Fifteen-Year Outcomes of a Rural Residency:

Aligning Policy With National Needs

Robert Ross, MD, MScEd

BACKGROUND AND OBJECTIVES: Despite 30 years of policy initiatives and rural-focused programs, the number of physicians in rural practice remains unchanged and insufficient for the needs of rural communities. The practice characteristics of graduates of a rural family medicine residency program are identified, including community size, practice content and procedures, and hospital and outpatient services offered and track any changes in practice location and services.

METHODS: A postgraduate survey instrument was sent to all graduates of Cascades East Family Medicine Residency beginning with the initial class of graduates and ending with the alumnae who completed the program in 2009. The response rate was 82%, and data were collated and analyzed for practice content and demographic characteristics. Changes in practice location and content were summarized.

RESULTS: Most graduates are located in demonstrated areas of need immediately following graduation: 60% entered practice in population centers of less than 25,000; 63% are located in health professional shortage areas (HPSAs). There was an insignificant migration from rural to urban locations and little change in practice content over the duration of the study.

CONCLUSIONS: As a result of this survey, we are aware of the postgraduate training design that is most successful at producing primary care physicians who enter isolated rural practice in areas of greatest need. There is a requirement for training incentives, federal funding, and Accreditation Council on Graduate Medical Education flexibility to support and accommodate the unique needs of training programs that demonstrate clear outcomes that are congruent with the needs of the rural American population and produce physicians who enter rural practice.

(Fam Med 2013;45(2):122-7.)

Rural areas of the United States have a shortage of physicians relative to urban areas.[1,2] Despite 30 years of policy initiatives, the number of physicians in rural practice remains virtually unchanged and insufficient.[3-5]

Cascades East Family Medicine Residency Program (CEFMR) administered by Oregon Health & Science University (OHSU), is situated in Klamath Falls, OR (population ~42,000), at a 96-bed, not-for-profit community hospital, Sky Lakes Medical Center (SLMC). CEFMR remains the only Oregon residency program outside the metropolitan Portland area. According to our investigations through the American Academy of Family Physicians (AAFP), Accreditation Council for Graduate Medical Education (ACGME), and other organizations, CEFMR is the most rural and remote 3-year residency training site in the nation, and SLMC is the smallest institution supporting a 3-year residency. The program's main goal is to produce full scope of practice family physicians to enter rural practice. In both OHSU and SLMC, family physicians have full admitting privileges and perform many procedures (C-sections, endoscopy) that are confined to subspecialists in most other locales.

Is this a successful model for rural family medicine training? Where do the graduates of the program practice? How often do they relocate? This study aimed to answer these questions using data gathered from a detailed postgraduate survey instrument mailed to all graduates of the program, with follow-up electronic, written, and phone reminders. All addresses and practice locations were verified with personal or email contact. A search of studies in OVID MEDLINE, CINAHAL, EMBASE, and the Cochrane database shows there are few outcome studies or statistics available for residency programs of any specialty published in the literature. Other databases (eg, the American Medical Association

From the Cascades East Family Medicine Residency, Klamath Falls, OR

Table 1: Practice Location

	First Practice Location Sums	First Practice Location Means	%	Current Practice Location Sums	Current Practice Location Means	%
Years at this location		3.46			3.66	
Solo practice	11	0.17	18	7	0.11	11
Family practice group (only family physicians)	23	.33	34	20	.32	32
Number in group	130	5.7 mean # in group		111	5.6 mean # in group	
Multi-specialty group	9	0.14	15	5	0.11	11
Number in group	167	18.6 mean # in group		138	27.6 mean # in group	
Emergency room	4	0.06	6.5	7	0.11	11
Urgent care practice	2	0.03	3.2	2	0.03	3.2
HMO or other salaried practice	2	0.03	3.2	2	0.03	3.2
Academic medicine	5	0.08	8	6	0.09	10
Administration	1	0.02	2	0	0	0
Public health or Federally Qualified Health Center	10	0.16	16	8	0.13	13
Other (please specify):	0			0		
Approximately how many hours do you work each week?		45.78			46.33	
What is the average frequency of your night call?	7—67/84	10/59 ~1 night/6		5—53/83	8/61 ~1 night/7.6	
Which of the following best describes the community in which you practice?						
Population less than 5000, not within 25 miles of a major city	15	0.24	24	12	0.19	19
Population less than 5000, within 25 miles of a major city	3	0.05	5	3	0.04	5
Population 5000–10,000 not within 25 miles of a major city	13	0.21	21	11	0.18	18
Population 5,000–10,000, within 25 miles of a major city	2	0.03	3	3	0.05	5
Population 10,000–25,000, not within 25 miles of a major city	5	0.08	8	8	0.13	13
Population 10,000–25,000, within 25 miles of a major city	1	0.02	2	1	0.02	2
Population 25,000–100,000	15	0.24	24	14	0.22	23
Population 100,000–500,000	6	0.09	10	9	0.14	15
Population greater than 500,000	2	0.03	3	1	0.01	2
Other (please specify)	0	0		0	0	

