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## **Lessons Learned as Thomas Jefferson University's Rural Physician Shortage Area Program (PSAP) Approaches the Half-Century**

**Mark**

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## **Abstract**

To help increase the supply and retention of rural family physicians, Thomas Jefferson University initiated the Physician Shortage Area Program (PSAP) in 1974. The program selectively admits medical school applicants who both grew up in a rural area and plan to practice in a rural area. During medical school, PSAP students have ongoing mentoring and rural clinical experiences.

As the program now approaches the half-century mark, this commentary summarizes several important lessons learned. First, outcomes research is critical, and program leaders have been able to publish 15 papers and a book about the PSAP and its outcomes. Second, these studies have shown that the program has been highly successful, with PSAP graduates 8.5-9.9 times more likely to enter rural family medicine than their peers, and that the PSAP contributed 12% of all rural family physicians in Pennsylvania. Other similar medical school rural programs have had comparable success, with more than half of all graduates combined (including PSAP graduates) practicing rural. Third, long-term retention has a multiplicative impact. Long-term retention of PSAP graduates in rural family medicine was greater than 70% after 20-25 years. Fourth, research has shown that the admissions component accounted for approximately three-quarters of the PSAP's success. Three factors available at the time of matriculation (rural background, plans for rural practice, and plans for family medicine) identified almost 80% of all Jefferson graduates in rural practice 3 decades later. Having a peer group with similar backgrounds, mentoring, and the rural curriculum were also very important. Fifth, wanting to live rural appears key to the rural practice decision. Finally, given that medical school programs

like the PSAP produce substantial increases in the supply and retention of rural physicians while requiring modest resources, medical schools can have a critical role in addressing the rural physician shortage.

The shortage of physicians in rural areas is one of the most enduring problems in U.S. health care, with serious health consequences for those living rural. This contrasts with non-rural areas, where access to care is more often limited by economic and social factors. Rural inhabitants are also older, poorer, sicker, and more often medically uninsured than those in non-rural areas. Rural areas contain almost 20% of the U.S. population but have a substantially lower per capita supply of physicians (including family physicians) than metropolitan areas. Approximately one-third of rural inhabitants live in federally designated Health Professional Shortage Areas (HPSAs), and most HPSAs are located in rural areas. This problem is clearly seen in Pennsylvania, where almost half of all physicians practice in just 3 large metropolitan counties (Philadelphia County, its suburban Montgomery County, and Pittsburgh's Allegheny County), although almost three-quarters of the population lives in the other 64 counties. And with fewer than 4% of current U.S. medical students planning to enter rural or small-town practice, this longstanding problem is likely to continue.<sup>1-6</sup>

To address this problem, Sidney Kimmel Medical College (previously Jefferson Medical College) at Thomas Jefferson University developed the rural Physician Shortage Area Program (PSAP) in 1974. The program set out to increase the supply and retention of family physicians in small towns and rural areas, primarily in Pennsylvania. The PSAP recruited and selectively admitted medical school applicants who both (1) grew up in rural areas or small towns (i.e., not large metropolitan areas, and not commuting suburbs of those areas), and (2) were also committed to practice family medicine in a similar area. In 2009, the program expanded its focus to include those planning any medical specialty needed in rural areas and small towns, and to the state of Delaware. PSAP applicants complete a brief additional application and submit 3 letters

of support from individuals in their hometown. Jefferson works cooperatively with 8 undergraduate colleges and universities in Pennsylvania and Delaware to help recruit and select students for the program.

During most of the past 48 years, between 5 and 15 PSAP students have enrolled in each class. Throughout medical school, PSAP students are closely mentored and advised (via regular email, monthly lunch meetings, and individual meetings) by the small group of PSAP faculty (the authors of this commentary). They are also paired with a “Big Sib” mentor from the previous PSAP class to help guide them through medical school. During their core clinical curriculum, PSAP students must take one of their required 6-week rotations in a smaller community outside of the Philadelphia metropolitan area. During their final year, they are encouraged to take a rural preceptorship or elective rotation. PSAP students are also eligible for additional financial aid during medical school. This is usually in the form of need-based loans (though more recently 2 scholarships have been established); however, this additional support represents only a very small percentage of the overall educational cost. Upon graduation, PSAP students match at the residency program of their choice, similar to all students. After completing their training, they are encouraged to practice in a small town or rural area, although no formal mechanism exists to ensure compliance. Additional details regarding the PSAP have previously been published.<sup>1-16</sup>

As the PSAP now approaches the half-century mark, we have learned several important lessons, which we summarize here.

