

**Final Report #126**

# **Family Medicine Residency Training in Rural Locations**

**July 2010**

This study was supported through the WWAMI Rural Health Research Center with funding from the federal Office of Rural Health Policy, Health Resources and Services Administration, Department of Health and Human Services (Grant #HRSAU1CRH03712-04-00).



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## ABOUT THE CENTER

The WWAMI Rural Health Research Center (RHRC) is one of six centers supported by the Federal Office of Rural Health Policy (FORHP), a component of the Health Resources and Services Administration (HRSA) of the U.S. Public Health Service. The major focus of the RHRC is to perform policy-oriented research on issues related to rural health care and the rural health professional workforce. Specific interests of the RHRC include the adequacy of the supply and education of rural health care professionals, and the availability and quality of health care for rural populations, with particular emphasis on access to high-quality care for vulnerable and minority rural populations.

The WWAMI Rural Health Research Center is based in the Department of Family Medicine at the University of Washington School of Medicine, and has close working relationships with the WWAMI Center for Health Workforce Studies, state offices of rural health, and the other health science schools at the University, as well as with other major universities in the five WWAMI states: Washington, Wyoming, Alaska, Montana, and Idaho. The University of Washington has over 30 years of experience as part of a decentralized educational research and service consortium involving the WWAMI states, and the activities of the RHRC are particularly focused on the needs and challenges in these states.

The Rural Health Final Report Series is a means of distributing prepublication articles and other working papers to colleagues in the field. Your comments on these papers are welcome, and should be addressed directly to the authors. Questions about the WWAMI Rural Health Research Center should be addressed to:

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## EXECUTIVE SUMMARY

Family physicians provide the majority of medical care to rural and underserved areas in the United States, particularly in small and remote areas. Rural physician supply depends upon the capacity of family medicine residency training programs to prepare residents for rural practice. However, recent decreases in interest in family medicine and declining family medicine residency match rates may jeopardize rural family physician supply. While federal health reform legislation offers incentives for primary care and rural practice, it will take time for new policies to reverse trends. We surveyed all U.S. family medicine residency programs about their rural training programs in 2007 and compared findings to our 2000 survey.

## METHODS

We mailed a survey to all 439 eligible, accredited family medicine residency programs in the United States using a list from the American Academy of Family Physicians. After several mailings, we obtained 354 responses (80.6%). The instrument asked programs how important rural or urban training was to their mission, whether there were other residency programs in their teaching hospital, the number and location of rural training sites, how many residents train in rural locations, the duration of training experiences, and whether programs had a rural training track (RTT), rural block rotations, or rural clinic sessions. We identified rural and urban training sites and mapped the location of each residency and its rural training sites to Rural-Urban Commuting Areas (RUCA) codes.

## RESULTS

Over 90% of programs were located in an urban area, with 7% located in large rural areas. About half of the respondents overall and 90% of rural program respondents considered rural training to be a “very important” part of their mission. Rural residency programs tended to be located in community-based hospitals and were the sole residency in the hospital. Rural residency programs provided a higher proportion of rural training than urban programs, but because more programs were in urban settings, there was more rural training in urban than rural programs. Overall, 15% of respondents had a formal RTT; of these, 61% were in rural and 10% in urban programs. Rural residency programs conducted 83% of all rural residency training in RUCA-defined rural areas. Comparing the 2000 and 2007 surveys, rural training increased from 372 to 408 FTEs, but rural training in urban programs declined from 186 to 79 FTEs, resulting in an overall decrease in the amount of rural-focused family medicine training.

## DISCUSSION AND POLICY IMPLICATIONS

The continuing operation of rural family medicine training is vital to address persistent shortages of rural family physicians. The survey revealed that 33 rural programs account for over 80% of family medicine training occurring in rural sites, although some urban programs offer RTTs. Expansion in rural training venues needed to improve the supply of rural primary care is limited by the Medicare graduate medical education (GME) funding caps on residency slots, financial hardships facing rural hospitals, and challenges of creating residency training programs. As medical school class size expands, osteopathic schools emphasize rural

training, and the economic downturn increases the pool of medical school applicants, pressure will mount for expanded residency training programs. National rural training policy should address undergraduate and graduate medical education and pipeline issues such as loan repayment and rural physician retention. The survey identified over 50 residency programs offering RTT experiences, which have a strong track record of producing rural

physicians but are underfunded. Recent legislation may clarify the RTT definition, allow GME caps to be reallocated, and promote growth of RTTs. New models such as “teaching health centers” offering outpatient training in underserved areas can also promote rural residency training. Health reform legislation has the potential to encourage the growth of medical training that supports rural primary care.