(continued on next page)

Table 1: continued

	First Practice Location Sums	First Practice Location Means	%	Current Practice Location Sums	Current Practice Location Means	%
Practice description						
Are you practicing in a Health Professional Shortage Area?	39	0.63	63	32	0.52	52
Are you practicing in a Federally Qualified Health Center?	15	0.24	24	10	0.16	16
Are you practicing at an Indian Health Service site or tribal clinic?	2	0.03	3	1	0.02	2
Are you practicing at a Rural Health Clinic site or clinic?	13	0.21	21	7	0.11	11
Are you receiving loan repayment, and if so, from what source?	5	0.08	8	0	0	0
Are you a National Health Corps Scholar?	4	0.06	7	3	0.05	5

[AMA] physician masterfile) are incomplete and do not have relevant information about practice activity or content.[6]

Many methods have been used to entice physicians into postgraduate training designed to bolster the supply of rural providers, the most numerous being through family medicine programs where residents are assigned to a central teaching hospital for the PGY-1 year and then spend the final two training years in a rural community. These programs, which produce small numbers of graduates, seem to successfully place rural family physicians,[7] but the literature reveals limited information on graduate outcomes of these or other residency program designs. A recent article from the Spokane Family Medicine Residency states that 49% of graduates from this program practice in rural communities (defined as populations of less than 25,000 located further than 25 miles from a town larger than 25,000) and goes on to quote a much older article citing that 76% of graduates of 1-2 programs practice in rural areas.[7] No methodologies are presented for supporting the reported data.[8] In fact, a recent (2009) Cochrane review revealed virtually no evidence about the most effective way of producing practitioners for rural locations.[9] In the author's words, "There are no studies in which bias and confounding are minimized to support any of the interventions that have been implemented to address the inequitable distribution of health care professionals. Well-designed studies are needed to confirm or refute findings of various observational studies."

We have previously demonstrated our success in placing graduates in isolated and underserved areas. Of 63 graduated residents (as of March 2008), 17 (27%) were practicing in Federally Qualified Health Centers (FQHC-330 Grant Based), 39 (62%) in Health Professional Shortage Areas (HPSAs) and three (7%) in Indian Health Service (IHS) sites or tribal clinics. The survey design was altered in 2009 to reflect longitudinal progression of our graduate's practices over time. The results of our investigations form an initial but incomplete attempt to establish a database that address the desperate need for an evidence-based rural physician policy.

Methods

In 2009, an ambitious postgraduate survey instrument was sent to all graduates of CEFMR who completed the program between its inception (1994) and 2009. When no contact information was available, a search of the records of State Board of Medical Examiners and the use of web-based search engines yielded a current mailing and/or electronic address for 98% of graduates. In the summer of 2009, graduates were sent both an electronic version of the questionnaire when possible and a printed copy of the survey, including specific instructions on completion. By May of 2010, completed surveys were received from 62 of 76 program graduates for a response rate of 82%. The IRB of OHSU approved the study methodology and survey instrument.

Results

As evidenced from Table 1, 60% of our graduates initially entered practice in communities of less than

