

Factors That Influence Physicians to Practice in Rural Locations: A Review and Commentary

Darra Ballance, MLIS, AHIP;¹ Denise Kornegay, MSW;¹ and Paul Evans, DO²

ABSTRACT: *Rural populations remain underserved by physicians, despite various efforts by medical schools and other institutions/organizations to correct this disparity. We examined the literature on factors that influence rural practice location decisions by physicians to determine what opportunities exist along the entire educational pipeline to entice physicians to, and retain them in, rural areas. Results reported in the literature favor a multidisciplinary or multi-faceted approach that results in more residents and physicians locating their practices in rural areas. The need to define proven strategies is not the pressing issue; rather, the needs are to define the commitments necessary to implement proven strategies, as well as the will to make physician distribution a priority issue in medical education.*

The shortage of physicians in rural areas of the United States remains a persistent problem. About 11% of all physicians treat the 20% of the US population that resides in rural areas.¹ In February 2005, the Association of American Medical Colleges recommended that enrollment at medical schools be increased by 15% over the next 15 years. In response to this recommendation and the persistent need for more physicians, many medical schools have expanded their class sizes and several have developed satellite campuses.^{2,3}

The decline in rural physician supply is becoming more severe. There are many factors contributing to this decline. More female physicians are entering the profession, with fewer women than men choosing rural practice.^{4,5} The number of graduates who choose careers in generalist medicine or family practice has also declined; these graduates make up a majority of physicians who decide on rural practice locations.^{6,7} Physicians from rural backgrounds are more likely than their urban counterparts to choose rural practice,⁸⁻¹⁰ but too few rural students are applying to medical schools to ameliorate the shortage.¹¹ How should medical school educators approach this dilemma? In what ways can this growing gap in health care provision be

addressed? Are there ways to influence new physicians to consider rural practice? Is this just a health care policy issue? Fortunately, many other factors appear to influence physicians' practice location decisions, especially rural practice locations. These factors fall into 5 general categories: (1) preparation for and recruitment by medical schools; (2) the medical school experience; (3) the residency experience; (4) recruitment of physicians to rural communities; and (5) retention of rural physicians.

We searched the published literature in each of these 5 areas along the entire educational pipeline to learn what strategies strengthen students' and residents' intentions to practice in rural areas, and how to retain physicians once they are located in such areas. A literature search of MEDLINE covered the years 1966 to 2008. MeSH headings used included: *physicians; physicians, family; physicians, women; professional practice location; rural health services; rural health; career choice; education, premedical; medical education, undergraduate; medical schools; medically underserved area; and rural population*. Only English-language articles and those most applicable to the United States were included. We focused on research on large groups, such as surveys of graduates from long-standing programs, and on articles that addressed gaps in the literature. Articles were grouped into the 5 categories listed above.

Preparation for and Recruitment by Medical Schools. Many medical schools currently offer short summer programs designed to increase academic competitiveness for high school and undergraduate students. These programs generally begin in high

¹Statewide Area Health Education Centers Network, Medical College of Georgia, Augusta, Ga.

²Georgia Campus, Philadelphia College of Osteopathic Medicine, Suwanee, Ga.

For further information, contact: Darra Ballance, Statewide AHEC Network, HT-2402, Medical College of Georgia, Augusta GA 30912; e-mail dballance@mcg.edu.

school, and usually feature some combination of physician shadowing, hands-on activities, and classroom learning or tutoring. Many area health education centers (AHECs) offer such programs or coordinate them with academic medical centers.

McKendall,⁸ Knopke,⁹ and Crump¹⁰ have reported on programs that expose rural high school students to health careers in their communities and provide tutoring. These programs have shown higher ACT scores after completion. When rural students are academically qualified, their subsequent admission to medical schools will likely result in the graduation of higher numbers of physicians who return to rural communities.^{12,13}

Experiences During Medical School. We examined articles about schools with 2 types of programs: those with extended rural clerkships; and those with either selective admissions for family medicine/primary care studies, or entirely separate educational tracks for primary care. Both types of programs have proven effective in maintaining and encouraging students' interests in rural primary care.