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## INTRODUCTION

Family physicians continue to provide the majority of physician-directed medical care to rural and underserved areas in the country, particularly in smaller and more remote areas.<sup>1-3</sup> As a result, the supply of rural physicians depends in large part upon the number and ability of family medicine residency training programs to prepare residents for rural practice. While all family medicine residency programs encompass a broad clinical spectrum including obstetrical, pediatric, and surgical training, training in rural settings is associated with a two- to three-fold increased likelihood of rural practice.<sup>4-7</sup> This is especially true of residency programs with rural training tracks (RTTs), during which resident physicians spend at least two years in a full-time rural continuity clinic.<sup>8,9</sup>

While rural physician production and distribution have remained relatively stable over the past decade, recent decreases in medical student interest in family medicine and the decline in family medicine residency match rates may have serious implications for rural family physician supply.<sup>1,10,11</sup> More generally, the resultant increase in specialty physician production means fewer physicians in rural primary care. Even though the proportion of international medical graduates (IMGs) and osteopathic physicians has been higher historically among rural physicians compared to urban physicians, osteopaths and IMGs have begun to follow the trend of increasing specialization with fewer graduates entering primary care.<sup>1</sup> Finally, the perennial financial pressures on residency training programs are often more pronounced in rural programs.<sup>2</sup>

Although the recently passed federal health reform legislation, the Patient Protection and Affordable Care Act (PPACA), has numerous incentives for primary care and rural practice, the time-consuming nature of the rural physician production pipeline predicts that it may be many years before the impact of this legislation will become apparent. In order to describe the current state of rural family medicine residency training, we

surveyed all U.S. family medicine residency programs about the current status and location of their rural training for residents.

This survey repeats a previous survey performed by the Washington-Wyoming-Alaska-Montana-Idaho Rural Health Research Center (WWAMI RHRC) in 2000. Our earlier study found that only 33 family medicine residency programs—7.3% of the total at the time of the survey—were physically located in rural areas.<sup>12</sup> These 33 programs accounted for 71% of all rural family medicine training occurring in the United States. For the current study, we sought to compare changes in the amount and location of rural training from 2000 to 2007. In addition, we asked specifically about RTTs and other special programs to train rural physicians.

## METHODS

We administered a survey by mail to all accredited family medicine residency programs in the nation (excluding closed, military, and Puerto Rican programs) about their rural training activities. To ensure comparability, we used the same questions regarding rural training as on the 2000 questionnaire. The instrument asked programs how important rural or urban training was to their mission, whether there were other residency programs in their teaching hospital, the number and location of rural training sites, how many residents train in rural locations, the duration in months of these training experiences, and whether programs had an RTT, rural block rotations, or rural clinic sessions.

We obtained a mailing list of all family medicine residency programs and their directors from the American Academy of Family Physicians (AAFP). The AAFP database included the program ZIP code, the number of residents in each training year, as well as whether the program was university or community based. The first mailing in February 2007 included an

introductory letter on University of Washington School of Medicine letterhead, a three-page questionnaire, and a postage-paid return envelope. Two weeks later, all non-respondents received a postcard that reminded them to return the survey. A third mailing, sent on letterhead from the Robert Graham Center for Policy Studies in Family Medicine and Primary Care, was sent to all non-responding residencies two weeks after the postcard. In mid-April, a third questionnaire was sent with a letter from the president of the University of Washington Family Medicine Residency Network, who encouraged the residency directors to complete the questionnaire. A final mailing was sent to non-responding residencies in late May. This mailing included a handwritten note from one of the family physicians working on the study, asking for cooperation in completing the questionnaire. The mailing also included a replacement questionnaire and postage-paid return envelope.

Attempts were then made to contact program directors who had not responded to the mail survey. They were given an opportunity to complete the questionnaire over the phone or to have another questionnaire re-mailed, e-mailed, or faxed to them. Up to four attempts were made to reach each non-responding program, with particular emphasis on rural training programs. This follow-up occurred throughout the summer of 2007.