Table 2: Practice Content—Inpatient and Outpatient

	First Practice Location Sums	First Practice Location Means	%	Current Practice Location Sums	Current Practice Location Means	%
Do you currently have admitting privileges to a hospital? (Yes)	51	0.82	82%	49	0.79	79%
Number of hospital beds		57.16 beds			69.94 beds	
Please indicate the procedures for which you currently have hospital privileges:						
Medical admissions of adult patients	50	0.81	81%	50	0.81	81%
Medical admissions of children older than the newborn	49	0.791	79%	46	0.74	74%
Low-risk newborn infants	42	0.68	68%	39	0.63	63%
Coronary care unit	31	0.5	50%	28	0.45	45%
Surgical or medical intensive care unit	43	0.69	69%	36	0.58	58%
Perform low risk obstetrical care	26	0.42	42%	19	0.31	31%
Perform vacuum extraction deliveries	24	0.39	39%	18	0.29	29%
Forceps deliveries	3	0.05	5%	2	0.03	3%
Cesarean section deliveries	6	0.09	10%	2	0.03	3%
Tubal ligations	5	0.08	8%	3	0.05	5%
Appendectomies	0	0		0	0	
Insertion of central venous catheters	31	0.5	50%	26	0.42	42%
Insertion of Swan-Ganz (PA) catheters	6	0.09	10%	6	0.09	10%
Insertion of temporary pacemakers	2	0.03	3%	2	0.03	3%
Admission privileges for patients with psychiatric disorders	29	0.47	47%	26	0.42	42%
EKG interpretation	38	0.61	61%	36	0.58	58%
Dilatation and curettage	10	0.16	16%	7	0.11	11%
First assist in general surgery	34	0.55	55%	31	0.5	50%
Gastroscopy	11	0.18	18%	9	0.14	15%
Colonoscopy	11	0.18	18%	9	0.14	15%
Flexible sigmoidoscopy	15	0.24	24%	10	0.16	16%
Ultrasound (Please indicate if OB only or for other procedures)	7	0.11	11%	5	0.08	8%
Other procedures (please list):	1	0.01	2%	1	0.02	2%

(continued on next page)

Table 2: continued

	First Practice Location Sums	First Practice Location Means	%	Current Practice Location Sums	Current Practice Location Means	%
How satisfied are you with your current hospital privileges?						
Completely satisfied	36	0.58	58%	37	0.59	60%
Mostly satisfied	14	0.23	23%	12	0.19	19%
Somewhat dissatisfied	0	0		0	0	
Very dissatisfied	1	0.02	2%	1	0.01	2%
Please list any areas in which you sought, but were unable to obtain, hospital privileges?	0	0		0	0	
Approximately how many hospitalized patients do you care for on an average day? (not including OB patients)		3.75 patients/day			2.66 patients/day	
Approximately how many obstetrical deliveries do you do each year in your practice?	598	18		380	18	
Which of the following procedures do you perform in your office practice?						
Flexible sigmoidoscopy	11	0.18	18%	7	0.11	11%
Colposcopy	16	0.26	25%	13	0.21	21%
Obstetrical ultrasound	17	0.27	27%	15	0.24	24%
Surgical removal of skin or subcutaneous lesions	59	0.95	95%	56	0.90	90%
Closed reduction of uncomplicated fractures	31	0.5	50%	30	0.48	48%
Casting of fractures	46	0.74	74%	41	0.66	66%
Electrocardiogram	59	0.95	95%	56	0.90	90%
Urinalysis	59	0.95	95%	56	0.90	90%
Endometrial biopsy	40	0.64	65%	35	0.56	57%
Elective abortion	4	0.064	7%	5	0.08	8%
Breast biopsy	1	0.02	2%	2	0.03	3%
Aspiration of breast cyst	15	0.24	24%	12	0.19	19%
Vasectomy	8	0.13	13%	6	0.09	10%
Repair of lacerations	56	0.90	90%	55	0.89	89%
Colonoscopy	4	0.06	7%	2	0.03	3%
Gastroscopy	4	0.06	7%	2	0.03	3%
Cryotherapy	45	0.73	73%	42	0.68	68%
Electrical excision	22	0.35	36%	20	0.32	32%
Cosmetic procedures (eg, laser, dermabrasion, liposuction, collagen injection, etc)	0	0	0%	2	0.03	3%

25,000 population, and 45% practice in towns of less than 10,000. Thirty-seven percent remained in very rural locales, centers of less than 10,000. Forty percent of our graduates have relocated their practices at least once since graduation. Using populations of less than 25,000 more than 25 miles from major centers as the cut point for defining rural practice, 50% of all of the graduates from CEFMR's inception in 1994 remain in these settings. Sixty-four percent first practiced in HPSAs, and 52% remain in these shortage areas, with 45% delivering care at FQHCs or Rural Health Centers (RHCs) upon graduation, and 27% still practice in these centers in 2009. Compared with previous surveys, these statistics raise the concern that fewer graduates are willing to enter rural practice in communities of less than 10,000, and reveal a small net migration of graduates to more urban areas.