Blue et al¹⁴ described a 4-week rural primary care clerkship required for all third-year students at the Medical University of South Carolina. The students' perceptions of rural practice became significantly more positive after completing the clerkship. Although these students had not yet completed residency and therefore did not have practice locations, other evidence shows that positive rural experiences during medical school can have a strong influence on practice location choices.¹⁵

In Colorado, Fryer et al¹⁶ studied an AHEC program that offered extramural rotations for medical students. More students who had experienced at least 1 extramural rotation listed primary care specialties than did students who had not participated. The authors noted that while there was initially some faculty reluctance to entrust clinical preparation of students to non-academics, these students scored as high on the National Medical Board Examination for their specialties as had students who were taught or precepted in the university setting.

The Appalachian Preceptorship at East Tennessee State University has offered a month-long medical school clerkship that has both a clinical component and a week of complementary classroom instruction.¹⁷ The program, in existence for over 20 years, is designed to increase retention in rural practice by emphasizing the attractive cultural and practical aspects of a rural community. Residency choices of the 164 participants who matched prior to 2005 indicated that 82% selected a primary care specialty. Of the former students whose

practice location could be identified, 33% of graduates chose a rural practice location, more than 3 times the national average.

The University of Washington created the WAMI program for medical students from Washington, Alaska, Montana, and Idaho. Phillips et al¹⁸ reported on the long-term effect of the program's required family medicine rural clinical clerkship. The goal was to have at least 20% of each class enter family medicine, but when the first 6 graduating classes were studied in 1994, more than 30% of the graduates had entered family medicine residencies, and 57% of all graduates were still in family practice.

The Physician Shortage Area Program (PSAP) at Jefferson Medical College in Pennsylvania is a special admissions program developed in 1974 to identify medical student applicants who would eventually practice family medicine in underserved areas.¹⁹ Qualified applicants are given high priority for the program only if they have lived in or have strong family ties to an area in or adjacent to a physician shortage area of Pennsylvania. Upon admission, students are required to take several family medicine clerkships. Rabinowitz found that these students are 5 times as likely as their peers to enter family medicine, and almost twice as likely to enter this specialty compared to non-PSAP students who entered Jefferson Medical College with the desire to become family physicians. The selective admissions component of the PSAP is the most important reason for its success.^{20,21} Replication of the PSAP program, or similar programs focused on rural outcomes, at all 125 US allopathic medical schools could result in 1,139 rural physicians annually if results were similar.²¹

Selective admissions policies that give preference to rural candidates do not result in the acceptance of unqualified applicants. Like the PSAP, the University of Missouri-Columbia School of Medicine studied its rural medical school applicants and determined that the school was able to maintain competitive admissions criteria while still admitting students who were most likely to choose rural practice.²²

The Rural Medical Education Program (RMED) at the State University of New York's (SUNY) Upstate Medical University has documented high numbers of physicians who chose rural practice locations.²³ Students in the RMED program receive their clinical training in rural communities rather than on the SUNY Upstate campuses, spending 36 weeks under the guidance of a primary care preceptor, usually a rural family physician. Eighty-four percent said the program had helped them choose a rural practice location.

To summarize, a combination of selective admissions and focused rural/generalist curricula may

be the best way to increase the number of medical school graduates who intend to practice in rural areas. Kassebaum and Szenas urged educators to focus their efforts on sustaining and increasing all students' interest in generalist medicine and rural practice, regardless of rural or urban background,⁵ since the number of students with rural backgrounds is too small to make up for present and future shortages, even if all were to choose rural practices.

