
Rural Physician Assistants: a Survey of Graduates of MEDEX Northwest

ERIC H. LARSON, MS
L. GARY HART, PhD
JEFFREY HUMMEL MD, MPH

All the authors are with the University of Washington, Seattle. Mr. Larson is Associate Director of Research at the Washington Alaska Montana Idaho (WAMI) Rural Health Research Center, Department of Family Medicine. Dr. Hart is Principal Investigator and Director of the WAMI Rural Health Research Center and Research Associate Professor of Family Medicine. Dr. Hummel is Medical Director of MEDEX Northwest, the physician assistant training program at the University of Washington.

This work was supported by a grant to the WAMI Rural Health Research Center of the University of Washington School of Medicine from the Office of Rural Health Policy, Health Resources and Services Administration, Public Health Service.

Tearsheet requests to Mr. Larson, WAMI Rural Health Research Center, Department of Family Medicine HQ-30, University of Washington, Seattle, WA 98195; tel. 206-685-0401, FAX 206-685-0610.

Synopsis.....

Graduates of MEDEX Northwest, the physician assistant training program at the University of Washington, were surveyed to describe differences between physician assistants practicing in rural settings and those practicing in urban settings. Differences in demography, satisfaction with practice and community, practice history, and practice content

were explored. Of the 341 traceable graduates, 295 (86.5 percent) responded to the mail survey.

Although rural- and urban-practicing physician assistants are remarkably similar in most respects— income, hours worked, levels of practice satisfaction, for example—those in rural primary care reported performing a much wider range of medical and administrative tasks than those in urban practice. Half of the physician assistants who grew up in small towns were practicing in rural places compared with 18 percent of those from large towns.

The broader scope of practice available to primary care physician assistants in rural areas may be of particular interest to those considering rural careers, to people who train physician assistants, and to rural communities trying to recruit and retain physician assistants. Results also suggest that recruitment of students for rural practice should focus on rural residents.

Some problems that rural practitioners are more likely to face than urban ones, such as unreasonable night call schedules and lack of acknowledgement and respect for them as professionals, need to be addressed if rural communities are to be able to attract and retain physician assistants.

TRAINING PHYSICIAN ASSISTANTS (PAs) as a new type of mid-level medical practitioner emerged in the mid-1960s. Drawing initially from a pool of former military corpsmen, then gradually including women and men from more diverse backgrounds, training programs for PAs were expected to produce graduates who would fill gaps left by the anticipated shortage of physicians in the United States in the 1970s and 1980s (1). Availability of primary care, especially for rural and other underserved populations, also appeared to be threatened by the increasing specialization of physicians and the increasing cost of health care.

More than 19,000 PAs currently practice in the United States (2). As roles for them in surgical specialties and subspecialties of internal medicine have emerged, and as physician and patient acceptance of them has increased, the proportion of PAs entering

primary care practice has decreased. In 1991, approximately 53 percent practiced in primary care settings, a decrease from about 69 percent in 1978 (3).

Approximately 40 percent of PAs practice in towns with populations of less than 50,000, and the proportion practicing in towns of less than 10,000 population has decreased significantly from 27 percent in 1981 to 20 percent in 1989 (2). As the number of roles that PAs can fill in medicine expands, it is likely that rural communities will find that the financial and lifestyle push and pull factors that contribute to the chronic shortage of physicians in rural areas (4) will make recruitment and retention of rural PAs a problem too.

In the early 1980s, coinciding roughly with the 10th anniversary of the profession, a large volume of work was published on the roles of PAs and the content of

PA practice (5–8). A few studies addressed particular aspects of rural PA practice (9,10), and the locational choices of PAs were explored in work by Gairola (11) and Hafferty and Goldberg (12). Little is known, however, about how rural PA practice content and style compares with urban practice, or about the rural-urban variation in personal and professional characteristics of PAs. Our study, based on a survey of the graduates of the MEDEX Northwest PA training program at the University of Washington, was carried out to help improve the understanding of the role of PAs in rural medicine.

MEDEX Northwest is one of the oldest PA training programs in the country. It was founded in 1969 with the expressed goal of graduating PAs who would practice in the underserved rural areas of the Pacific Northwest (13,14). Between 1970 and 1990, 425 students were graduated from the program. In our study, we attempted to discover and describe the differences in personal characteristics and practices of MEDEX graduates in rural areas compared with those in urban areas. Specifically, we sought to describe rural-urban differences in practice satisfaction, practice characteristics, practice content, and locational decision-making.