To identify and describe rural and urban training sites, the location of each residency and its rural training sites were geocoded to ZIP code, which allowed each to be matched to its Rural-Urban Commuting Areas (RUCA) code. RUCA codes are based on both core population size and work commuting flow relationships. Because they are constructed from census tracts, RUCA codes provide a more refined means of identifying degree of rurality than county-based approaches.<sup>13,14</sup> A ZIP code approximation version of the census tract-based RUCA codes has been developed (<http://depts.washington.edu/uwruca/data.html>) and was used in this study. Core populations are categorized as urban (continuously built up areas of 50,000 or more), large rural (10,000-49,999), and small rural (2,500-9,999). Work commuting flow accounts for the direction and the extent to which a core's population commutes to a city or town of similar or larger size. RUCA version 2.0, used in this study, consists of 10 general settlement types that are themselves further broken down in the 33 subcategories based on work commuting patterns. These 33 subcategories were aggregated to create a 4-category classification that identifies locations as urban, large rural, small rural, and isolated small rural. For many of the analyses, we combined all of the rural categories (large, small, isolated small) into one "rural" category.

Our analyses compared rural training quantity and type by program location (rural vs. urban), program

type (university vs. community), and other program characteristics. In order to quantify the amount of rural training, we calculated the number of resident full-time equivalents (FTEs) in each rural training location by multiplying the number of training months by the number of residents in each location and dividing by 12. In cases where programs reported residents in training settings but did not identify the exact location, or when programs reported fewer FTEs than the known number of program residents, we attributed these FTEs to the home program's location. This same allocation method was used in the 2000 survey that we were working to replicate. All analyses were conducted using SPSS. The University of Washington Human Subjects Institutional Review Board granted this study a Certification of Exemption (#07-6760-X/A).

## RESULTS

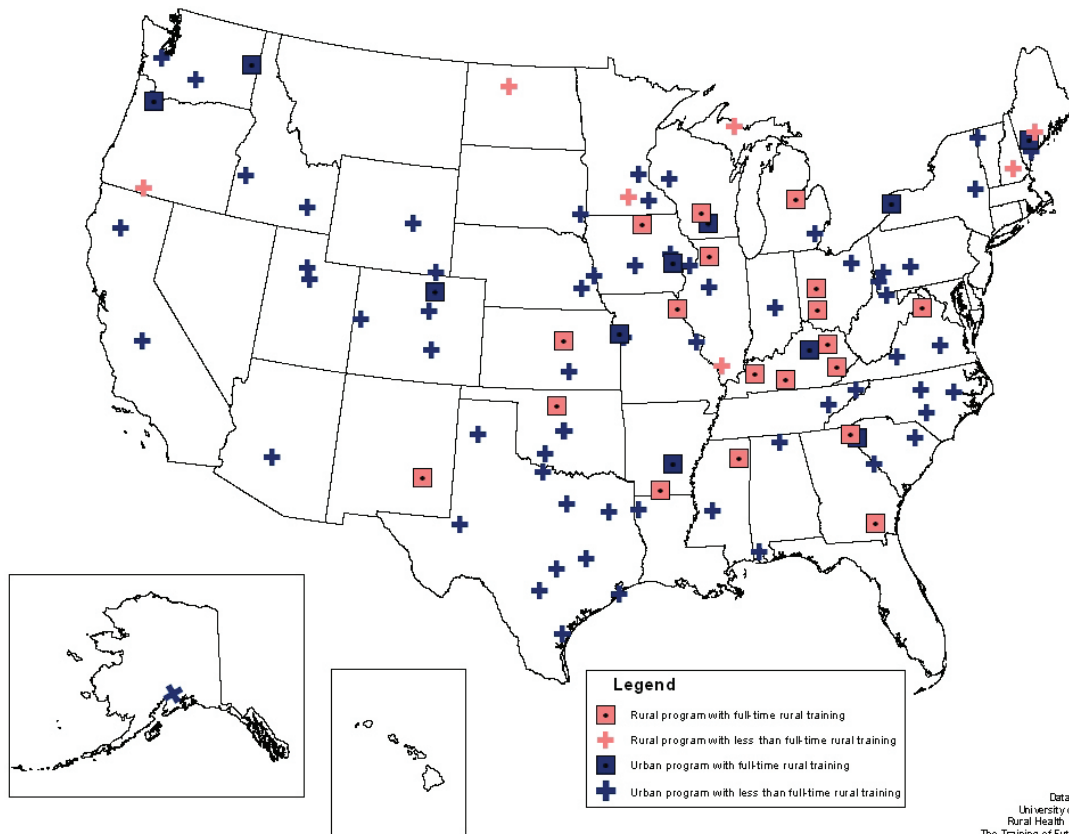
Of 439 eligible family medicine residency programs, 354 responded to the questionnaire, for an overall response rate of 80.6%. Of the survey respondents, no programs were located in isolated small RUCA locations, only 2 (0%) residency programs were located in a small rural RUCA location, and 31 (8.8%) programs were located in a large rural RUCA location. Of these 33 rural programs, 31 (93.9%) programs returned surveys. The remaining 323 responding programs were located in an urban area, yielding a 79.6% urban programs response rate. The map (Figure 1) displays the locations of responding urban and rural residency programs with rural training experiences.