## **Outcomes Research Is Essential**

While many academic institutions initiate programs intending to shape the physician workforce, these are not always evaluated to determine whether they are successful. Educational program evaluation is often difficult, requiring long timeframes with outcomes that occur well after graduation. For rural programs, evaluation is also hampered by various definitions of rural, as well as the changing rural character of communities over decades. At Jefferson, we were able to carry out our PSAP outcomes research due to the existence of the Jefferson Longitudinal Study (JLS) of Medical Education, which has tracked our students and graduates since the entering class of 1964, and contains over 6 million pieces of data on their background, performance, and other variables.<sup>17</sup> This has resulted in 15 published papers on PSAP outcomes (including 2 in the *New England Journal of Medicine*, 3 in the *Journal of the American Medical Association*, and 7 in *Academic Medicine*), and a book.<sup>1-16</sup> This outcomes research enables us to demonstrate the PSAP's success and understand what program characteristics lead to this success.

## **The PSAP Works, as Do Other Similar Medical School Rural Programs**

Data from the JLS have shown that PSAP graduates from 2 different cohorts (the graduating classes of 1978-1991, and 1992-2002) were 8.5-9.9 times more likely to practice rural family medicine than their non-PSAP classmates, 2.7-3 times more likely to practice any specialty in a rural area, and 4-4.7 times more likely to practice family medicine. This small program produced 12% of all rural family physicians in Pennsylvania who graduated from U.S. and international medical schools from 1978-1991. Overall, the vast majority (84%) of PSAP graduates were practicing either in a rural or small metropolitan area or in one of the primary care specialties;



only 2%-3% of non-PSAP graduates were practicing rural family medicine.<sup>1,4</sup> The program was successful for both men and women graduates of the program.<sup>5</sup>

While the PSAP is one of the most recognized medical school rural programs<sup>18</sup> (in large part due to its published outcomes research), it is not the only successful program.<sup>19,20</sup> Combined outcomes of 1,600 graduates over 3 decades from 6 longstanding medical school rural programs, including the PSAP, showed that a weighted average of 53%-64% of their graduates were practicing rural (depending on the definition of rural used).<sup>6-7</sup> All programs included in this analysis had an identified cohort of students likely to practice rural and a required rural clinical curriculum, but the programs were situated in both public and private schools, and were located in multiple regions of the country, demonstrating that this approach to medical education can have a positive effect on the rural physician workforce in many settings. Medical school rural programs also accounted for more rural family physicians in their states than did international medical graduates (IMGs).<sup>8</sup>

## **Long-Term Retention Has a Multiplicative Impact**

Although “recruitment and retention” are frequently mentioned together, they represent very different outcomes. Compared with recruitment, retention has a multiplicative effect on the rural physician workforce. For example, training 1 physician who stays in a rural area for a 35-year career has a similar impact on a community as training 5 physicians who each stay for an average of 7 years. Long-term follow-up of PSAP graduates has shown that approximately 70% of PSAP graduates have remained in rural family practice in the same area for at least 20-25

years after first located in practice, and an additional 10% had previously moved to another rural area.<sup>9-10</sup>

## **Admissions Is Most Important**

Research has consistently found that growing up in a rural location is the strongest predictor of choosing a rural practice location. PSAP outcomes have similarly shown that the admissions component of the program accounted for approximately three-quarters of its success.<sup>11</sup> Three factors known at the time of medical school matriculation—growing up in a rural area, plans for rural practice, and plans for family medicine—were found to be powerful and additive predictors of rural practice 3 decades later, similar in magnitude to the well accepted relationship between multiple predictive risk factors and coronary heart disease.<sup>21</sup> Despite the numerous factors that are known to influence physician practice location, many of which occur after medical school matriculation (e.g., rural curriculum, residency training location, spouse and family preferences, and income), the presence of these 3 powerful factors at matriculation identified almost 80% of all Jefferson graduates practicing rural 3 decades later; only 22% of rural physicians had none of these predictors.<sup>12</sup> While these admissions factors represent the strongest predictors of rural practice, other program components (e.g., mentoring, the rural curriculum, and having a peer group with similar backgrounds) collectively added an additional 25% to the PSAP success, a substantial and very important increase.<sup>11</sup> These 3 components are also often mentioned by PSAP students as the most influential parts of the program.