Experiences During Residency. Family practice residency programs that graduate higher numbers of rural physicians share similar qualities, according to Bowman.²⁴ These programs had more required rural and obstetrical training months, were located in rural states, and had a full or partial rural mission. Unfortunately, these programs also had fewer residents who were minorities or females, 2 groups that are of importance to the rural health workforce.

The University of New Mexico (UNM) family medicine residency program has more rural-background and minority residents choosing rural practice than all other UNM specialty graduates combined (25.9% compared to 10%). Three residency sites for several rotations were created outside the Albuquerque metropolitan area. Residents also participate in a state-sponsored locum tenens program providing practice relief for rural practitioners. A greater percentage of ethnic minority graduates from UNM practiced in rural areas and stayed in the state (44.7%) compared to ethnic minority graduates who were from other medical schools (22.2%).²⁵

Spending large amounts of time in rural areas during residency reinforces practitioners' affinity for those areas. Rural training tracks (RTTs) are "one-two" programs that require residents to spend 1 year in an urban-based residency and 2 years in a rural community. RTTs have a high number of graduates who remain in rural areas to practice. Rosenthal²⁶ studied 13 RTT programs that collectively produced 67% of graduates with a primary office ZIP code in a rural community, and 61% that practiced in a designated Health Professional Shortage Area (HPSA).

Some studies show that rural practice selection is lower among women.^{4,5,11} However, Rosenfeld and Zaborlik conducted a survey of family practice residency graduates in southern Appalachia that found that more women than men were practicing in small towns.²⁷ Characteristics of the physicians' practices were similar, as were their reported reasons for choosing a practice location.

Recruitment of Physicians. A strong correlation exists between the state or region in which a physician

is practicing and the geographic area in which he or she (1) lived during pre-adulthood, (2) attended medical school, and (3) completed a residency.²⁸ A good interpersonal match with future colleagues can be a strong indicator of a satisfactory practice location. If the physician has a partner or spouse, both must determine whether a community is a good fit for them.²⁹ One study that surveyed graduates and current residents from 12 family practice residency programs in the western United States recommended certain strategies to assist rural communities in physician recruitment: create a diverse recruitment committee, plan the recruitment strategy carefully, identify prospects early and stay in touch during residency, make a good first impression, identify the interests of a recruit's spouse or partner (including job opportunities), pay for as much of the site visit as possible, and follow-up after the visit.³⁰

A survey of recent female recruits in the Pacific Northwest identified 3 important focus areas for positive rural recruitment experiences: cultivating good recruitment relationships, offering attractive practice arrangements, and emphasizing the strength of the medical community.⁴ Communities are more likely to recruit female physicians if they communicate effectively and address spouse/partner, childcare, and scheduling issues during the recruitment process.³¹

An organized community effort can result in successful recruitment of physicians. A study of South Carolina physicians found that more than half of those who locate in rural communities were actively recruited to establish their practice there, as opposed to only 31% of those in urban communities.³² Combining traditional recruitment activities with community development allowed the Arkansas Southern Rural Access Program to recruit 8 new primary care providers to an underserved rural area in a 2-year period.³³ The recruiter worked with local providers, community leaders, and residents to design and implement various improvements that would make their rural community more attractive to new health care providers. Development of a "regional recruiter" position that involved community members in recruitment and retention of primary care providers proved to be cost effective and was replicated in several other Southern states.

Retention. What is the relationship between physicians' training, the physicians' self-preparedness for rural life, and retention? Pathman and colleagues collected data to study how prepared physicians felt themselves to be when they began working in their first rural practice for the requirements of medical practice and the "realities of living" there.³⁴ Asked to identify

the single experience that had best prepared them for rural practice, 54% responded growing up in a rural area. Physicians also cited having 3 or more clerkships and residency rotations in rural areas as providing them with their best preparation for rural practice. According to Pathman's survey, physicians who self-reported feeling "more prepared" or "prepared" for rural life were twice as likely as unprepared physicians to still be there 6 years later.

