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# Physician Assistants and Nurse Practitioners in Hospital Outpatient Departments, 1993–1994

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## S Y N O P S I S

**Objective.** To describe the characteristics of visits to physician assistants (PAs) and nurse practitioners (NPs) in hospital outpatient departments in the United States.

**Methods.** Data from the 1993 and 1994 National Hospital Ambulatory Medical Care Surveys were used to compare hospital outpatient department visits in which the patient was seen by a PA or NP, or both, with outpatient visits to all practitioners.

**Results.** An average of 64 million annual outpatient visits were made in 1993–1994, and patients were seen by PAs, NPs, or both, at 8% of these visits. PA-NP visits were more likely than total visits to occur in the Midwest, in non-urban areas, and in obstetric-gynecology clinics, and a higher proportion involved patients younger than age 25. Smaller differences were found between PA-NP visits and total outpatient visits in "reason for visit," "principal diagnosis," and "medication prescribed."

**Conclusion.** Beyond the care they provide in physicians' offices and other non-hospital settings, PAs and NPs make an important contribution to ambulatory health care delivery in hospital outpatient departments.

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**A**mbulatory care is the predominant mode of health services delivery in the United States. In 1994, there were an estimated 841 million visits to ambulatory care settings,<sup>1-3</sup> 81% of which occurred in physicians' offices. Visits to hospital emergency departments represented 11% of the total number of ambulatory care visits, followed by hospital outpatient departments with 8%.

Both the structure and process of health care delivery in hospital outpatient departments, especially in teaching hospitals, are undergoing rapid change in ways that are likely to increase the use of physician assistants (PAs) and nurse practitioners (NPs) in these settings. For example, in an attempt to generate future savings from the deployment of a more balanced physician supply, the Council on Graduate Medical Education has recommended a reduction in the number of specialist positions in hospital-based graduate medical education programs.<sup>4</sup> Meanwhile, other changes in graduate medical education are shifting greater proportions of primary care medical residents from hospitals to community settings,<sup>5</sup> which will contribute to increased demand for PAs and NPs in hospital OPDs.

Patients seen in OPD visits have been shown to differ from those seen in physicians' offices in demographic characteristics:<sup>3</sup> for example, OPDs provide a disproportionate amount of care to people of color and to Medicaid recipients.<sup>3</sup> The present study was designed to determine whether PA-NP hospital OPD visits differ from hospital OPD visits to all types of medical practitioners in terms of factors such as patient characteristics, tests and procedures performed or ordered, and medications prescribed.

This study presents empirical information on the use of PAs and NPs in hospital OPDs based on combined data from the 1993 and 1994 National Hospital Ambulatory Medical Care Surveys (NHAMCS). The NHAMCS is an annual probability sample survey of non-Federal, short-stay, general hospitals in the United States first conducted in 1992 by the National Center for Health Statistics (NCHS).<sup>6</sup> The survey obtains information from medical record data on patient and visit characteristics, including type(s) of providers seen. Since the NHAMCS is the only national survey of OPD visits in the United States that collects data on the type of provider seen, it offers a unique opportunity to evaluate the roles of PAs and NPs in this setting on a national level. The present study reports the analyses of 1993 and 1994 data.

## METHODS

Identical survey instruments, definitions, and procedures were used by NHAMCS for 1993 and 1994. The sampling procedure is described in detail in an earlier publication.<sup>6</sup>

The number of hospitals eligible to participate in each of these years was 489. The response rates for the surveys were 94% of all eligible hospitals in 1993 and 95% in 1994. About 75% of the participating hospitals were included in both the 1993 and 1994 surveys. About half of the hospitals (228 in the 1993 sample and 260 in the 1994 sample) had OPDs. The response rates for hospitals with OPDs were 97% in 1993 and 89% in 1994.

Data collection for the NHAMCS consisted of interviews with hospital administrators and a review of patient data record forms that were filled out by hospital staff. Bureau of the Census field representatives conducted interviews with the administrators of all participating hospitals.

