

## Training Physician Assistants for the Pacific Northwest

### The MEDEX Northwest Ten-Year Experience

ROBERT G. HARMON, MD, MPH, *Phoenix*; STEVEN TURNIPSEED, PA-C, and  
SHARON SCHLITTENHARD, *Seattle*, and ANDREW PENMAN, MBBS, MPH, *Halls Creek, Australia*

*The student characteristics and employment status of physician assistants trained at MEDEX Northwest in Seattle between 1969 and 1979 were surveyed. There were 201 graduates and an attrition rate of 11.1 percent. Of 142 respondents, 88.7 percent were currently employed as physician assistants or nurse practitioners. Most (77.5 percent) were employed by their teaching preceptors following graduation. A majority (55.6 percent) were working in public or nonprofit private sector facilities.*

*In all, 70 percent were practicing in Washington state, 75 percent were in family practice and 62 percent were working in communities of less than 50,000 population. These results compare favorably with rural and primary care practice data for physician assistants and physicians nationally. An effective preceptorship and deployment system is proposed as an important reason for the results.*

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**M**EDEX\* Northwest, a physician assistant (PA) training program, was founded in 1969 under the cosponsorship of the University of Washington and the Washington State Medical Association. Its goal has been the education and placement of primary care PA's in medically needy (especially rural) areas of the states of Washington, Alaska, Montana, Idaho and Oregon. Funded mainly by federal training grants, the program has utilized a one-year curriculum including three to six months of didactic course work at the University of Washington and 6 to 12 months of field preceptorship, where a majority of the graduates continue to practice. The background of the program is amply described elsewhere.<sup>1-4</sup>

Minimal qualifications for student entry are a high school education and at least two years of experience in a primary health care delivery role. Senior (400 level) college credit and a MEDEX PA certificate are

awarded upon completing the year of study. A bachelor's degree can be earned with additional coursework, but is not mandatory. MEDEX graduates are fully eligible to take the PA national certifying examination and to register with individual states for PA practice.

#### Rationale

The purpose of the survey was to describe and evaluate the student characteristics, professional status and employment distribution of PA's trained and graduated at MEDEX Northwest from 1969 to 1979. The basic question to be answered was whether or not the program's methods were resulting in substantial primary care and rural practice deployment among its graduates. The MEDEX curriculum is "competency-based," meaning that its content is derived from task analysis which leads to objectives that specify the knowledge and skills necessary to carry out defined tasks. The MEDEX training model has been noted for its emphasis on selecting students with substantial prior health care

\*The name MEDEX is derived from the French words "MEDecin EXTension," meaning physician's extension.

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Dr Harmon is Chairman, Department of Community Medicine, Maricopa County General Hospital; Director, Division of Public Health, Maricopa County Department of Health Services, Phoenix, and Adjunct Associate Professor, Department of Family and Community Medicine, University of Arizona, Tucson. Mr Turnipseed is Clinic Manager, Group Health Cooperative of Puget Sound, Seattle. Ms Schlittenhard is Administrative Services Manager of MEDEX Northwest, Seattle. Dr Penman is Medical Officer, Halls Creek, Western Australia.

Reprint requests to Robert G. Harmon, MD, MPH, Chairman, Department of Community Medicine, Maricopa County Medical Center, 2601 East Roosevelt, Phoenix, AZ 85008.

ABBREVIATIONS USED IN TEXT

PA=physician assistant  
 NP=nurse practitioner  
 RN=registered nurse

experience, teaching practical skills and placing students in well-matched preceptorship sites that are intended to provide full-time jobs after graduation. The current 12-month training period is significantly shorter than the norm of 24 months for most PA programs.

**Methods**

Demographic and prior training information was obtained from MEDEX Northwest files on all 226 PA students accepted between 1969 and 1978. A nine-page direct mail questionnaire survey was done from January to May 1980, seeking responses from all 201 graduates of the program from 1970 to 1979. Data were sought on employment history, board certification status, geographic location and characteristics of the supervising physician or physicians. Questionnaire information was obtained from 142 of 201 graduates for a response rate of 71 percent.