According to research conducted by Rabinowitz et al,³⁵ the typical primary care physician remains in rural practice in the same area for approximately 7 years. Increasing rural physicians requires replacing those who leave and then adding additional doctors. According to the authors' study of long-term (11-16 years) retention of graduates from the first 9 years of the PSAP in Pennsylvania, the PSAP is the only program whose outcomes have been shown to result in multifold increases in both recruitment and long-term retention.³⁵ In light of recent national recommendations to increase medical school enrollment by 15%, Rabinowitz urges that some of this growth be allocated to developing and funding programs similar to the PSAP as an effective way to address the rural physician shortage.^{35,36}

Loan forgiveness or return-of-service (ROS) agreements have long been used as a tool for recruitment of rural physicians. Do these agreements result in long-term retention as well? Sempowski reviewed the literature on ROS agreements and found 10 articles on this topic that were judged to have the highest levels of evidence.³⁷ The author's review concluded that while most studies showed effective recruitment, the one prospective cohort study revealed that physicians who voluntarily chose to go to a rural area are far more likely to stay in the long term than are those who locate there as a result of an ROS commitment.

Policy Issues

The search to find effective solutions to the problem of physician geographic distribution is not new, as evidenced by the wealth of published research. The need to define "what works" is not the pressing issue; rather, the needs are to define the commitments necessary to implement proven strategies and strengthen the will to change the status quo. Academic health centers are pressured to perform on many stages, including providing care for the indigent, educating highly trained practitioners, and producing voluminous research findings to add to the body of knowledge influencing clinical practice. Graduate practice location choice is, at best, a minor agenda item

for most schools and residency programs. As long as the largest funding streams available to academic health centers are based on research productivity, then the primary agenda will remain as research excellence as defined by procurement of grant and research dollars. The historic 3-part mission of most academic health centers (education, clinical care, and research) does not speak to the more specific need to graduate physicians who will choose to practice in rural communities. To succeed, these programs must be funded in a way that implements proven strategies and rewards meaningful results.

Simultaneous with the expansion of the medical school pipeline resulting from nationwide class size increases, there is increased attention focused on developing new and expanding existing residency programs. These expansions offer a unique opportunity to attempt new programming to address physician distribution challenges.

To encourage innovative changes in medical education that include attention to physician distribution issues, a funding priority or a funding expectation must be articulated to encourage medical schools and residency programs to think creatively. The move toward outcome measures as a condition of state funding is a potential opportunity to leverage programs that prioritize geographic graduate distribution goals. Providing financial incentives to programs that produce graduates at a defined level who choose practice in a rural area would encourage medical school faculty buy-in and creativity in addressing this challenge.

A far more subtle change must also occur. Currently, the leadership in academic medicine speaks about distribution and shortage challenges, but most commonly continue to provide larger resources and priority access to specialty and sub-specialty departments and faculty largely due to the higher clinical revenues generated by these units. Further, the constant pressure to obtain outside funding from federal and private grantors is a disadvantage for primary care-oriented departments, for whom access to such funds is limited. Yet, these departments produce the physicians most likely to practice in rural areas. Individual faculty prestige, promotion, and monetary rewards are largely tied to the ability to procure funds through research or clinical revenue rather than the ability to mentor students into needed disciplines, implement community-oriented curricula, and shepherd students and residents toward practice in HPSAs and/or rural areas. Present recruitment resources that encourage graduates to seek a practice in a rural community are minimal or nonexistent at most institutions.

Conclusion

In this article, we identified strategies that effectively influence practice location choice toward rural areas. While “nature” or rural background is a common factor in many physicians who choose rural practices, “nurture” or programs that encourage and maintain rural affinity and intent to choose family medicine or primary care are also a necessary component in a budding rural physician’s education and residency. High school programs are shown to encourage rural students to develop an interest in medicine and gain admission to competitive colleges. Undergraduate programs also connect premedical students to local rural practices. Medical school clerkships in rural areas keep students connected to rural life and strengthen their intention to practice in rural areas. Effective recruitment efforts that highlight the positive aspects of rural life and address work-life balance are also shown to attract providers and retain them in their rural practices.

