

How PAs improve access to care for the underserved

Forrest S. Staton; Monali J. Bhosle, MS; Fabian T. Camacho, MS; Steven R. Feldman, MD, PhD; Rajesh Balkrishnan, PhD

In the 1960s and 1970s, the federal government instituted funding for and development of programs for the education of physician assistants (PAs). The government initiated this educational funding for family physicians, nurse practitioners (NPs), and PAs to increase the supply of health care providers available to meet the needs of underserved populations. These governmental programs began to support training in primary care, internal medicine, and nurse midwifery.¹ Since then, additional health care proposals have come before Congress acknowledging and responding to increased demand for health care services and providers.²

When the government began to distinguish physician from nonphysician providers in the late 1970s, payment issues were addressed with the 1977 Rural Health Clinic Services Act,³ which enabled rural clinics staffed by PAs and NPs to be eligible for Medicare and Medicaid payments. This federal policy was created partially in response to health care access problems for beneficiaries in underserved rural areas² and partially to recognize that PAs' skills and practice structure were suitable for serving rural areas.³ Federal Medicare and Medicaid policy amendments followed this act, allowing PAs to provide certain services without physician supervision (as permitted under state law).²

The use of PAs in the US health care system has significantly increased in recent years. More than half (56%) of physicians in group practice and almost 40% of independently practicing physicians use PAs, NPs, or nurse specialists to extend their ability to provide care to more people.⁴ The number of PAs and NPs increased from 228,000 in 1995 to 384,000 in 2005.⁴ This increase is primarily a result of the increased demand for health care services—a demand that most likely will continue as nonphysician providers fill the gap where physician shortages exist.⁵

Although little research has been conducted on the tendency of nonphysician clinicians to care for low-income patients and to practice in rural communities, research has shown that nonphysician clinicians and family physicians are more likely to care for underserved patients than are physicians in other specialties.¹ Underserved areas were defined as being rural; a *vulnerable community* (having a high number of minority and poor residents); and previously designated as a *primary care shortage area* in 1998. In general, a higher percentage of PAs than physicians practiced in underserved areas and cared for a large number of uninsured patients or those on Medicaid.¹

Greater access to primary care is linked to health care cost savings overall and improved quality of care. Nonphysician practitioners are cost-effective not only

ABSTRACT

Objective: Increasing health care costs and inaccessibility to care create barriers to physicians' services. The physician assistant (PA) profession developed in part to help care for underserved populations. The objective of this study was to test the hypothesis that poorer patients in outpatient clinics are more likely to see PAs than physicians.

Methods: A retrospective analysis of National Ambulatory Medical Care Survey data (1997-2003) on outpatient physicians and their office staff was carried out. Weighted logistic regression analysis was used.

Results: After adjusting for covariates such as patient age, gender, race, year of visit, and region, patients covered by Medicare insurance had lower odds of visiting PAs compared to patients possessing private insurance (odds ratio [OR]: 0.48; 95% confidence interval [CI]: 0.29-0.81). Further, patients who paid out-of-pocket had higher odds of visiting PAs compared to patients with private insurance, after adjusting for potential confounders (OR: 1.37; CI: 1.18-1.77). Patients in rural areas were more likely to visit PAs than were patients in urban areas (OR: 2.02; CI: 1.31-3.14).

Conclusion: Considerable use is made of PAs in all settings, and they tend to be utilized in otherwise underserved, rural populations who do not have health insurance.

COMPETENCIES

● Medical knowledge

● Interpersonal & communication skills

● Patient care

●●● Professionalism

●●●● Practice-based learning and improvement

●●●● Systems-based practice

because they are less expensive to educate but also in their clinical models and fees.² The potential savings in labor costs to be gained by increasing the use of PAs and NPs was estimated in 26 primary care clinics in a group managed care organization.⁶ Primary care clinics with a greater number of practicing PAs had lower labor costs than did practices that used fewer nonphysician clinicians.⁶

PAs can increase the efficiency of health care in underserved populations and have proved to be a cost-effective way to improve access to care. We tested the hypothesis that underserved (defined as low-income and rural) populations are more likely to be seen by PAs than by physicians in outpatient clinics.