**Results**

*Student Body Profile and Attrition*

Table 1 lists the number and percentage of students accepted and not graduated by various characteristics. Of 226 students accepted, 25 have not graduated, for an overall attrition rate of 11.1 percent. This has held relatively constant over the past ten years. Women have made up 24 percent of all students, with a pronounced increase from zero in the early years to about half in the late 1970s. A majority of these women have been registered nurses (RN's).

The differences in the proportions of Table 1 were tested using the normal approximation to the binomial distribution. The lower attrition rate for women (5.4 percent) versus men (12.8 percent) was not statistically significant ( $\alpha=0.14$ ). Of the 54 women accepted, 32 were registered nurses. All three of the women who failed to graduate were RN's.

Racial and ethnic minority students have comprised about 13 percent of all students accepted. This has held relatively constant over the years. The distribution has been 15 (50.0 percent) Hispanic, 8 (26.7 percent) black, 4 (13.3 percent) Asian and 3 (10.0 percent) Native American. The higher attrition rate for minority students (20.0 percent) versus nonminorities (9.7 percent) was not statistically significant ( $\alpha=0.09$ ).

Table 1 also lists the number and percentage of students accepted and not graduated by status as exmilitary corpsmen, RN's, and others as well as formal college education. Although excorpsmen have made up 65.5 percent of all students, their percentage has been decreasing substantially over the past six years to about a third in the late 1970s.

The attrition rate for excorpsmen was not signifi-

TABLE 1.—MEDEX Northwest Physician Assistant Students (1969-78) by Sex, Minority Status, Former Training and College Education Versus Attrition

Category	Number (Percent) Accepted (N=226)	Number (Percent) Not Graduated [N=25 (11.1%)]
Men	172 (76.1)	22 (12.8)
Women	54 (23.9)	3 ( 5.4)
Minorities	30 (13.3)	6 (20.0)
Nonminorities	196 (86.7)	19 ( 9.7)
Excorpsmen	148 (65.5)	20 (13.5)
Registered nurses	41 (18.1)	3 (11.5)
Other	37 (16.4)	2 ( 5.4)
≤2 Years college	110 (48.7)	17 (15.5)
>2 Years college	116 (51.3)	8 ( 6.9)

Source: MEDEX Northwest file data.

TABLE 2.—Characteristics of Respondents and All Graduates

Category	Respondents Number (Percent) (N=142)	All Graduates Number (Percent) (N=201)
Men	107 (75.4)	150 (74.6)
Women	25 (24.6)	51 (25.4)
Minorities	22 (15.5)	24 (11.9)
Excorpsmen	87 (61.3)	128 (63.7)

cantly different from RN's ( $\alpha=0.28$ ). The attrition rate for students with less than or equal to two years of college preparation (15.5 percent) was significantly greater than that for those with more than two years (6.9 percent) ( $\alpha=0.05$ ). Of the 25 students who did not graduate, 14 failed and left for academic reasons and 11 left for personal reasons.

*Characteristics of Respondents and Nonrespondents*

Table 2 lists respondents to the questionnaire survey by sex, racial minority and excorpsman status, in comparison with all graduates. There was no significant difference between the group responding and the total population for these factors ( $\alpha=0.34$  to 0.88). The mean present age of male respondents was 37.3 years (SD=6.8) and of females was 35.1 (SD=6.3), with the combined age mean being 36.8 (SD=6.8). The mean duration of years worked since graduation was 5.2 (SD=3.1).

*Employment*

MEDEX graduates who are RN's have had the choice of becoming certified and registered as either a PA or nurse practitioner (NP). Of 142 respondents, 126 (88.7 percent) were currently employed as a PA or NP. Of these, 109 reported PA employment, 13 reported NP employment, and 4 reported both PA and NP. Of 41 RN's responding, the 13 represent 31.7 percent choosing to work as NP's instead of PA's.

Of those not employed as PA's or NP's, 12 listed their other employment pursuits. They included five unemployed, two nursing educators, one emergency medical technician instructor, one medical claims inspector, one medical receptionist, one self-employed and one physician. From MEDEX Northwest files, we

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know that at least three graduates have gone on to medical school, for a rate of 1.5 percent.

*Geographic Distribution*

For 120 graduates employed as PA's or NP's, Table 3 describes distribution by state. Of note are the 70.0 percent working in Washington, especially the 40.0 percent in the western region where the training program is located.