Hospital OPD staff were asked to complete patient record forms for a systematic sample of patient visits that took place during a randomly assigned four-week reporting period. The patient record form asked for information on the age, sex, and "race" of the patient; expected source(s) of payment; reason(s) for visit;<sup>7</sup> diagnoses;<sup>8</sup> "tests, surgical and nonsurgical procedures, and therapies";<sup>8</sup> medication prescribed;<sup>9</sup> and the type of provider(s) seen. As many as three reasons for a visit could be recorded and classified according to a system developed by NCHS,<sup>7</sup> and up to three diagnoses were recorded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification*.<sup>8</sup> The number of patient record forms completed by hospital staff was 28,357 in 1993 and 29,095 in 1994. Data processing operations and medical coding were performed by Analytic Services, Inc., Durham, North Carolina.

Hospital outpatient clinics were included in the analyses reported here if they provided ambulatory medical care under physician supervision within the auspices of a hospital at established locations and schedules. Clinics where only ancillary services (such as radiology, physical rehabilitation, and laboratory services) were provided, or in which physician services were not typically provided, were excluded from the survey, as were freestanding clinics and ambulatory surgery centers. For the purposes of data analysis, clinics surveyed for the NHAMCS were grouped into five cate-

gories: general medicine, surgery, pediatrics, obstetrics-gynecology, and "other."

Data from the NHAMCS were weighted to produce national estimates. The weighting factor was based on the probability of selection, an adjustment for nonresponse, and a post-ratio adjustment. Estimates were considered unreliable if they had more than a 30% relative standard error (that is, fewer than 41,000 visits and 65,000 drug mentions). The determination of statistical inference was based on the two-tailed *t*-test. For multiple comparisons, the Bonferroni inequality was used to test for statistically significant differences at the 0.01 confidence level.<sup>10</sup> Standard errors were computed using a generalized variance model, and 95% confidence intervals were calculated.<sup>11</sup>

RESULTS

For 1993–1994, we found that an average of 64 million annual hospital OPD visits were made in the United States. Patients were seen by PAs or NPs at 8% of these visits. (Physicians or other providers may also have seen the patient at these visits.)

The data shown in Tables 1–4 and Figures 1–2 represent annual averages for the two-year period, that is, the means of the 1993 and 1994 data.

Table 1 shows a comparison between PA-NP visits and total OPD visits. (Visits to PAs and NPs were included in total visits.) Higher proportions of PA-NP visits than of overall visits were made by people younger than 25 years old (*P* < 0.01) and by females (*P* < 0.01).

**Table 1. Hospital outpatient department visits to physician assistants (PAs) and nurse practitioners (NPs) and visits to all providers, by selected patient and visit characteristics, National Hospital Ambulatory Medical Care Survey, 1993–1994**

Characteristic	PA-NP visits				Visits to all practitioners			
	Number of visits (in thousands)	95% CI	Percent	95% CI	Number of visits (in thousands)	95% CI	Percent	95% CI
<b>Age</b>								
Younger than 15 . . . . .	1202	899,1505	23.9	21.9,26.0	13,218	10,135,16,302	20.5	20.0,21.1
15–24 . . . . .	939	697,1181	18.7	16.8,20.6	8171	6255,10,087	12.7	12.2,13.1
25–44 . . . . .	1416	1064,1769	28.2	26.0,30.4	19,053	14,620,23,486	29.6	29.0,30.2
45–64 . . . . .	705	518,892	14.0	12.3,15.7	13,332	10,222,16,442	20.7	20.1,21.2
65 and older . . . . .	<u>760</u>	560,960	15.1	13.4,16.9	<u>10,652</u>	8162,13,142	16.5	16.0,17.0
	5021				64,426			
<b>Sex</b>								
Female . . . . .	3407	2593,4221	67.9	65.6,70.1	39,759	30,536,48,982	61.7	61.0,62.4
Male . . . . .	<u>1614</u>	1216,2012	32.1	29.9,34.4	<u>24,667</u>	18,935,30,399	38.3	37.6,39.0
	5021				64,426			
<b>Clinic type</b>								
General medicine . . . . .	2685	2039,3332	53.5	51.0,55.9	32,368	24,855,39,882	50.2	50.0,50.9
Obstetrics-gynecology . . . . .	1137	849,1425	22.6	20.6,24.7	8209	6284,10,134	12.7	12.3,13.2
Surgery . . . . .	591	431,752	11.8	10.2,13.3	9750	7469,12,031	15.1	14.6,15.6
Pediatrics . . . . .	525	380,670	10.5	9.0,12.0	9185	7035,11,336	14.3	13.8,14.7
Other . . . . .	<u>83</u>	46,120	1.7	1.0,2.3	<u>4914</u>	3752,6076	7.6	7.3,8.0
	5021				64,426			
Totals . . . . .	5021	3834,6208	—	—	64,426	49,497,79,356	—	—