Methods

A four-page questionnaire was developed and pretested during the fall of 1990. Following the pretest, minor modifications were made to the survey instrument to improve its understandability. Questionnaires were mailed to all graduates of the MEDEX program for whom current addresses could be ascertained. Questions from the survey can be classified into five categories—demographic, practice characteristics, practice satisfaction, practice content, and practice history.

Questions were typically of the yes or no, multiple choice, or Likert scale types. One set of questions that asked respondents to list reasons for choosing their current locations was open-ended. The original responses to open-ended questions were collapsed during the coding process into nine relatively homogeneous categories. Respondents were also asked to list all the places where they had practiced as PAs. The population of each community listed and the county in which each community is located was determined and coded with the survey data. This information, along with the dates associated with each practice location, allowed construction of an individual locational history for each respondent.

The definition of rural and urban was county-based. Counties that are part of Metropolitan Statistical Areas

'As the number of roles that PAs can fill in medicine expands, it is likely that rural communities will find that the financial and lifestyle push and pull factors that contribute to the chronic shortage of physicians in rural areas will make recruitment and retention of rural PAs a problem too.'

were designated urban, and nonmetropolitan counties were designated rural (15). Equating rural and urban with nonmetropolitan and metropolitan by county is an oversimplification. On the other hand, it is a good operational definition that can be uniformly applied across States and was therefore adopted for use in this study.

We were especially interested in understanding the role of PAs in providing primary care in rural areas. To control for rural-urban specialty disparity (and the greater breadth of specialties available to urban PAs), we restricted many of the analyses to PAs practicing in the primary care specialties (family practice, general internal medicine, pediatrics, and obstetrics and gynecology).

Survey population and survey procedure. The survey was conducted between January and March 1991. Additionally, two followup surveys of respondents were performed based on information received in the initial questionnaire. First, the graduates who stopped practicing as PAs were resurveyed about their reasons for leaving the profession. The second followup survey was carried out because of our interest in the locational behavior of PAs. We resurveyed the practicing PAs who had changed their practice location between January 1987 and December 1990 about their reasons for moving. These two surveys will be referred to in the text as the "stopper survey" and the "mover survey."

The two resurvey instruments were similar in content and simply inquired about the importance of personal, professional, and community factors in the decision to quit practicing or move. An open-ended question gave the respondents an opportunity to comment on their reasons for leaving practice or moving. In the stopper survey, a second open-ended question asked about what might have influenced the

Table 1. Demographic characteristics and previous medical experience of MEDEX graduates by percentage and practice locations

Characteristic	Rural	Urban	All
Number of respondents.....	77	164	241
Age (mean years).....	41.8	41.1	41.3
Male	57.1	59.8	58.9
Married	177.9	65.0	69.2
Race-ethnic status:			
White.....	83.1	81.1	81.7
Black.....	21.3	5.5	4.1
Native American	311.7	1.8	5.0
Hispanic.....	11.3	6.7	5.0
Asian.....	...	3.0	2.1
College education:			
No degree.....	241.9	29.8	33.6
Associate degree.....	23.0	24.2	23.8
Bachelor's degree.....	32.4	36.6	35.3
Graduate degree.....	22.7	8.1	6.4
Board certified.....	80.5	79.3	79.7
Previous medical experience: ^{4,5}			
Military corpsmen	39.4	44.8	43.1
Paramedics, EMTs	7.6	12.0	10.6
Medical assistants.....	15.2	16.9	16.3
Licensed practical nurses...	13.6	16.9	15.9
Community health aides....	115.2	4.9	8.2
Registered nurses.....	28.8	21.1	23.6

¹Significant at .05

²Significant at .10

³Significant at .01

⁴Data on previous medical experience of 33 respondents were not available; the numbers of respondents on previous experience were 66 rural and 142 urban.

⁵Previous medical experience columns may add to more than 100 percent because some respondents had more than one type of medical experience prior to MEDEX training.

NOTE: EMTs = Emergency medical technicians.

respondent to stay in practice. Movers were asked about what might have influenced them to stay in their previous location. These questionnaires were kept as brief as possible (one page) to encourage a high response rate.