Table 4 describes distribution by population of community where working. About 62 percent of MEDEX Northwest graduates were working in towns or cities of less than 50,000 population. A 1978 nationwide PA survey found 47 percent of all respondents in this category.<sup>5</sup> This difference is accounted for chiefly by the high percentage of MEDEX Northwest graduates in communities of under 10,000 population (about 41 percent) versus 25 percent of PA's nationwide.

*Practice Organization*

Table 5 describes the PA's employer's practice setting relative to tax status. Of those who gave an informed answer, a majority (55.6 percent) reported working in the public or nonprofit sector.

TABLE 3.—Distribution of PA/NP-Employed Graduates by State

State	Number (Percent)
Washington .....	84 ( 70.0)
Western ...	48 (40.0)
Eastern ...	36 (30.0)
Alaska .....	6 ( 5.0)
Oregon .....	6 ( 5.0)
Idaho .....	5 ( 4.2)
California .....	2 ( 1.7)
Other .....	17 ( 14.1)
<b>TOTAL .....</b>	<b>120 (100.0)</b>

PA=physician assistant; NP=nurse practitioner.

TABLE 4.—Distribution of PA/NP-Employed Graduates by Community Population

Community Population	MEDEX Northwest Graduates	
	Number (Percent)	Cumulative Percent
10,000 .....	52 ( 40.6)	40.6
10,000-49,999 .....	27 ( 21.1)	61.7
50,000-249,999 (or suburb) ...	19 ( 14.8)	76.5
250,000 (or suburb) .....	30 ( 23.5)	100.0
<b>TOTAL .....</b>	<b>128 (100.0)</b>	

PA=physician assistant; NP=nurse practitioner.

TABLE 5.—Employers by Tax Status

Category	Number	Adjusted Percent
Private for-profit .....	55	44.4
Public .....	36	29.0
Private nonprofit .....	33	26.6
<b>TOTAL .....</b>	<b>124</b>	<b>100.0</b>

Table 6 describes the practice setting where the respondents spend most of their time. Of note is the substantial percentage who work in solo offices (27.3 percent), health maintenance organizations (15.6 percent) and community clinics (13.3 percent). Of 125 respondents, 68 (54.4 percent) reported having formal hospital privileges.

Of our respondents, 20 percent reported working in remote satellite clinics, compared with 15 percent nationally.<sup>5(p841)</sup> Another 25.8 percent reported working at a rural clinic certified under the Rural Health Clinic Services Act of 1977 (PL 95-210). These are further indicators of deployment to underserved areas.

*Specialty of Supervising Physician*

Table 7 lists the distribution of the major specialties of physicians who supervise the respondents. This shows that 75.0 percent work with family practitioners and 83.9 percent work with primary care physicians (family or general practice, general internal medicine and general pediatrics). Nationally, about 74 percent of PA's work with primary care physicians, but only 52 percent are with family or general practitioners.<sup>5(p841)</sup>

A key item was noted when graduates responded to the question "Were they ultimately employed after graduation by their precepting physicians?" The answer was *yes* by 107 of 138 respondents (77.5 percent), while 22.5 percent said *no*. Common reasons for not

TABLE 6.—Distribution by Practice Setting

Category	Number	Percent
Solo office .....	35	27.3
Health maintenance organization ...	20	15.6
Community clinic .....	17	13.3
Single-specialty group .....	14	10.9
Multispecialty group .....	10	7.8
Nonprofit hospital .....	4	3.1
Industrial clinic .....	4	3.1
Government prison clinic .....	4	3.1
VA hospital .....	3	2.3
State hospital .....	3	2.3
City or county hospital .....	3	2.3
"Other" clinic .....	2	1.6
US Public Health Services .....	2	1.6
Proprietary hospital .....	2	1.6
PA training program .....	2	1.6
"Other" .....	2	1.6
Military hospital .....	1	.8
<b>TOTAL .....</b>	<b>128</b>	<b>99.9</b>

TABLE 7.—Major Specialty of Supervising Physician

Category	Number	Percent
Family or general practice .....	84	75.0
General internal medicine .....	8	7.1
Emergency medicine .....	4	3.6
Psychiatry .....	3	2.7
General pediatrics .....	2	1.8
Preventive medicine and public health ..	2	1.8
General surgery .....	2	1.8
"Other" .....	7	6.2
<b>TOTAL .....</b>	<b>112</b>	<b>100.0</b>

continuing in the practice included dissatisfaction by the student or preceptor (or both), and lack of patient volume to justify utilization of a PA.