NOTE: All data reported here represent 1993 and 1994 survey findings averaged over the two-year period. CI = confidence interval

## “Patients were seen by physician assistants or nurse practitioners at 8% of hospital outpatient department visits in 1993–1994.”

Twenty-eight percent of PA-NP visits occurred in non-Metropolitan Statistical Areas compared with 10% of total OPD visits ( $P < 0.01$ ). (Metropolitan Statistical Areas are groupings of cities, towns, or counties identified by the U.S. Office of Management and the Budget; non-Metropolitan Statistical Areas are defined as non-metropolitan areas of the United States.) Data on OPD visits by geographic region are shown in Figure 1.

Table 2 shows a comparison of the most frequently reported diagnoses for PA-NP visits and for overall visits.

PA-NP visits and total visits did not differ with respect to the three leading reasons for visits—routine

prenatal examination, general medical examination, and progress visit.

One or more diagnostic or screening service was provided in a higher percentage of PA-NP visits (84%) than of total visits (76%) ( $P < 0.01$ ). For example, significantly more blood pressure checks (68%) were ordered or provided in PA-NP visits than in total visits (54%). Similarly, more urinalysis tests (22%) were ordered or provided in PA-NP visits than in total visits (14%) ( $P < 0.01$ ).

The results of an open-ended question about procedures on the data collection form are presented in Table 3. “Counseling/education” was ordered or provided at

**Table 2. Hospital outpatient department visits to physician assistants (PAs) and nurse practitioners (NPs) for the top 10 principal diagnoses, compared with rankings for visits to all providers, National Hospital Ambulatory Medical Care Survey, 1993–1994**

Principal diagnosis	ICD-9-CM code <sup>a</sup>	Rank	PA-NP visits (n = 5021)				Rank among total visits
			Number of visits (in thousands)	95% CI	Percent of visits	95% CI	
Normal pregnancy . . . . .	V22	1	622	454,790	12.4	10.8,14.0	1
Health supervision of infant or child . . . . .	V20	2	246	167,325	4.9	3.8,6.0	3
Suppurative and unspecified otitis media . . . . .	382	3	150	95,205	3.0	2.2,3.8	6
General medical examination . . . . .	V70	4	148	94,202	2.9	2.1,3.8	4
Essential hypertension . . . . .	401	5	104	61,147	2.1	1.4,2.8	2
Diabetes mellitus . . . . .	250	6	93	53,133	1.9	1.2,2.5	5
Acute upper respiratory infections of multiple and unspecified sites . . . . .	465	7	77	42,112	1.5	0.9,2.1	7
Asthma . . . . .	493	8	76	41,111	1.5	0.9,2.1	8
Acute pharyngitis . . . . .	462	9	73	39,107	1.5	0.9,2.0	15
Follow-up examination . . . . .	V67	10	68	35,101	1.4	0.8,1.9	13

NOTE: All data reported here represent 1993 and 1994 survey findings averaged over the two-year period.