The type of practice chosen by the graduates has remained relatively constant with more than 30% of the graduates choosing and remaining in group practice (the most popular setting) and 11% to 18% in solo situations. The majority of graduates have hospital admitting privileges when first graduated (82%), and this number remains high later in practice at 79%. The decrease in provision of OB services from 42% (even higher in previous surveys) to the current level of 31% seems to confirm that, as more time passes after residency graduation, physicians give up obstetrical privileges, including C-section privileges and procedures. The reasons why these changes occur was not investigated. Outcomes are illustrated in greater detail in Table 2.

Overwhelming migration of physicians from rural to urban locales did not occur. Of 25 graduates who have practiced in more than one location since graduation, 11 (18%) have moved to larger centers, seven (11%) have moved laterally to towns of the same size, and the remaining seven (11%) have moved to smaller population centers. The reasons why graduates relocate from FQHCs and RHCs to other practice arrangements is unclear, but it is encouraging that, even 15 years post-residency start-up, many physicians (a majority, at 52%) are still located in federally defined shortage areas.

Conclusions

Family medicine residency programs of 3 years duration, located in small community hospitals, would seem to be ideal settings for training future rural physicians. The outcomes demonstrated by this study substantiate this conclusion and show that rural residency graduates tend to serve small communities, often the one where they first enter practice, for an extended period. Although the study results presented are overwhelmingly supportive of current rural residency program design, these outcomes have been obtained with decreasing financial support. These economic realities, accompanied by a paucity of formal programs supporting medical education, puts residencies such as CEFMR at risk of closing. Additionally, the ACGME regulations implemented in 2011 are likely to decrease the current overwhelming resident support for our educational environment and structure and are antagonistic to the production of professional, well-trained family medicine graduates.[10]

Our survey included many questions designed to measure the preparation for practice and satisfaction of our graduates with the residency program curriculum. The overall graduate rating of our residency program's "preparation for practice" was an enviable 6.2/7 on a Likert scale. There were no comments or concerns regarding fatigue or desire to extensively modify the residency curriculum. Unfortunately, new ACGME work hour requirements will decrease by at least one third the total inpatient experience of our residents, often a vital component of rural practice. It is clear from this study that rural residency programs such as CEFMR can successfully prepare family physicians to provide medical care to rural communities. However, unless a comprehensive review of postgraduate training and funding is undertaken, with modifications of requirements based on the unique attributes of individual programs, there is imminent danger that the needs of rural America for primary care physicians will remain unfulfilled.

ACKNOWLEDGMENTS: This study was partially supported by HRSA Title VII Grant: D58HP05140.

CORRESPONDENCE: Address correspondence to Dr Ross, Community Health Strategy, St Charles Medical Center, 2600 Neff Road NE, Bend, OR 97701. robr1228@aol.com.

References

1. Council on Graduate Medical Education: (COGME): Annual Report, 1997.
2. Rural health professional facts: supply and distribution of health professionals in rural America. Chapel Hill, NC: University of North Carolina at Chapel Hill, 1992.
3. Rural health: a challenge for medical education. Proceedings of the 1990 Invitational Symposium, San Antonio, Texas, February 1–3, 1990. Acad Med 1990;65(12 Suppl):S1-126.
4. Rural-based graduate medical education: a workshop. Proceedings of a conference. February 16-18, 2000. San Antonio, TX. J Rural Health 2000;16(3):196-306.
5. The Family Physician Workforce. The special case of rural populations. Paper number 31. Washington, DC: The Robert Graham Center, July 2005.
6. AMA web site, physician database. https://profiles.ama-assn.org/amaprofiles/info/sampleProfiles.jsp. Accessed January 10, 2011.
7. Rosenthal TC, McGuigan MH, Anderson G. Rural residency tracks in family practice: graduate outcomes. Fam Med 2000;32(3):174-7.
8. Maudlin RK, Newkirk GR. Family Medicine Spokane rural training track: 24 years of rural-based graduate medical education. Fam Med 2010;42(10):723-8.
9. Grobler L, Marais BJ, Mabunda SA, Marindi PN, Reuter H, Volmink J. Interventions for increasing the proportion of health professionals practising in rural and other underserved areas. Cochrane Database of Systematic Reviews 2009.
10. http://acgme-2010standards.org/pdf/dh-ComparisonTable2003v2011.pdf. Accessed January 9, 2011.