Data analysis. The analyses we present involve the comparison of PAs currently practicing in urban places with PAs currently practicing in rural places. Chi-square and t-tests were used to test for statistically significant rural-urban differences. Differences significant at the $\alpha = .10, .05,$ and $.01$ levels are identified in the tables.

Results

Current addresses for 341 of the 425 graduates of the MEDEX program were known. Three graduates are known to be deceased, and the 81 remaining graduates could not be located. Of the 341 traceable graduates, 295 responded to two mailings of the initial survey, for an overall response rate of 87.1 percent. A total of 47 respondents had retired or changed professions since graduating from MEDEX. Of this

group, 45 responded to two mailings of the followup survey, a response rate of 95.7 percent. Except for the analysis of the data from the stopper survey, these 47 were excluded from further analysis. Of the remaining 248 PAs, 3 were practicing in foreign countries, and 4 failed to provide usable information on the location of their current practice. These seven were also excluded from the analyses. In all, 82 PAs indicated that they had moved in the past 3 years. Of them, 75 responded to two mailings of the mover followup survey, a response rate of 91.4 percent.

Demographics, specialty, and employment type.

A summary of the demographic characteristics of rural and urban MEDEX graduates is presented in table 1. A few of the rural-urban differences deserve special attention. Approximately 60 percent of the respondents were men, reflecting the early MEDEX classes that were made up of former military corpsmen and predominantly male. American Indians and Alaska Natives are far more likely to practice in rural locations, and African American and Hispanic graduates are more likely to practice in urban settings. The large proportion of Alaska Native physician assistants in the rural population reflects the strong connections between MEDEX Northwest and Alaska. MEDEX has trained a number of community health aides from Alaskan Native health corporations, a group almost exclusively made up of Alaskan Native women who return to their villages to practice after completing MEDEX training.

Another important difference between rural and urban PAs is in their educational backgrounds. Approximately 42 percent of the MEDEX graduates in rural areas have no college degree (associate degree or higher) compared with only 30 percent of urban graduates. Urban PAs are more likely to have graduate degrees than rural ones, (8.1 percent compared with 2.7 percent). Rural PAs, however, were just as likely as their urban counterparts to have passed the board certification examination of the American Academy of Physician Assistants.

One of the requirements for admission to the MEDEX program is previous medical experience involving significant patient contact. We were able to link data from MEDEX records on the previous medical experience of respondents to our survey data, which allowed us to determine whether previous medical experience was related to rural-urban practice location. The results of this analysis are also presented in table 1. With the exception of previous experience as an Alaskan community health aide, no particular previous medical experience was associated with increased likelihood of practicing in a rural or an

urban location.

Table 2 shows the practice specialties and employment types of the respondents. Not surprisingly, rural PAs are more likely than urban ones to work in primary care specialties and less likely to work in subspecialties of internal medicine. Rural PAs are also much less likely than their urban counterparts to work in health maintenance organizations and more likely to be employed by State or Federal Governments. Most of the government-employed respondents work for State prison systems, migrant health centers, or the Indian Health Service.

When we restricted the analysis to primary care PAs only, results were similar to those for the population as a whole. Rural primary care PAs were significantly more likely than their urban counterparts to be American Indians or Alaska Natives. They were also more likely to be married and less likely to have college degrees.

Practice characteristics, content, and satisfaction.

Analysis of the practice characteristics of primary care PAs did not reveal many significant rural-urban differences. Table 3 shows that rural PAs spend an average of 3.6 hours per week in administrative duties, and urban PAs spend only about 1.5 hours. Rural PAs spend somewhat fewer hours each week working in the same building as their physician sponsor.

No significant difference in average annual income between rural and urban PAs was found. The mean salaries of PAs in practice less than 5 years and those in practice more than 5 years are shown in table 3. Overall, primary care PAs responding to the survey reported annual incomes averaging approximately \$40,000. (Inclusion of nonprimary care PAs in the analysis raises the mean salary to approximately \$42,000 with no significant rural-urban differences).

While little rural-urban variation in the structure of PA practices was observed, significant rural-urban variation in the content of practice was found as is shown in table 4. PAs were asked whether or not they performed 19 different medical tasks during the course of a month. Rural primary care PAs were significantly more likely than urban primary care PAs to be performing 11 of those tasks, including prenatal care, house calls, nursing home rounds, surgical assisting, and various administrative activities. Urban PAs were more likely to treat AIDS patients than rural PAs.

