrics and cesarean sections. Between 77 and 80 percent of graduates from obstetrical fellowship programs obtain privileges in high-risk obstetrics, and 54 to 80 percent obtain cesarean section privileges. In contrast, almost all graduates from rural fellowship programs obtain high-risk obstetrics privileges, and 75 to 94 percent obtain cesarean section privileges. This discrepancy most likely reflects the difference in practice locations between graduates of rural fellowships and obstetrical fellowships.

Discussion

Not all family practice residency programs in the United States are alike. Training in family practice varies widely from one program to the next and from one region to the next. For example, several family practice residency programs in the eastern United States require only two months of obstetrics training over three years, whereas residency programs in the Midwest and the West typically require four to six months of obstetrics. As a result, not all family practice residents completing their three years of training

Table 5. The Percentage of Active Members of the American Academy of Family Physicians Who Have Hospital Privileges.

Hospital Privileges	1990	1999
Obstetrics (routine delivery)	28%	24%
Cesarean section	10%	7%
Surgery assisting	45%	33%
Intensive care	75%	67%

Source: Modified form Stoever, J. (2000).

are trained alike, nor do they possess the same cognitive or technical skills. In fact, there can be a considerable difference between graduates from the same program. Unfortunately, not all family practice residents who are interested in pursuing rural practice possess the necessary skills by the time they finish training. According to a recent survey of active AAFP members who have hospital privileges, the rate of family physicians performing routine obstetrics, cesarean sections, surgical assisting and intensive care unit care continues to decline despite training efforts (Table 5) (Stoever, 2000). Twenty-eight percent of family physicians had routine obstetrical privileges in 1990, and that rate has declined to 24 percent in 1999. Having more training opportunities available for family physicians may prevent this trend from continuing.

Several strategies for residency training have tried to address this problem in a variety of ways. The AAFP has published recommended guidelines for rural training (1994), with the hope of providing residents and their programs with a resource to help plan training. Nevertheless, many residents still graduate without the experience, competency or confidence they need. RTTs have demonstrated their success in preparing their residents for rural practice. However, 13 RTT programs exist in the United States, and each usually offers only one to two positions per year (Rosenthal, et al., 2000). Fellowship programs have been developed for those resident graduates who do not feel that they have achieved competency or the confidence to take on the challenges of rural practice.

Reliable information on the availability of fellowship programs is important to maximize training opportunities for family physicians interested in rural practice. It was surprising to learn from this investigation that consistent and reliable information regarding fellowship programs is not readily available. This is partly because of the current mechanism for collecting data and advertising fellowship programs. The AAFP surveys all residency programs regarding their fellowship programs in the spring of each year, with a deadline for submission. If the program does not meet the submission deadline date, it is not included in the directory. Several rural fellowship directors did not even know about the published directory or about the online AAFP directory. The frequent turnover of fellowship programs also adds to this problem. No mechanism requires programs to report their closure. Therefore, it would seem prudent that this listing be updated and maintained on an annual basis. A current and well-publicized directory would readily aid those residents-in-training and other interested family physicians in obtaining the educational opportunities they desired in their preparation for rural practice.

In 1997, Norris and Acosta demonstrated that a large applicant pool was interested in their rural fellowship. This current study also confirms that a substantial applicant pool remains interested in postresidency education. The applicant pool comprises interested family physicians from all areas of the country. Several studies have described the typical applicant that is interested in rural practice. Previously, Norris, et al. (1996) demonstrated the rural physician profile consisted of the following characteristics: male, married, graduated from a rural high school, participated in a rural rotation during medical school and residency training. This current study demonstrates a changing trend. Rural health fellowship programs are finding an increasing number of female family physicians who are interested in fellowship training for rural practice.

Family practice residency programs in the United States are successful in placing 24 percent of their graduates in rural areas (AAFP, 1999). However, programs with rural missions and with curricula that focus on rural training have increased this rate of rural placement substantially (Bowman and Penrod, 1998). Rosenthal, et al. (2000) demonstrated that 76 percent of graduates from RTT programs locate in rural locales after matriculation. Rural fellowship programs seem to have the most success at placing their graduates in rural settings in comparison to obstetrical fellowship programs, and they seem to be as successful as RTT. More than 75 percent of the rural fellowship graduates are located in rural settings with a population of less than 25,000.