These findings are not surprising. The challenge appears to be in generating the will to fund and implement proven interventions widely and with consistency, and in creating a sense of priority around guiding graduate practice location choice. Until the need to provide physicians for all communities is clearly embraced by medical schools and programs are funded and implemented widely, only a limited number of schools will continue to specifically address the needs of rural populations. Given that all medical education is subsidized at some level by state and federal taxes, it would seem fair that all citizens should have some expectation of a return on this investment. Were this indeed the case, all medical schools and residency programs would have some concentrated programming in place to influence practice location and discipline-specific choices. Until these needs are accepted as a mandate to be addressed by all engaged in the medical education pipeline, we will continue to see expansions without specific specialty and geographic targets based on the needs of the states and the nation.

References

- Office of Rural Health Policy. *Facts About...Rural Physicians*. Available at: http://www.shepscenter.unc.edu/research_programs/rural_program/phy.html. Accessed March 2008.
- American Association of Medical Colleges. *2007 State Physician Workforce Data Book*. AAMC: Washington, DC; 2007.
- Georgia Board for Physician Workforce. *Fact Sheet on Georgia's Medical Schools*. 2008. Available at: http://gbpw.georgia.gov/vgn/images/portal/cit_1210/13/29/111117337Fact%20Sheet%20-%20Medical%20Education%202008.pdf. Accessed September 2008.
- Ellsbury KE, Baldwin LM, Johnson KE, Runyan SJ, Hart LG. Gender-related factors in the recruitment of physicians to the rural Northwest. *J Am Board Fam Pract*. 2002;15(5):391-400.
- Kassebaum DC, Szenas PL. Rural sources of medical students, and graduates' choice of rural practice. *Acad Med*. 1993;68(3):232-236.
- Whitcomb ME. The challenge of providing doctors for rural America [comment]. *Acad Med*. 2005;80(8):715-716.
- Hauer KE, Durning SN, Kernan WJ. Factors associated with medical students' career choices regarding internal medicine. *JAMA*. 2008;300(10):1154-1164.
- Easterbrook M, Godwin M, Wilson R, et al. Rural background and clinical rural rotations during medical training: effect on practice location. *CMAJ*. 1999;160(8):1159-1163.
- Laven G, Wilkinson D. Rural doctors and rural backgrounds: how strong is the evidence? A systematic review. *Aust J Rural Health*. 2003;11(6):277-284.
- Woloschuk W, Tarrant M. Do students from rural backgrounds engage in rural family practice more than their urban-raised peers? *Med Educ*. 2004;38(3):259-261.
- Tolhurst HM, Adams J, Stewart SM. An exploration of when urban background medical students become interested in rural practice. *Rural Remote Health*. 2006;6(1):452.
- Colwill JM. Education for and retention in rural practice. *J Rural Health*. 2003;19(3):233-235.
- Rabinowitz HK, Diamond JJ, Markham FW, Hazelwood CE. A program to increase the number of family physicians in rural and underserved areas: impact after 22 years. *JAMA*. 1999;281(3):255-260.
- Blue AV, Chessman AW, Geesey ME, Garr DR, Kern DH, White AW. Medical students' perceptions of rural practice following a rural clerkship. *Fam Med*. 2004;36(5):336-340.
- Brooks RG, Walsh M, Mardon RE, Lewis M, Clawson A. The roles of nature and nurture in the recruitment and retention of primary care physicians in rural areas: a review of the literature. *Acad Med*. 2002;77(8):790-798.
- Fryer GE, Stine C, Krugman RD, Miyoshi TJ. Geographic benefit from decentralized medical education: student and preceptor practice patterns. *J Rural Health*. 1994;10(3):193-198.
- Lang F, Ferguson KP, Bennard B, Zahorik P, Sliger C. The Appalachian preceptorship: over two decades of an integrated clinical-classroom experience of rural medicine and Appalachian culture. *Acad Med*. 2005;80(8):717-723.
- Phillips TJ, Rosenblatt RA, Schaad DC, Cullen TJ. The long-term effect of an innovative family physician curricular pathway on the specialty and location of graduates of the University of Washington. *Acad Med*. 1999;74(3):285-288.
- Rabinowitz HK. A program to recruit and educate medical students to practice family medicine in underserved areas. *JAMA*. 1983;249(8):1038-1041.
- Rabinowitz HK, Diamond JJ, Markham FW, Paynter NP. Critical factors for designing programs to increase the supply and retention of rural primary care physicians. *JAMA*. 2001;286(9):1041-1048.
- Rabinowitz HK, Diamond JJ, Markham FW, Wortman JR. Medical school programs to increase the rural physician supply: a systematic review and projected impact of widespread replication. *Acad Med*. 2008;83(3):235-243.
- Longo DR, Gorman RJ, Ge B. Rural medical school applicants: do their academic credentials and admission decisions differ from those of nonrural applicants? *J Rural Health*. 2005;21(4):346-350.
- Smucny J, Beatty P, Grant W, Dennison T, Wolff LT. An evaluation of the rural medical education program of the State