PAs were asked to rate their satisfaction with various aspects of their practices along a five-category scale from "very satisfied" to "very dissatisfied." Both rural and urban PAs appear to be satisfied with most aspects of their respective practices. Table 5 shows the percentage of primary care PAs who

Table 2. Length of practice, practice specialty, and employment type of MEDEX graduates by percentages and location

Practice	Rural	Urban	All
Number of respondents ¹	77	164	241
Length of practice (years):			
Mean.....	9.1	8.8	8.9
In current location (mean) ..	5.0	4.3	4.5
Practice specialty:			
Primary care ²	³ 76.6	62.2	66.8
Family practice.....	⁴ 67.5	54.3	58.5
General internal medicine...	3.9	4.9	4.6
Subspecialties of general internal medicine.....	⁵ 1.3	7.9	5.8
Obstetrics-gynecology.....	2.6	2.4	2.5
Pediatrics.....	2.6	0.6	1.2
Surgery.....	3.9	6.7	5.8
Emergency medicine.....	3.9	7.3	6.2
Other.....	14.3	15.9	15.4
Employment type:			
Private, fee for service.....	50.6	39.5	43.1
HMO.....	³ 9.9	29.0	20.9
Government.....	³ 27.3	15.4	19.2
Other.....	18.2	16.0	16.7

¹The number of cases varies slightly for different questions because of missing data.

²Family practice, general internal medicine, pediatrics, and obstetrics and gynecology.

³Significant at .05.

⁴Significant at .10.

⁵Significant at .01.

Table 3. Average practice characteristics of MEDEX graduates in primary care by location

Characteristics	Rural	Urban	All
Number of respondents ¹	59	102	161
Hours per week:			
Inpatient care.....	5.3	4.0	4.5
Outpatient care.....	31.9	31.2	31.4
Supervising.....	2.7	2.1	2.3
Administration.....	² 3.6	1.5	2.3
Number of times per week patients discussed with physician sponsor.....	11.0	11.0	11.0
Number of physician sponsors in current position.....	2.7	2.4	2.5
Hours per week working in same building with sponsor.....	³ 24.6	29.9	28.0
Annual income:			
In practice			
less than 5 years.....	\$35,250	\$38,070	\$37,060
more than 5 years.....	\$42,290	\$40,280	\$40,960
Vacation days per year.....	³ 17.8	15.4	16.3
Sick days per year.....	³ 9.0	13.7	12.1
CME days per year.....	4.6	5.2	5.0

¹The number of cases varies slightly for different questions due to missing data.

²Significant at .05.

³Significant at .10.

CME = Continuing medical education.

Table 4. Percentage of physician assistants in primary care performing various duties, by location

Activity	Rural	Urban	All
Number of respondents ¹	59	102	161
Prenatal care	² 50.0	28.9	36.8
Hospital rounds	22.4	13.4	16.8
House calls	² 44.8	20.6	29.7
Nursing home rounds	³ 22.4	8.2	13.5
Supervising	⁴ 54.5	37.9	44.0
Discussing patients with nonsponsor physicians.....	91.2	97.9	95.5
Talking with other physician assistants.....	75.0	83.3	80.3
Emergency room duty	27.6	33.0	31.0
Casting	73.7	71.9	72.5
Suturing	91.2	86.5	88.2
Surgical assisting	⁴ 27.6	14.4	19.4
Labor and delivery	5.2	1.0	2.6
Practice management.....	² 39.3	9.3	20.3
Personnel management.....	³ 28.6	12.4	18.3
Treating AIDS patients	² 17.2	41.2	32.3
Hospital committee meetings..	² 31.0	12.4	19.4
Athletic team coverage	³ 19.0	6.2	11.0
Coroner work	45.2	0.0	1.9
Night calls	³ 44.8	25.8	32.9

¹The number of cases varies slightly for different questions due to missing data.

²Significant at .01.

³Significant at .05.

⁴Significant at .10.