*Employment Characteristics*

Table 8 lists selected employment characteristics for the respondents.

Of note is the job stability, with respondents averaging almost four years at their first or current job. The average workweek is similar to the national PA average of 45.6 hours.<sup>5(p841)</sup> The 1980 mean income (\$22,486) is somewhat higher than the 1978 national figure of \$17,611, even after adjusting for two years of inflation.

*Board Certification Examination Results*

Of 175 graduates known from file data to have taken the national PA certification examination, which was instituted in 1973, there were 163 (93.1 percent) who passed. MEDEX Northwest graduates' mean scores regularly rank in the top half of all PA program results.

**Comment**

These results suggest that the program is approaching its basic goal of supplying primary care practitioners to medically needy areas. Comparison with results for other PA- and physician-training programs is limited because of lack of standardized data. The nonresponse rate of 29 percent to the questionnaire survey also prevents reaching extensive conclusions. Some analysis can be made, however.

Concerning student selection, it is interesting that RN's are now an important source of PA students for MEDEX. This trend has increased recently as the supply of excorpsmen has diminished and RN's, especially those without bachelor's degrees, have increasingly sought accessible training as NP's or PA's. Organized nursing, while still willing to accept the MEDEX curriculum for PA's as adequate preparation for a registered nurse to take the national nurse practitioner certifying examination, is nevertheless concerned that some of its members are choosing the PA instead of nurse practitioner route to primary care practice.

The only significant difference noted in attrition rate was that students with more than two years of college had a lower rate than those with less. The MEDEX curriculum is condensed and very intensive, both in the classroom and preceptorship phases. It is likely that the didactic skills acquired during college help to carry a student through the heavy load of reading, note taking, and test taking.

About 60 percent of active practice MEDEX Northwest graduates work in communities of 50,000 population or less in comparison with about 48 percent of all PA's. Comparisons with other categories of health professionals are complicated by variable definitions of rural. Scheffler and co-workers reported that about a fourth of the US population resides in nonurban areas, where 13 percent of all physicians, 17 percent of all NP's and 33 percent of all PA's are practicing. They also found that during 1976, there were 55 percent of

TABLE 8.—Selected Employment Characteristics

<i>Category</i>	
Duration in first job as PA/NP . . . .	43.9 months (SD=36.9)
Duration in present job as PA/NP . . . .	45.1 months (SD=38.6)
Number of total different jobs as PA/NP . . . . .	1.7 (SD=1.0)
Hours worked per week (excluding on-call) . . . . .	43.2 hours (SD=11.6)
Starting salary . . . . .	\$12,968 (SD=\$3,428)
Current income . . . . .	\$22,486 (SD=\$6,308)

PA = physician assistant; NP = nurse practitioner.

family physicians located in towns and cities with populations of 30,000 or less.<sup>6</sup> More recent data showed 69.8 percent of family practice residency graduates practiced in communities of 50,000 or less population.<sup>7</sup> It should be noted that these particular family practice programs emphasized rural networks of training sites.

Perry<sup>8</sup> found MEDEX graduates much more likely than physician assistant or physician associate graduates to practice in rural areas. His data showed 73.3 percent of MEDEX, 48.1 percent of physician assistant and 45.6 percent of physician associate graduates in communities of under 50,000 population. A report by the Congressional Budget Office<sup>9</sup> showed that 37 percent of MEDEX, 18 percent of PA's, 15 percent of NP's, 8 percent of physicians and 17 percent of the general population were located in nonstandard metropolitan statistical areas of less than 50,000 population in 1976.

Why do the MEDEX graduates have a strong rural tendency? Like other health professional training programs, geographic location of education plays an important role in selection of work sites. This is reflected not only in the rural deployment that results from preceptorship, but also in the strong tendency to stay in Washington state.