### RURAL/URBAN EMPHASIS

Among all of the residency program respondents, 49.4% considered rural training to be a "very important" part of their mission. Among rural programs, 90.3% considered rural training to be "very important." In contrast, only 40.3% of urban residency programs considered urban underserved training to be "very important" (Table 1).

Rural residency programs were more likely to be located in community-based hospitals and be the only residency in the hospital ( $P < .01$ ). In rural residency programs, 96.7% were "unopposed," meaning they were the only residency program located in their teaching hospital. In contrast, over half of urban programs (53.2%) reported having other specialty residency programs in their teaching hospital. This difference was statistically significant ( $P < .001$ ). All of the rural programs were at community-based hospitals rather than university-based hospitals, but almost all (93.5%) were either university affiliated or administered. (Table 1)

**Figure 1: U.S. Family Medicine Residency Training Programs Reporting Full-Time or Other Rural Training, 2007**



**Table 1: Characteristics of Family Medicine Residency Programs**

Characteristics	Large Rural Programs (n = 29)	Small Rural Programs (n = 2)	Urban Programs (n = varies 314-323)
Rural training "very important"	26 (89.7%)	2 (100.0%)	144 (45.4%)
Urban training "very important"	0 (0.0%)	0 (0.0%)	127 (40.3%)
Only program in hospital	27 (93.1%)	2 (100.0%)	147 (46.8%)
Program structure			
Community based	2 (6.9%)	0 (0.0%)	12 (3.7%)
Community based, university affiliated	18 (62.1%)	1 (50.0%)	204 (63.2%)
Community based, university administered	9 (31.0%)	1 (50.0%)	62 (19.2%)
University-based	0 (0.0%)	0 (0.0%)	42 (13.0%)
Has rural training track	17 (58.6%)	2 (100.0%)	34 (10.5%)

## RURAL TRAINING OPPORTUNITIES

Rural residency programs provided a higher proportion of RTTs and rural training opportunities than urban programs. Because of the large number of urban programs, however, there were more RTTs in urban programs than rural. Overall, 53 (15.0%) family medicine residency programs that responded to the survey reported having a formal “rural training track.” Nineteen (61.3%) of the rural programs had a formal “rural training track” compared to only 34 (10.5%) of the urban programs.

## RURAL TRAINING FTEs

Programs self-reported or were allocated a total of 7,593 family medicine residency training FTEs (Table 2). As was the case in 2000, the vast majority of reported residency training continues to take place in urban settings, with 6,915 FTEs (91.1%) reported for urban locations and 678 (8.9%) for rural locations. Of the total of 678 reported rural training FTEs, 437 FTEs or almost two thirds of the total was reported as being provided by the 323 urban residency programs, while 241 FTEs or roughly one third of the total was reported by the 31 rural programs.

In 2000, however, we observed that such “reported” rural training does not necessarily translate into training in “actual” rural locations verified by the RUCA code of the training site. Using the same methodology as the 2000 survey, we geocoded the ZIP codes of the reported rural training to the RUCA codes of the actual practice site location. We attributed unreported program FTEs (based on the known number of program residents) to the home program location. (Table 3) Nearly all (99.9%) of the 241 FTEs of rural training reported by rural residency programs took place in rural locations. On the other hand, only 95 FTEs (21.7%) of the 437 rural training FTEs that had been reported by urban programs actually occurred in RUCA-defined rural areas.