<sup>a</sup>Reference 8

CI = confidence interval

**Table 3. Hospital outpatient department visits to physician assistants (PAs) and nurse practitioners (NPs) by the 10 tests, surgical and nonsurgical procedures, and therapies most often ordered or provided, compared with rankings for visits to all providers, National Hospital Ambulatory Medical Care Survey, 1993–1994**

Test, procedure or therapy	ICD-9-CM code <sup>a</sup>	Rank	PA-NP visits				Rank among total visits
			Number of visits (in thousands)	95% CI	Percent of visits	95% CI	
Microscopic examination of female genital specimen—culture . . . . .	91.42	1	703	516,890	14.0	12.3,15.7	8
Pap smear . . . . .	91.46	2	666	488,844	13.3	11.6,14.9	3
Fetal monitoring . . . . .	75.34	3	312	217,407	6.2	5.0,7.4	14
Other nonoperative measurements and examinations . . . . .	89.39	4	271	186,356	5.4	4.3,6.5	5
Routine chest X-ray . . . . .	87.44	5	224	151,297	4.5	3.5,5.5	4
Diagnostic ultrasound of gravid uterus . . . . .	88.78	6	151	96,206	3.0	2.2,3.8	9
Electrocardiogram . . . . .	89.52	7	145	92,199	2.9	2.1,3.7	6
“Other mammography” . . . . .	87.37	8	129	80,178	2.6	1.8,3.3	8
Eye examination . . . . .	95.09	9	119	72,166	2.4	1.6,3.1	2
Gynecological examination . . . . .	89.26	10	109	65,153	2.2	1.5,2.9	11
All PA-NP visits . . . . .	—	—	5021	3834,6208	—	—	—

NOTE: All data reported here represent 1993 and 1994 survey findings averaged over the two-year period. Rankings were compiled from answers to open-ended questions on the data collection form.

<sup>a</sup>Reference 8

CI = confidence interval

51% of PA-NP visits, in contrast to 46% of total visits ( $P < 0.01$ ). (The “Counseling/Education” item on the checklist included the following categories: “none,” exercise, cholesterol reduction, weight reduction, smoking cessation, growth/development, injury prevention, HIV transmission, other STD transmission, and “other.”)

Both Medicaid and “other government” were recorded on the data forms as the expected source of payment for a larger proportion of PA-NP visits than of total visits ( $P < 0.01$ ). In contrast, both “patient paid” and “HMO/other prepaid” were recorded for a higher percentage of total visits than of PA-NP visits ( $P < 0.01$ ). Figure 2 shows OPD visits and total visits by expected source of payment.

At least one physician was seen at 88% of non-PA-NP visits, 24% of PA-NP visits, and 83% of total visits. One-fifth of all OPD visits were made as a result of a referral from a physician, compared with 11% of PA-NP visits ( $P < 0.01$ ).

Sixty-four percent of total visits were made by people

who were returning to the clinic for care of a previously treated problem, as were 59% of PA-NP visits ( $P < 0.01$ ). Fifteen percent of all visits and 19% of PA-NP visits were made by people who were returning to the clinic for treatment of a new problem ( $P < 0.01$ ).

The mean number of drug mentions for PA-NP visits was 1.3; for total visits, the mean number of drug mentions was 1.2 (data not shown). See Table 4 for the most frequently prescribed generic substances.

## DISCUSSION

Analysis of 1993 and 1994 NHAMCS data shows that PA-NP OPD visits were similar to total OPD visits with respect to the most commonly recorded diagnoses and reasons for visits. That the largest proportion of PA-NP visits occurred in obstetrics-gynecology clinics may have been due to the inclusion of certified nurse-midwives and clinical nurse specialists in the NP category. At the same time, however, a higher proportion of PA-

“Hospital outpatient department visits to physician assistants and nurse practitioners did not differ from overall visits with respect to the most commonly recorded diagnoses and reasons for visits.”

NP visits than of total visits were made by people younger than age 25, which probably reflects the use of pediatric PAs and NPs and certified nurse-midwives in the OPD setting.