One might ask whether the rural nature of Washington state is a factor since 70 percent of the practicing respondents are located there. However, data from the 1980 US census show that Washington's population is 26.4 percent rural compared with the US mean of 26.3 percent. The other northwest states served, Oregon, Montana, Idaho and Alaska, have results further above this norm (32.1 percent, 47.1 percent, 46.0 percent and 35.5 percent, respectively), but only 14 percent of the respondents are located in these states.

The Washington state PA law has also helped to promote effective PA deployment. Passed originally in 1971, it allows for practice remote from the supervising physician, prescribing of drugs, hospital privileges and temporary supervised practice as a student. This contrasts with Montana, where as of 1980 PA's were neither recognized nor certified. Given this fact, it is understandable that no graduates responded from Montana.

Besides the rural tendency, the respondents are also located in health maintenance organizations (20 percent), community clinics (13 percent) and public hospitals (7 percent). When considered with the fact that 55.6 percent are working in public or private nonprofit settings, these data suggest that graduates are an im-

portant resource for facilities outside the private, for-profit sector.

Concerning practice specialty, 90 percent of MEDEX Northwest graduates work with primary care physicians while only 58 percent of all PA's do. For family practice, the figures are 75 percent versus 42 percent. The likely reason for this is the rural preceptorship matching and placement (deployment) system utilized in the MEDEX model. Perry<sup>8(p1020)</sup> also found that MEDEX graduates were much more likely to be in general or family practice primary care settings than physician assistants or physician associates. He said, "The deployment system used by the MEDEX programs seems to provide a satisfactory explanation for the favorable results which they have obtained." Stated simply, 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.

The increasing tendency for new family practice graduates to locate in rural settings is perceived by some observers as a barrier to further success for the MEDEX model. On the contrary, a 1978 survey of primary care physicians in Washington state showed the younger ones to be more likely to hire a PA.<sup>10</sup> The MEDEX Northwest program continues to find an adequate number of rural physicians for preceptors. Furthermore, family practice physicians are still reluctant to locate in smaller rural communities of population 10,000 or less which lack hospitals. PA's are showing a strong tendency to stay in this setting, especially with enactment of PL 95-210, allowing Medicare and Medicaid reimbursement to PA's and NP's in certified rural clinics.

Concerning training methodology, more than 40 PA programs have gradually moved toward a longer (24 month), more hospital-based and specialty-based training model. For example, from a peak of nine MEDEX training programs in the mid-1970s,<sup>4(p174)</sup> three retain the 12-month, preceptorship-oriented model. Three have adopted the longer curriculum, one has converted to NP training and two have closed.

Why is this system changing? Some probable reasons include the following:

- Pressure from academic institutions to stress biomedical rather than competency-based learning.
- Difficulty in recruiting enough rural family practice preceptors to train and hire students, especially in the eastern United States.
- Degree requirements mandating longer training periods.

- Difficulty in maintaining and monitoring quality education in rural preceptorships.
- A tendency to mimic hospital-based medical education, with a variety of specialty rotations.

Whatever the reasons, the trend in PA training toward the medical education model will have definite effects over the long run. PA graduates may begin to exhibit the specialty and geographic maldistribution characteristics of physicians. This issue has extreme importance as Congress continues to debate federal support for PA and other health manpower training programs.

The liberal PA practice laws in Washington state and strong endorsement of the Washington State Medical Association (WSMA) were two critical enabling factors in the progress of the training program. The future of the program, however, is clouded by uncertainties over state and federal funding, an increasing supply of physicians in the region and academic pressure to increase the didactic educational component. These factors undoubtedly contributed to the decision by WSMA to withdraw its endorsement of MEDEX Northwest in September 1981.

The program now plans to lengthen its didactic curriculum to 12 months, while retaining the six-month preceptorship. Tuition has been raised from \$916 (in-state) or \$2,623 (out-of-state) to \$5,325 for all students. The recent enactment of new legislation in Montana enabling PA practice could offer new rural training and placement opportunities in a state previously resistant to the PA concept. Additional new areas of need under consideration for expanded training are occupational medicine, geriatrics and correctional medicine. An increasing number of PA's are finding employment in these settings. The program has been frequently adapted to changing conditions during its first ten years, and should continue to evolve during the 1980s.

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