Using these geocoded, RUCA-defined rural training FTE calculations, 554 FTEs (7.3%) of family medicine residency training actually occurred in rural locations. Of these 554 FTEs, 95 FTEs (17.1%) of rural training was conducted by urban residency programs. As a result, rural residency programs were responsible for conducting 83% of all rural residency training occurring in RUCA-defined rural locations.

**Table 2: Reported Training Type FTEs by Location of Program**

Training Type	Large Rural Programs (n = 29)	Small Rural Programs (n = 2)	Urban Programs (n = 323)	Total
Full-time rural track FTEs	178	13	233	424
Rural block rotation FTEs	3	0	91	94
Rural continuity clinic FTEs	21	0	96	117
Other Rural Training FTEs	27	0	17	44
Total rural training FTEs	228	13	437	678
Total training FTEs	435	15	7,143	7,593
Reported rural training % of total	52.5	86.7	6.1	8.9

**Table 3: Reported Rural and Actual Rural Training by Program Location**

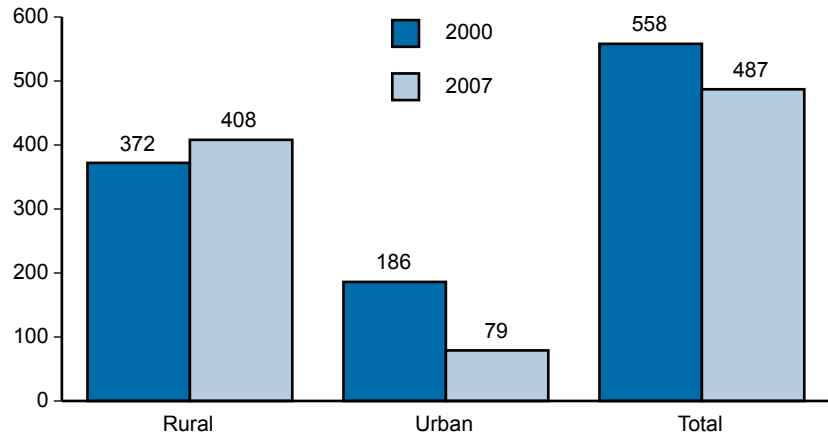
	Rural Programs (large and small rural) (n = 31)	Urban Programs (n = 323)	Total
Reported rural FTEs	241	437	678
Attributed rural FTEs*	209	0	
Actual rural training FTEs	450	95	545

\* When a program reported fewer FTEs than the known number of program residents, the missing FTEs were attributed to the location of the home program.



Finally, using only the cohort of training programs and actual rural training FTE that were present in both the 2000 and 2007 surveys, we compared the change in the amount of rural training taking place during the two points in time. Of the 23 rural programs who were in both surveys, the total amount of rural training increased from 372 FTEs to 408 FTEs. The urban program cohort (n = 294), however, experienced a decline in rural training from 186 FTEs to 79 FTEs. As seen in Figure 2, an overall decrease in the amount of rural family medicine residency training occurred that was driven by the decrease in the amount of rural training by urban residency programs.

**Figure 2: Actual Rural Training\* FTEs in Rural and Urban Residency Programs†, 2000 vs. 2007**



\* Actual rural training is defined as training that occurred in a RUCA-defined rural location.  
 † This figure only includes the 317 programs (23 rural, 294 urban) for which we had data in both 2000 and 2007.

## NON-RESPONDENT ANALYSIS

In the non-respondent analysis, there was no difference in response rate between university-based and community-based programs. There was a significant difference in response rate between urban and rural programs (80% vs. 94%,  $P = .04$ ). This was most likely attributable to the emphasis we placed on following up survey responses with rural programs.