'Retention of PAs in rural communities might be enhanced with greater community awareness of the problems of acceptance of PAs as health care providers and the lower level of community acceptance of spouses.'

reported being either "very satisfied" or "somewhat satisfied" with various aspects of their practices. In general, the PAs responding to the survey appear to be highly satisfied with their relationships with their physician sponsors and with the level of responsibility and range of services they provide in their practices. Somewhat lower levels of satisfaction were expressed with salaries and stress levels. Comparison of rural PAs to urban ones showed that rural PAs expressed significantly lower levels of satisfaction with professional acknowledgement and respect (70.7 percent satisfied compared with 83.8 percent satisfied) and lower levels of satisfaction with the number of other PAs in the community.

Community satisfaction and locational choices.

Respondents were asked how satisfied they were with various aspects of their current communities on a scale like the one used to describe practice satisfaction. The results are also summarized in table 5. Both rural and urban PAs generally expressed high levels of satisfaction with most aspects of community life. Primary care PAs practicing in rural areas did indicate, however, significantly less satisfaction with the community's acceptance of their spouses than their urban counterparts.

An open-ended question asked PAs to list the three most important factors in their decision to practice medicine in their current location. The responses to this question were grouped into the nine categories shown in table 6. Urban primary care PAs were much more likely than rural PAs to cite the type of practice as an important factor in their locational choices, perhaps reflecting the broader range of choices in practice types available to urban PAs. Rural PAs were more likely to mention various locational amenities, such as access to outdoor recreation, as factors in their locational choices.

Personal background. Several questions were asked concerning the places where respondents and their spouses had grown up. Twenty-three percent of all respondents (primary care and non-primary care) grew up in towns of less than 2,500 population. The PAs from small towns who went on to practice in rural places made up about 34.7 percent of the total graduates practicing in rural settings. In contrast, 27.2 percent of the graduates grew up in cities with more than 100,000 population, but they account for only 14.7 percent of graduates currently practicing in rural settings. Another way of looking at these data is in terms of the rural "yield" of PAs from various sizes of towns. Although 50 percent of the graduates from the smallest towns went on to practice in rural places, the yield dropped considerably as the population of the towns in which graduates grew up increased. Only 18 percent of the PAs who grew up in towns of more than 100,000 population were in rural practice at the time of the survey.

Locational histories of MEDEX graduates. Respondents were asked to list all the places they had practiced medicine since graduating from the program. We found that 51 percent of the graduates had practiced in rural places at some point in their careers, although only 31 percent were doing so at the time of the survey. To understand this aspect of PA practice history better, we used the locational information provided by the respondents to construct four loca-

tional trajectories to describe the practice histories of respondents. Graduates in practice less than 2 years at the time of the survey were excluded from this analysis.

PAs who practiced entirely in urban or rural locations are described respectively as all urban and all rural. PAs beginning practice in rural locations but practicing in urban positions at the time of the survey are called rural to urban. PAs beginning practice in urban locations but currently practicing in urban positions are called urban to rural. The chart summarizes this analysis. The PAs from smaller towns were more likely to start in and stay in rural practice, more likely to move from urban settings to rural ones, and less likely to leave rural settings for urban ones.

Results of resurveys of movers and stoppers.

Respondents to the mover resurvey were asked to rate the importance of three factors, personal life, professional environment, and community environment in their decision to move. A total of 73 percent indicated that factors related to personal life were very important in the decision to move, and 57 percent indicated that the professional environment was very important in their decision. A minority (31 percent) cited the community environment as very important in the decision to move. In responding to open-ended questions about their reasons for moving, salary, unreasonable night call schedules, and lack of respect from physician sponsors were cited frequently. Night calls are more frequently a feature of rural PA practice (see table 4) and were mentioned more often by PAs leaving particular rural practice settings.

Of those who left PA practice altogether and responded to the resurvey, 11 percent had retired, and 71 percent reported that they were still working in a health care field. Although not working as PAs, the majority of those who left practice are providing primary care in other roles as nurse practitioners or physicians. Thirty-one percent of those still working in health care fields are practicing as nurse practitioners.