In terms of geographic distribution, the fact that the Midwest had the highest proportion of PA-NP visits may be the result of both larger supply and generally more favorable PA and NP practice environments in several midwestern states than in the rest of the country.<sup>12</sup> The finding that PA-NP visits were also more likely to occur in non-Metropolitan Statistical Areas is consistent with the results of several other studies which found that higher proportions of PAs and NPs than of primary care physicians work in rural areas.<sup>13,14</sup>

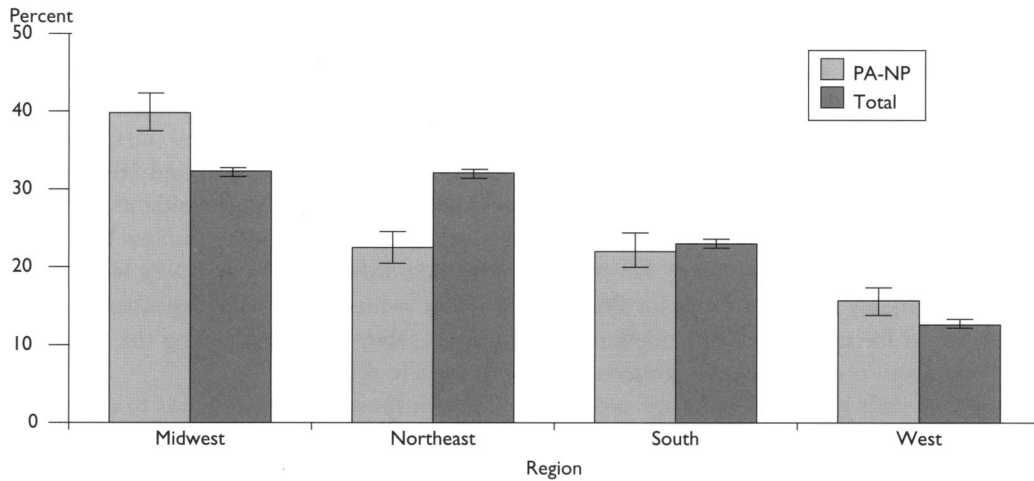
Although few differences were found between PA-NP and total OPD visits in the “reason for visit” category, PAs and NPs saw a higher proportion of OPD patients who returned with new problems and a lower proportion of referred patients than were seen at overall visits. From this it may be assumed that many PAs and NPs performed patient screening and intake duties in OPDs while referred patients were seen by physicians. Twenty-one percent of all PA-NP visits, meanwhile, were for wellness examinations. These results show that PAs and NPs can be used to free physicians from providing routine services, thereby allowing them to spend more time attending to seriously ill or injured patients.

**Table 4. Most frequently prescribed generic substances at physician assistant-nurse practitioner (PA-NP) hospital outpatient department visits, compared with ranking for visits to all providers, National Hospital Ambulatory Medical Care Survey, 1993–1994**

Generic substance	Rank	Number of mentions (in thousands)	PA-NP			Rank among total visits
			95% CI	Percent of mentions	95% CI	
Multivitamins . . . . .	1	360	239,481	4.6	3.8,5.5	3
Acetaminophen . . . . .	2	306	199,413	3.9	3.2,4.7	1
Amoxicillin . . . . .	3	281	181,381	3.6	2.9,4.4	2
Ibuprofen . . . . .	4	197	119,275	2.5	1.9,3.2	4
Trimethoprim . . . . .	5	141	79,203	1.8	1.3,2.3	6
Sulfamethoxazole . . . . .	6	137	76,198	1.8	1.3,2.3	7
Estradiol . . . . .	7	129	70,188	1.7	1.2,2.2	42
Albuterol . . . . .	8	126	68,184	1.6	1.1,2.1	5
Polio vaccine . . . . .	9	112	59,166	1.4	1.0,1.9	22
Iron preparations . . . . .	10	107	55,159	1.4	0.9,1.8	11