## DISCUSSION

In light of the persistent shortage of rural family physicians and the pressures facing family medicine and primary care, the fact that rural family medicine training programs continue to exist despite adverse financial pressures and train rural family physicians is heartening. The preponderance of this training occurs in the handful of rural-located programs, although urban programs also continue to have a role in rural training. The results of this national survey of family medicine residency training programs revealed that 33 rural programs, less than 8% of the total number of programs, accounted for over 80% of the training in family medicine actually occurring in rural locations. Despite the fact that these rural family medicine training programs continued to operate, their total contribution to meeting rural primary care needs is, at best, modest, given the limited amount of total FTEs they provide. Our findings suggest that expansion in rural family medicine training venues would be needed

to markedly improve the workforce pipeline and supply of rural primary care physicians to meet the needs of the roughly 20% of the U.S. population residing in rural locations.

The success of rural residency training, particularly longitudinal experiences, in producing rural physicians is well documented.<sup>5,9</sup> The likelihood, however, of significantly expanding the number of rural residency programs or even the number of rural locations that train residents is limited. Challenges include the Medicare graduate medical education (GME) funding cap on residency slots and the financial challenges facing many rural hospitals and communities.<sup>15,16</sup>

Whether or not urban family medicine programs can fill the gap in the rural primary care workforce is an open question. Even though they are not located in rural areas, a significant number of urban family medicine training programs are committed to training rural family physicians and offer RTTs. No one doubts the commitment of these programs to training rural physicians. While the difference between “reported” and “actual” rural training is similar to that found in our previous study, there are other possible explanations. Training locations may be defined as “urban” using RUCA definitions but may still be sparsely populated and serve a predominantly rural patient population. Commonly, many training locations that start off as clear rural locations lose their rural status as a result of urban growth. In any case, the urban training programs believe that these training experiences constitute rural exposure. Further examination of this discrepancy is warranted, and in

particular, studies that track trends in the contribution of these programs to the rural primary care workforce are needed.

This study has several limitations. Almost one fifth of residency programs did not respond to the survey, but this lack of representation was offset by a nearly complete response from the rural programs that were the primary focus of this study. Additionally, the survey did not ask about urban training experiences. As a result, the attribution of unreported FTEs by programs to the home program locations may be inaccurate. On the other hand, this methodology allowed us to compare the results from the previous survey to these data.

## POLICY DISCUSSION

This report describes the limited state of rural family medicine residency training. While clearly inadequate to meet rural primary care needs into the future, it affords the opportunity to examine GME policy and current issues.

GME training is a major rate-limiting step for expanding the rural physician workforce. The administrative and financial challenges of creating a residency training program are formidable. GME training slots, funded by Medicare, have been essentially frozen since the Balanced Budget Act of 1997. As medical schools continue to expand their class size, new osteopathic schools open and renew their emphasis on rural and underserved student training, and the economic downturn increases the pool of qualified medical school applicants, the geographic and numeric limitations on GME are almost certain to attract renewed attention. That is, the expanding cohort of medical school graduates will put pressure upon residency training programs to expand. In addition, there will likely be a limitation on the number of slots that are currently filled by IMG physicians in favor of American graduates. These pressures will be more pronounced in hospitals that are already over their GME cap.

The PPACA includes provisions to redistribute unused GME slots from hospitals that have closed or have been unable to fill to rural and underserved training sites. In addition, new programs to encourage and emphasize outpatient training in underserved communities such as “teaching health centers” may support rural residency training. These new developments provided through the PPACA may provide a much-needed mechanism to expand rural training opportunities.

There currently exists no consistent national physician workforce policy to address rural workforce shortages. The PPACA has led to the creation of a national health workforce commission. National policy targeting rural training emanating from this new infrastructure will need to encompass undergraduate and graduate

medical education, as well as other pipeline issues such as community engagement, loan repayment or scholarship, and rural physician retention.

The survey identified over 50 residency programs that reported having RTT experiences. RTTs boast a strong track record of producing rural physicians but have been chronically underfunded and underdeveloped.<sup>8,17</sup> RTTs have an exemption from the GME residency funding cap from legislation in the Balanced Budget Refinement Act of 1999.<sup>15</sup> Recent health reform legislation may speed change by clarifying the RTT definition, allowing GME caps to be reallocated and thereby incentivize the growth of RTTs.

In summary, rural family medicine residency training remains viable and an important pipeline for rural health care. The volume of training has not kept pace with either rural population growth or the new expansion of medical schools. Recent legislation holds promise of changes to encourage the growth of undergraduate and graduate medical training to support rural primary care.

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