Written comments from the resurvey suggest that the decision to practice as a nurse practitioner instead of as a PA is often based on local regulatory and licensure considerations such as prescribing authority and the ability to practice independently of physicians. Other former PAs work as nurses, health educators (particularly as PA trainers), and public health workers. Thirty-one percent of the stoppers indicated that the professional environment had been very important in the decision to leave practice, and only 15 percent said that the community environment was very important in their decision. Forty-two percent of the respondents cited personal life factors as very impor-

Table 5. Percentage of MEDEX graduates in rural and urban primary care practice "very satisfied" or "somewhat satisfied" with various aspects of their practice and with their community

<i>Satisfaction</i>	<i>Rural</i>	<i>Urban</i>	<i>All</i>
Number of respondents ¹	59	102	161
<i>With practice</i>			
Relationship with sponsor	89.8	89.8	89.8
Quality of care provided by sponsor	93.2	94.8	94.2
Availability of sponsor	89.8	91.9	91.1
Number of other physician assistants in community	² 53.6	68.5	62.8
Salary	63.8	67.4	66.0
Level of responsibility	81.4	89.7	86.5
Range of service	86.4	92.9	90.4
Level of stress	45.8	46.5	46.2
Professional acknowledgement and respect	² 70.7	83.8	79.0
Work load	69.5	66.7	67.7
Time off	76.3	71.7	73.4
Opportunity for CME	74.6	76.5	75.8
<i>With community</i>			
Population	78.0	73.3	75.0
Recreation opportunities	82.8	89.0	86.7
Church	59.2	70.0	65.5
Environment for children	83.6	82.1	82.7
Acceptance of spouse	² 83.7	95.1	90.0
School quality	76.4	76.1	76.2
Overall	93.1	85.1	88.1
Spouse's overall	91.3	93.7	92.7

¹The number of cases varies slightly for different questions due to missing data.

²Significant at .10.

tant in their decision to leave PA practice.

Discussion

In 1982, Harmon and coworkers conducted a survey of MEDEX graduates and found that MEDEX Northwest had been very successful, relative to other programs, in selecting and training PAs who would enter rural practice (14). Forty percent of the graduates surveyed in 1982 practiced in towns of less than 10,000 population, and an additional 27 percent practiced in towns of between 10,000 and 50,000 population. At that time, more than 90 percent of the graduates practiced with primary care physicians whereas nationally, about 58 percent did so. Despite these encouraging numbers, Harmon and coworkers warned that PAs would be increasingly subject to the same forces of specialization contributing to both geographic maldistribution of physicians and a shortage of primary care physicians.

The results from our survey indicate that Harmon and his coauthors were, in large part, correct. The graduates of the MEDEX program still practice in

Table 6. Percentage of primary care physician assistants mentioning various reasons for choosing to locate in their present practice site

Reason	Rural	Urban	All
Number of respondents ¹	58	96	154
Salary	37.9	43.2	41.2
Benefits	6.9	1.1	3.3
Professional growth	15.5	7.4	10.4
Job availability	12.1	20.0	17.0
Job satisfaction	5.2	2.1	3.3
Patient population	8.6	13.7	11.8
Type of practice	² 50.0	70.5	62.7
Family-personal	29.3	34.7	32.7
Location amenities	³ 67.2	50.5	56.9

¹7 respondents did not answer the question.

²Significant at .05.

³Significant at .10.

'While the proportion of PAs in rural practice appears to be dropping, our comparison of rural and urban primary care PAs revealed very few significant differences between the two groups in terms of demographic characteristics or levels of satisfaction with their practices and communities.'

primary care specialties to a greater degree than PAs nationally (75 percent compared with 53 percent), but the proportion has fallen. There has also been a shift away from practice in smaller towns. Between 1982 and 1991, the percentage of graduates practicing in towns of between 10,000 and 50,000 has remained fairly constant, but the proportion practicing in towns of less than 10,000 population has dropped sharply, from 40 percent to 27 percent. A rural-urban comparison between the two periods is not possible because the 1982 study reports only city size, not the rural-urban status of the counties. The substantial drop in graduates practicing in places of less than 10,000 population, however, almost certainly represents a drop in the proportion of MEDEX graduates in rural practice.

While the proportion of PAs in rural practice appears to be dropping, our comparison of rural and urban primary care PAs revealed very few significant differences between the two groups in terms of demographic characteristics or levels of satisfaction with their practices and communities. In fact, remarkable similarity between rural and urban PAs was found in average salaries, in the average number of hours per week spent doing inpatient and outpatient care, and in

many other aspects of practice.