- University of New York Upstate Medical University, 1990-2003. *Acad Med.* 2005;80(8):733-738.
24. Bowman RC. Family practice residency programs and the graduation of rural family physicians. *Fam Med.* 1998;30(4):288-292.
 25. Pacheco M, Weiss D, Vaillant K, et al. The impact on rural New Mexico of a family medicine residency. *Acad Med.* 2005;80(8):739-744.
 26. Rosenthal TC. Outcomes of rural training tracks: a review. *J Rural Health.* 2000;16(3):213-216.
 27. Rosenfeld JA, Zaborlik PM. Comparison of female and male graduates of southern Appalachian family practice residencies. *Tenn Med.* 1996;89(11):407-409.
 28. Cordes SM. Factors influencing the location of rural general practitioners. A study in Washington State. *West J Med.* 1978;128(1):75-80.
 29. Scammon DL, Williams SD, Li LB. Understanding physicians' decisions to practice in rural areas as a basis for developing recruitment and retention strategies. *J Ambul Care Mark.* 1994;5(2):85-100.
 30. Riley K, Myers W, Schneeweiss R. Recruiting physicians to rural practice. Suggestions for success. *West J Med.* 1991;155(5):500-504.
 31. Mitka M. What lures women physicians to practice medicine in rural areas? *JAMA.* 2001;285(24):3078-3079.
 32. Michels PJ, Hornung CA, Updike J, Sheridan D. Factors which discriminate rural and urban family physicians practicing in South Carolina. *J S C Med Assoc.* 1993;89(2):88-90.
 33. Felix H, Shepherd J, Stewart MK. Recruitment of rural health care providers: a regional recruiter strategy. *J Rural Health.* 2003;19(suppl):340-346.
 34. Pathman DE, Steiner BD, Jones BD, Konrad TR. Preparing and retaining rural physicians through medical education. *Acad Med.* 1999;74(7):810-820.
 35. Rabinowitz HK, Diamond JJ, Markham FW, Rabinowitz C. Long-term retention of graduates from a program to increase the supply of rural family physicians. *Acad Med.* 2005;80(8):728-732.
 36. Rabinowitz HK, Diamond JJ, Markham FW, Wortman JR. Medical school programs to increase the rural physician supply: a systematic review and projected impact of widespread replication. *Acad Med.* 2008;83(3):235-243.
 37. Sempowski IP. Effectiveness of financial incentives in exchange for rural and underserved area return-of-service commitments: systematic review of the literature. *Can J Rural Med.* 2004;9(2):82-88.