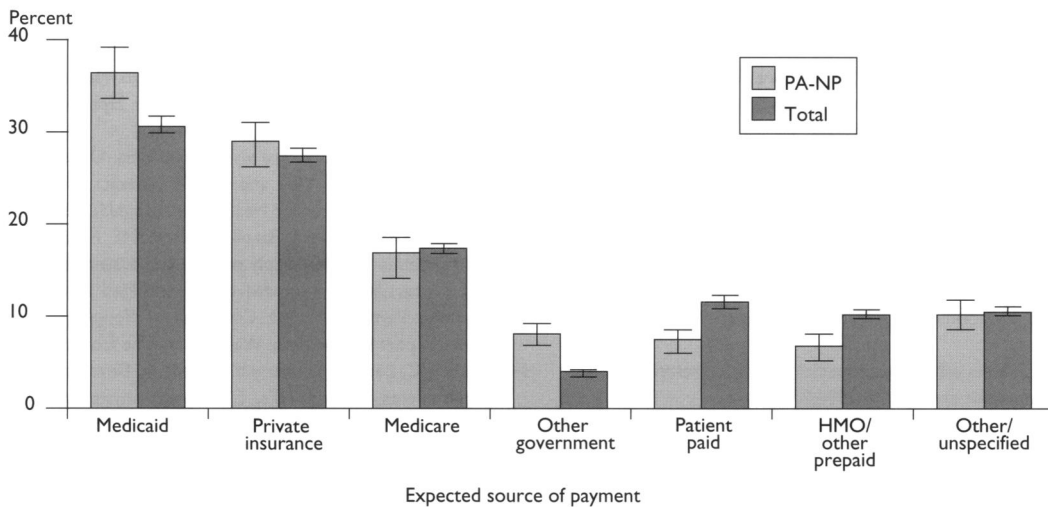
NOTE: All data reported here represent 1993 and 1994 survey findings averaged over the two-year period.  
CI = confidence interval

**Figure 1. Percent of PA-NP hospital outpatient department visits compared to total visits, by geographic region, National Hospital Ambulatory Medical Care Survey, 1993–1994**



NOTE: Bars indicate 95% confidence intervals. Percentages represent 1993 and 1994 survey findings averaged over the two-year period.  
 PA = physician assistant  
 NP = nurse practitioner

**Figure 2. Percent of PA-NP hospital outpatient department visits, by expected source of payment, National Hospital Ambulatory Medical Care Surveys, 1993–1994**



NOTE: More than one source of payment could be reported for each visit. Bars indicate 95% confidence intervals. Percentages represent 1993 and 1994 survey findings averaged over the two-year period.  
 PA = physician assistant  
 NP = nurse practitioner  
 HMO = health maintenance organization

At PA-NP visits, the diagnostic tests and surgical and nonsurgical procedures that were performed or ordered were more likely to be associated with obstetrical-gynecological care than in overall OPD visits. Counseling/education services were more frequently ordered or provided at PA-NP visits, which reinforces the notion that health promotion and patient education are important components of the care provided by PAs and NPs.

Prescribing regulations for nonphysician providers vary widely by state.<sup>12</sup> PA and NP prescription patterns are largely unknown; however, it is widely presumed that they prescribe in a manner similar to their associated physicians, an assumption borne out by this survey. Seven out of 10 of the most commonly recorded drugs for PA-NP visits were the same as for visits to all practitioners (Table 4). Four of these were over-the-counter preparations, which is consistent with the types of drugs prescribed at general wellness examinations.

Our study presents results of the first national survey of hospital OPDs that included PAs and NPs along with physicians as the provider of record. The major limitation of the survey design is that the contribution of each type of provider to the patient's care could not be assessed. Also, estimates for PA and NP visits could not be provided separately. It appears that PAs and NPs

are managing patients with a wide range of conditions, recommending over-the-counter medications, and prescribing much as physicians do and providing high levels of patient education and counseling.

Based on these findings, it is likely that use of these providers could be expanded in hospital OPDs, potentially lessening demands on house staff and diverting physician resources to more specialized tasks. There is some evidence that teaching hospitals are already increasing their hiring of PAs and NPs to perform tasks previously done by medical residents.<sup>15</sup> A recent survey of hospitals' hiring practices in New York City, however, found that although PAs and NPs led a list of occupations for which hospitals expected significant staff increases, they were also among the most difficult professionals to recruit.<sup>16</sup>

The purpose of our study was to assess the extent to which PAs and NPs are providing services in hospital OPDs. Several other issues that should be addressed in future research are role delineation, cost savings including differential productivity, and use of resources such as diagnostic tests by provider type. Research that can shed light on these issues will assist in the ability to manage this growing and important segment of the nation's health care workforce.

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