Obstetrical and rural fellowship programs have been successful in their graduates obtaining the hospi-

tal privileges that they desired. This study found that 92 to 100 percent of family physicians who completed an obstetrical or rural health fellowship program attain routine obstetrical privileges. By comparison, 67 percent of RTT graduates provide routine obstetrical care (Rosenthal, et al., 2000). In addition, the majority of fellowship-trained family physicians had privileges in high-risk obstetrics. Furthermore, nearly half (48 percent) of RTT graduates (Rosenthal, et al., 2000) and obstetrical fellowship graduates (>54 percent), and more than 75 percent of rural health fellowship graduates have cesarean section privileges. Depending on the fellow's locale after matriculation, privileges in high-risk obstetrics and cesarean sections can be variable. Those fellows that located in rural areas seemed to have had more success in attaining these privileges than have those fellows who located in metropolitan areas. This seems to be consistent with the AAFP findings when comparing rural vs. urban family physicians and obstetrical privileges (AAFP, 1998).

Saver, et al. (1998) demonstrated that there are barriers to the training of residents who are interested in rural practice. These include financial barriers (lack of graduate medical education [GME] funding and allocation of resources to select hospitals at the exclusion of rural hospitals) and faculty development. Like family practice residency programs, this current study demonstrates that many of the obstetrical and rural health fellowships that were no longer in operation were closed because of some of the same barriers—lack of financial support and lack of family practice faculty trained to do obstetrics. GME funding has not played a significant role in funding fellowship programs. As federal support for postgraduate training has continued to decline over the years, more and more institutions have had to develop alternative funding to either create or salvage these programs.

Approximately 73 fellowship positions are available per year for those family physicians interested in preparing for rural practice. However, like family practice residency programs (Kahn, et al., 1999), not all of the positions are filled annually. Unlike residency programs, fellowship programs do not participate in the National Resident Match Program. Therefore, these positions can fill quickly. Increasing the coordination between rural and obstetrical fellowship programs could maximize the availability of these rural training opportunities. Obstetrical and rural fellowship programs could develop a network to share those applicants who were not chosen.

Several limitations exist to this study, and a survey of a small group must be interpreted with caution. As previously mentioned, the author relied on available published data, which was found to be variable and limited. Surveying all family practice residency programs and departments of family medicine in the United States may provide a more current and reliable source of existing fellowship programs. This study was also limited by selection bias. Only obstetrical, maternal health, women's health, reproductive health and rural health fellowship programs were included. No other fellowship programs for family physicians were queried regarding the status of their graduates. The survey also relied on the program directors' recall regarding the demographics of their applicant pool, and the practice location and privileges attained by their past graduates. Perhaps direct contact with all graduates from obstetrical and rural health fellowship programs in future studies would lend a closer look at the actual outcomes.

Many unanswered questions exist regarding fellowship programs, and more research is necessary. What effect will fellowship training have on the retention of rural physicians? Do physicians who are better trained stay in their rural communities longer? Pathman, et al. (1999) argued that physicians' preparedness (during residency) for the "realities of rural living" predicted their retention duration, whereas their preparedness for the practice of rural medicine did not predict retention duration. Will the results be different for fellowship-trained physicians?

West, et al. (1996) reported that 38 percent of male physicians and 21 percent of female physicians who initially chose rural practice relocated after four years in practice. Eighteen percent of these male physicians and 27 percent of these female physicians transitioned to urban practice. Rosenthal, et al. (1992) demonstrated that 30 percent of physicians relocated every two years in New York state, and 33 percent of the rural physicians eventually transitioned to urban practice. Will these transitional trends be the same for those rural physicians who have participated in fellowship training?

Conclusion

It appears that postresidency training does play an integral part in the preparation of physicians for rural practice. It joins the ranks of other successful innovations of training that have been critical to supplying the physician shortage areas. It is certainly not the only answer or the best answer to the question of how to best recruit and retain physicians to rural commu-

nities. It is only a piece of this large puzzle. It is clear that some newly graduated residents do not feel well prepared to meet the challenges of rural practice. Fellowship programs may provide them with the alternative that they are looking for and help them build the confidence they need.

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