Both rural and urban PAs indicated high levels of satisfaction with most aspects of their practice situations, except for levels of stress. More than half of rural and urban PAs expressed dissatisfaction with the level of stress in their respective practices. Interestingly, rural primary care PAs expressed higher levels of dissatisfaction with "professional acknowledgement and respect" than did urban primary care PAs. These PAs also expressed high levels of satisfaction with their relationships with, and respect for, their physician sponsors. Possible sources of this dissatisfaction include lack of acknowledgement from other health professionals such as nurses and administrators or difficulty in gaining acceptance as legitimate health care providers from patients. Written comments offered by many respondents suggest that more difficulties are experienced with patients than with other health professionals, but the issue was not explored systematically in the survey.

Large differences were found in the scope of medical practice conducted by rural versus urban primary care PAs. Rural PAs had a much broader scope of practice and participated to a greater extent in supervisory and administrative activities. Rural PAs also spent fewer hours than their urban counterparts working with their physician sponsors, suggesting a slightly greater degree of autonomy among rural PAs. Rural PAs, however, did discuss patients with physicians as often as urban PAs (approximately 11 times per week).

Analysis of the locational career trajectories of PAs, personal backgrounds, and the resurvey of movers suggested three important points with implications for PA training and for recruitment of PAs to rural settings. First, in general, rural PAs grow up in rural areas (and, to a somewhat lesser extent, so do their spouses). This finding appears to contradict work by Gairola (11) who found no relationship between the residential background and subsequent practice location of PAs trained at the University of Kentucky. Other work by Hafferty and Goldberg (12), however, suggests that residential background is only a part of the increased likelihood of practicing in rural areas. They found that preceptorships in areas near their original residences greatly enhanced the probability that graduates would choose to practice in those areas. Harmon and coworkers (14) noted, with particular reference to MEDEX Northwest graduates, the importance of preceptorship in the decision to practice in a rural setting. They wrote

... if well-matched in a medically needy area to an appropriate preceptor who is willing to

consider employing the student after graduation, the desired result of rural deployment is enhanced.

Complete data on the location of preceptorship was not available for this study, but approximately half of the preceptorships available to MEDEX students are in rural primary care settings.

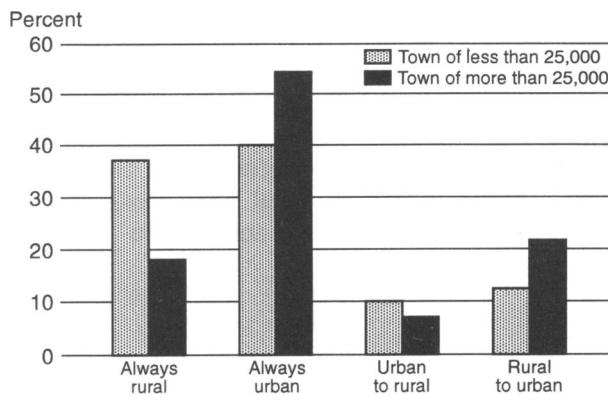
Second, the data from the resurvey of PAs who moved during the 3 years before the survey indicates a high degree of professional mobility in the PA population and a high degree of willingness to leave jobs for professional reasons. Data from the Office of Technology Assessment (2) indicate that the profession of physician assistant is one of the fastest growing in health related fields and that there are far more jobs available than PAs to fill them.

Finally, analysis of locational career trajectories indicated that many PAs who eventually move to practice settings in urban areas do try rural practice at some point during their careers. More than half of the MEDEX graduates responding to the survey practiced in rural settings at some point, although only 31 percent were doing so at the time of the survey.

Limitations. While the response rates to the three surveys were very high, two limitations of the study should be noted. First, 19 percent of the total graduates could not be located for purposes of the survey. While there is little reason to suspect that the untraceable group differs in any systematic way from the rest of the population in terms of demographics or practice characteristics, it is possible that they were untraceable because they moved or left the profession more often than other graduates. The mover and stopper survey data should therefore be treated with caution as to its representativeness.

Second, more than 19,000 PAs currently practice in the United States, and only 425 of them were trained by MEDEX Northwest. Our study is limited to the graduates of that program and caution should be exercised in generalizing the results from a study of one training program to the graduates of the 54 PA training programs currently accredited in the United States. MEDEX Northwest, with its strong emphasis on primary care and practice in rural settings, is almost certainly atypical. On the other hand, since MEDEX Northwest has been fairly successful in training PAs who enter rural practice, the results of this study should be of particular interest when other PA training programs with an emphasis on training rural practitioners are evaluated. Studies of the graduates of other training programs or of a national cross-section of PAs would be extremely helpful in building a more

Career trajectories by size of town where responding primary care physician assistants grew up



accurate picture of the roles of PAs generally and of their roles in rural medicine in particular.