TABLE 1. Descriptive statistics of study population

Variables	Estimated overall proportions, %
PATIENT DEMOGRAPHICS	
Age group	
• 0-34 y	35.45
• 35-49 y	20.54
• 50-64 y	19.13
• ≥65 y	24.88
Female gender	59.46
White race	87.30
Primary source of payment	
• Private insurance	56.37
• Source of payment Medicare only	22.40
• Source of payment Medicaid only	8.86
• Workers' compensation	1.88
• Self-payment (out-of-pocket)	6.06
• No charge/charity	0.69
PHYSICIAN/PRACTICE CHARACTERISTICS	
Region	
• Northeast	21.05
• Midwest	21.60
• South	33.63
• West	23.72
Practice in metropolitan statistical area	84.19
PROVIDER TYPE	
Physician only	94.32
PA only	0.56
Physician and PA	1.45
Neither (other professionals)	3.67
<small>Note: Table describes cross-sectional patient visits from 1997-2003; weighted sample size = 5.87 billion visits.</small>	

METHODS

Data source The National Ambulatory Medical Care Survey (NAMCS) is a national survey conducted by the National Center for Health Statistics and the Centers for Disease Control and Prevention. The NAMCS began in 1973, has been conducted annually since 1989, and supplies ambulatory care data from a national sample of office-based physicians involved in direct patient care. Physicians in anesthesiology, pathology, and radiology are excluded from the survey. The NAMCS does not include home, nursing home, organizational (bill-paying, paperwork, etc), or hospital visits. The survey uses a multistage probability design that encompasses probability samples of primary sampling units (geographic segments), physician practices within primary sampling units, and patient visits within practices.

The first stage of the NAMCS design includes 112 primary sampling units within the United States and Canada. The second stage includes a sample of nonfederally-employed, office-based physicians selected randomly from a list maintained by the American Medical Association and the American Osteopathic Association. The third and final stage includes randomly selecting the office visits to the sample of physicians. To achieve this, the physician sample is divided into 52 subgroups of approximately equal size, each of which is randomly assigned a 1-week reporting period in the survey year. The physician then randomly selects visits to record during that week.

The actual data for the survey are collected by the physicians with the assistance from staff, as instructed by the field representative. Physicians record data on a patient record form, which includes the patient name and record number for organizational purposes; however, all data are de-identified prior to physician submission. The data are edited before central processing, and all ambiguous entries are either reclassified or recoded. Computer edits are subsequently performed to identify any inconsistencies.

The NAMCS data are adjusted using the following four components: inflation (weekly data are inflated by 52 to produce annual estimates); adjustment for nonresponse (data are adjusted to account for physicians who failed to participate in the study); a ratio adjustment (an adjustment within each of the specialties to make the data representative of physician specialty distribution); and weight smoothing (a technique that preserves the visit counts in each specialty by switching the extra from largest visits to smaller visits).

Study variables and statistical analyses for the current study In our study, we analyzed data provided in the NAMCS. Payer mix is recorded on the NAMCS survey under *primary expected source of payment for this visit*; we examined this variable from 1997 to 2003. Choices for source of payment on the NAMCS survey included private insurance, Medicaid, Medicare, workers' compensation, self-pay, no charge/charity, not known. For our analysis, we combined several of these original variables and identified them using the following terms: *private insurance, source of payment Medicaid only, source of payment Medicare only, workers' compensation, self*

TABLE 2. Association between provider category versus primary source of payment and urban visit