## **Wanting to Live Rural Is Key to the Decision to Practice Rural**

Addressing physician shortages in rural and urban areas are often grouped together, as they both represent important needs. However, we have found that, in contrast to students who plan to care for the urban underserved, most students who are planning to practice in rural areas primarily decide to live in a rural area, and thus to care for their community. They often desire a rural lifestyle, want to have their children educated in rural schools, and prefer to practice a broader scope of medicine with more professional autonomy.<sup>13</sup> This differs from those planning to practice in urban underserved areas, who less commonly live in the community where they provide care, often prefer a more suburban or urban lifestyle with access to suburban or select urban schools, and many are employed by academic health systems. Predicting future practice locale at the time of admission based only on the applicant's stated intentions is difficult; however, linking this stated practice intent with rural background has been a key to the PSAP success. In contrast, there is less research linking urban background with urban underserved practice. While some believe that income is also a major factor in physicians' choice of non-rural practice, data suggests that rural physicians earn similar levels of income compared with their non-rural counterparts and, given their substantially lower housing costs, actually have a higher income when adjusting for cost of living and specialty.<sup>3</sup>

## **Medical Schools Can Have a Critical Role in Addressing the Rural Physician Shortage**

Medical school rural programs like Jefferson's PSAP will not solve the entire rural physician shortage but can be a critical solution for many communities. They are among the most successful evidence-based strategies, resulting in a high percentage of physicians practicing and remaining long-term in rural areas. Rural programs may also require fewer resources; the cost of

the PSAP, supported by Jefferson, is largely built into the ongoing cost of the admissions process and curriculum. Additional resources are needed for mentoring, the partial time of 2 faculty, and administrative support.

In addition to the critical role of medical school rural programs in addressing this problem, other policy solutions, such as pathway programs focusing on high school and college students, expanding medical school rural clinical experiences, and rural residency programs would be helpful. Other strategies, such as increasing the supply of National Health Service Corps physicians, expanding other loan repayment programs, increasing the supply of IMGs entering rural areas, and enhanced reimbursement for rural physicians, are also very important. State and federal support for medical school rural programs is vital for continuation and expansion of these programs. For example, federal support for these rural programs similar to the well-funded National Institutes of Health Medical Scientist Training Program that addresses the shortage of physician researchers (and which has a similar level of success as medical school rural programs), could go far in easing the rural physician shortage.<sup>22</sup>

While some have questioned whether medical schools have a role in addressing the rural physician shortage, the clearest evidence of their importance are the outcomes of the PSAP and other similar programs. The medical school admissions process in particular directly influences who becomes a physician. To identify those most likely to practice rural, the PSAP preferentially admits qualified applicants who meet the same standards as all applicants, but who also demonstrate a rural background and rural career plans. PSAP graduates performed similarly to their peers throughout medical school and during residency training<sup>2, 14</sup>—and have practiced

rural much more frequently than their classmates. Medical schools also have a key role in mentoring and advising students, as well as providing clinical rotations to expose and support a career in rural practice. Projections show that if all U.S. medical schools developed medical school rural programs similar to the PSAP with 10 students per class, this could more than double the current output of rural doctors.<sup>6</sup> Considering the multiplicative effects of retention, the long-term impact would be far greater. Even a relatively small absolute number of additional physicians would have a disproportionately positive effect on many small towns. Jefferson's PSAP in particular has shown that if a private medical school located in a major metropolitan area in the Northeast region of the United States can increase the supply and retention of rural physicians, then this can be done at any medical school.

## **Conclusion**

For most of the past century, a prevailing myth regarding rural practice, included in a study of the rural physician shortage sponsored by the General Education Board (1924) was that “admitting more students from rural districts... would only produce inferior doctors without altering the underlying demographic trends.”<sup>23</sup> The reality, however, is exactly the opposite. Extensive experience and outcomes research from Jefferson's PSAP and a number of other medical school rural programs over the past half-century has clearly shown their success in increasing the supply and long-term retention of highly competent rural physicians. We hope the lessons we have learned from this program, its students and graduates, and its outcomes can be of value to others in addressing this critical and long ignored health care problem.

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