Policy implications. In terms of PA training, our findings suggest that, if the goal is to train PAs for rural practice, recruitment efforts should be directed at rural residents. Paramedics, nurses, and emergency medical technicians come to mind immediately as a fertile rural population from which to recruit PA students. Efforts might also be directed at a younger population, for example, high school students, so that they might be made aware of the possibilities of a financially and professionally rewarding medical career that does not involve up to 12 years of training in college, medical school, and residency. As the work by Gairola (11), Hafferty and Goldberg (12), and Harmon and coworkers (14) indicates, however, a rural background without rural preceptorship is not strongly related to the likelihood of future rural practice.

On the recruitment side, our findings should serve as both an indication of an opportunity for recruitment and as a warning. The bad news for rural recruiters is that PAs have a high degree of professional mobility, and if practice settings are too stressful or not professionally rewarding, they are likely to relocate. On the other hand, since rural salaries are competitive with urban ones, there is little in the way of an urban financial pull factor for PAs, at least those working in primary care.

It is true that a smaller proportion of PAs are practicing in the small towns of the rural United States compared with a decade ago. However, the number of PAs is growing fast, 15 percent between 1985 and 1987 (2). Our data show that many MEDEX graduates tried rural practice at some point before moving to urban locations, indicating a high degree of interest in rural practice and rural lifestyles among graduates.

Retention of PAs in rural communities might be enhanced with greater community awareness of the problems of acceptance of PAs as health care providers and the lower level of community acceptance of spouses. Our finding of a significantly broader scope of practice for PAs in rural practice may help make rural practice more attractive to PAs interested in a career in a primary care setting. The challenge for PA trainers, preceptors, rural physicians, and rural communities is to sustain and nurture that initial interest in rural medicine.

References.....

1. Bottom, W. D.: Physician assistants: current status of the profession. *J Fam Pract* 24: 639-644 (1987).
2. Office of Technology Assessment: Health care in rural America. OTA-H-434, U.S. Government Printing Office, Washington, DC, 1990.
3. Oliver, D. R.: Eighth annual report on physician assistant educational programs in the United States. Association of Physician Assistant Training Programs, Alexandria, VA, 1992.
4. Rosenblatt, R. A., et al.: Which medical schools produce rural physicians? *JAMA* 268: 1559-1565, Sept. 23, 1992.
5. Cawley, J. F., Ott, J. E., and DeAtley, C. A.: The future of physician assistants. *Ann Intern Med* 98: 993-997 (1983).
6. Crandall, L. A., et al.: Physician assistants in primary care—patient assignment and task delegation. *Med Care* 22: 268-282 (1984).
7. Curry, R. H., and Luckie, R.: The role of the primary care PA. *Physician Assistant* 8: 31-40, September 1984.
8. Greenwood, J. G., et al.: Physician assistants: job description and practice. *Inquiry* 17: 137-144 (1980).
9. Moscovice, I., and Rosenblatt, R. A.: The viability of mid-level practitioners in isolated rural communities. *Am J Public Health* 69: 503-505 (1979).
10. Brooks, E. F., and Johnson, S. L.: Nurse practitioner and physician assistant satellite health centers—the pending demise of an organization form? *Med Care* 24: 881-890 (1986).
11. Gairola, G. A.: Physician assistant graduates: factors related to rural-urban practice location. *J Community Health* 8: 23-32 (1982).
12. Hafferty, F. W., and Goldberg, H. I.: Educational strategies for targeted retention of nonphysician health care providers. *Health Serv Res* 21: 107-125 (1986).
13. Smith, R. A.: MEDEX. *JAMA* 211: 1843-1845, Mar. 16, 1970.
14. Harmon, R. G., et al.: Training physician assistants for the Pacific Northwest. *West J Med* 138: 280-284 (1983).
15. Hewitt, M.: Defining 'rural' areas: impact on health care policy and research. *In Health in rural North America*, edited by W. M. Gesler and T. C. Ricketts. Rutgers University Press, New Brunswick, NJ, 1992, pp. 25-54.