Variables	Physician only, %	PA only, %	Physician and PA, %	Other professional, %	Total, %
PRIMARY SOURCE OF PAYMENT^a					
Private insurance	94.60	0.60	1.45	3.26	100
Source of payment Medicare only	96.88	0.55	1.36	1.21	100
Source of payment Medicaid only	96.48	0.56	1.57	1.39	100
Workers' compensation	97.37	0.58	1.45	0.60	100
Self-payment	94.00	0.54	1.15	4.31	100
No charge/charity	91.30	0.55	1.44	6.70	100
PRACTICE IN A METROPOLITAN STATISTICAL AREA^a					
Yes	94.36	0.60	1.60	3.42	100
No	94.20	0.25	1.20	4.34	100

^a Significantly associated with primary source of payment with Rao-Scott corrected Pearson statistic ($P < .0001$).

(out-of-pocket) payment, and no charge/charity. The category *not known* was not included in our analysis.

We also used NAMCS variables indicating the provider seen from 1997 to 2003. We grouped the choices into *physician only*, *PA only*, *physician and PA*, and *other professional*. Additional sociodemographic information utilized included gender, race, age, whether the visit was conducted in an urban or a rural area, geographical region, and year.

We first examined the relationships between payer mix, metropolitan status, and other covariates with provider type and tested them separately using a Rao-Scott corrected Pearson statistic to account for the survey design. A weighted logistic regression was conducted next, where the log-odds of provider type was treated as the function of payer mix and the other variables. The regression was performed using the SVYLOGIT procedure available in the STATA Statistical Analysis System version 9.1. Visits to both physicians and PAs or to other types of professionals were not included in the logistic regression model.

RESULTS

An estimated 5.87 billion visits were made to nonfederally-employed office-based physicians in the United States from 1997 to 2003 (see Table 1, page 34). Approximately 55% of the overall visits involved patients who were younger than 49 years; 60% of the visits involved female patients; and 87% of the visits were made by white patients. In 56% of the total visits, the primary source of payment was private insurance; Medicaid and Medicare covered 31% of the visits. Patient visits occurred most often in the South (34%) and in metropolitan areas (84%). A large number of visits were to physicians only (94%). Visits to PAs only were made by 32.5 million people, as much as 0.56% of the study population. The remaining 5% of visits were either to both physicians and PAs or to other types of health care providers.

Provider category was significantly associated with patients' source of payment and physicians' urban status (ie, whether or not the physician's practice was in a metropolitan statistical area) ($P < .0001$) (see Table 2). The statistically significant relationship between urban status and provider type suggests that proportionally more visits were to PAs (4.59%) in rural areas rather than urban areas (4.02%).

The logistic regression model suggested that patients who paid out-of-pocket (self-pay) had higher odds of visiting PAs than did patients with private insurance (odds ratio [OR]: 1.37; 95% confidence interval [CI]: 1.18-1.77). Patients who had only Medicare insurance were less likely to visit PAs than were patients who had private insurance (OR: 0.48; CI: 0.29-0.81). Patients in rural areas (as identified by physician practice area) were 102% more likely to visit PAs than were

“Patients who paid out-of-pocket were more likely to visit a PA than were patients who paid using private insurance.”

patients in urban areas (OR: 2.02; CI: 1.31-3.14). Nonwhite patients were more likely to visit PAs than were white patients (OR: 2.21; CI: 1.32-3.68). Further, visits made by patients in the Midwest were more likely to be to PAs than were visits made by patients in the West (OR: 1.79; CI: 1.40-2.84) (see Table 3, page 40).

DISCUSSION

Historically, PAs were one potential solution to the inaccessibility of health care, particularly in rural areas. Today, PAs

not only provide access to care in these areas but also allow the health care team to function as a more cost-effective and efficient unit. Exploring patient-related and physician-related determinants of the type of provider visited is important to further understanding of the role PAs play.

Compared to urban visits, rural visits are relatively more likely to be made to PAs than to physicians. Thus, PAs still tend to fill the rural gap where physician shortages are more prevalent. Assuming that people in rural areas have less access to health care than do people in metropolitan or urban areas, these results support the hypothesis that PAs are indeed providing care to more underserved populations. One plausible explanation for why PAs tend to care for a more rural population is that physicians are making a practice of shunting their lower income patients to PAs, either to improve the cost-effectiveness of their clinics or to direct their own time and resources towards a higher-income population. Our analysis suggests that despite the evolving role of non-physician clinicians, many of these practitioners continue to fulfill the role of providing access to care where it is most needed, often in lower-income rural areas.

Our analysis also found a significant relationship between the type of provider seen and the patient's insurance type. Patients who paid out-of-pocket were more likely to visit a PA than were patients who paid using private insurance. Generally, patients who pay out-of-pocket might be thought to have a lower socioeconomic status than those who have private insurance. Although correlating source of payment with patient income level in a study such as ours is complicated, it is clear that visits made by patients who have any type of insurance are more likely to be paid for in full than are visits that are paid for out-of-pocket. Thus, the tendency of self-pay visits to be to PAs could be attributed to uncertainty within the practice that full payment for visits paid out-of-pocket will be received.

Furthermore, in this population, patients with public insurance, such as Medicare, were less likely to visit PAs than were patients with private insurance. Patient race was also found to be an important predictor of PA visits. Nonwhite patients were more likely to visit PAs than were white patients. The comparatively lower socioeconomic status of nonwhites in the United States further supports our hypothesis that poorer patients tend to be cared by PAs.

Our study does have some limitations. First, the data analyzed were collected from 1997 to 2003, and the role and distribution of PAs have evolved since then, with many PAs today practicing in specialties rather than in primary care and choosing to work in more metropolitan areas rather than in rural areas. In addition, we did not limit our analysis only to those physicians that employed PAs. Thus, the tendency for physicians to shunt lower-income patients to PAs could not be accurately assessed. Finally, our conclusions make assumptions about patient income level based on patient source of payment and metropolitan status of visit, which may be subject to bias in interpretations. Despite these limitations, the results of our study help us to understand the determi-

TABLE 3. Patient and physician determinants of type of provider seen

Dependent variable Independent variables	Type of provider seen Odds ratio (95% confidence interval)
Source of payment: Medicare only	0.48 (0.29-0.81)
Source of payment: Medicaid only	1.33 (0.90-1.99)
Source of payment: Worker's compensation	0.92 (0.33-2.56)
Self-payment (out-of-pocket)	0.38 (0.19-0.77)
No charge/charity	2.70 (0.60-12.08)
Female sex	0.77 (0.57-1.04)
Age	1.00 (0.99-1.00)
Race	2.21 (1.32-3.68)
Metropolitan statistical area	0.49 (0.32-0.76)
Year	0.98 (0.83-1.15)
Region: Northeast	1.13 (0.74-1.72)
Region: Midwest	1.79 (1.40-2.84)
Region: South	1.43 (0.95-2.14)

Note: Significant odds ratios ($P < .05$) are highlighted in bold. All analyses are weighted using NAMCS sampling weights. Reference categories include private insurance, nonmetropolitan statistical area (rural), white race, and west geographical region.

nants of health care visits to PAs in the national population. The study lays a background for the future research that will be required to better understand the role of physician assistants in today's health care system. **JAAPA**

Forrest Staton is a student in the PA program; **Fabian Camacho** is a statistician in the Department of Public Health Sciences; and **Steven Feldman** is Professor of Dermatology, Pathology, and Public Health Sciences, all at Wake Forest University School of Medicine, Winston-Salem, North Carolina. **Monali Bhosle** is a graduate research associate in the Department of Pharmacy Practice and Administration; and **Rajesh Balkrishnan** is Merrell Dow Professor, College of Pharmacy and School of Public Health, both at Ohio State University, Columbus. The authors have indicated no relationships to disclose relating to the content of this article.

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