

2004 AANP National Nurse Practitioner Sample Survey, Part II: Nurse Practitioner Prescribing

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In August 2004, the American Academy of Nurse Practitioners (AANP) completed the 2004 AANP National Nurse Practitioner Sample Survey, which included 65 items to collect data on nurse practitioner (NP) characteristics and practices. The survey replicated two earlier projects conducted by AANP in 1989 and 1999, with only minor adaptations relevant to contemporary practice. It addressed clinical specialization, educational background, patient populations, practice communities and settings, prescriptive practices, salaries and employment benefits, liability experiences, and many other variables. This article, the second in a series of articles describing the findings from this study, describes prescribing patterns reported by 16,062 NP respondents who were in active practice at the time of the survey.

For a more detailed discussion of the survey methodology, see the first article in this series (Goolsby, 2005). However, the survey was mailed to 23,850 NPs (approximately 25% of the NP population) randomly selected using a stratified approach representative of the overall NP population by specialty. The over 16,000 respondents represented approximately 17% of the NP population and are characteristic of the overall population. This survey provides the most comprehensive data set on NP prescribing patterns, to date.

PERCENTAGE OF NPs WHO PRESCRIBE AND NUMBERS OF PRESCRIPTIONS WRITTEN DAILY

According to the survey, NPs manage their patients' pharmacotherapies in all 50 states, in all locales, and across all specialties. NPs prescribe in all 50 states and in the District of Columbia, including Georgia, where NPs lack authority to

"prescribe" yet may "order" medications under protocol with a physician. Only in Georgia (82.3%) and Hawaii (88.2%) did less than 90% of the respondents indicate that they prescribed pharmacologic agents. In seven states (Idaho, Montana, Nevada, North Dakota, Rhode Island, South Dakota, and Utah), 100% responded that they prescribed. Across all settings and specialties, NPs write an average of 19 prescriptions a day. When only full-time NPs are considered (those working over 35 h/week), an average of 22 prescriptions are written daily per NP.

While there is little variation in percentages of NPs who prescribe, based on the size of community in which their main practice is located, there is a difference in reported numbers of prescriptions written among these settings. Table 1 displays data on the percent of respondents who prescribe drugs in various sized communities as well as the mean number of prescriptions written by NPs in these communities.

Most NPs in all specialties prescribe (Table 2). Emergency NPs and family NPs are the most likely to prescribe; NPs in these specialties also write the largest number of prescriptions each day. Neonatal, occupational health, and school NPs are the least likely to prescribe and also write the fewest numbers of prescriptions. Many respondents identified more than one specialty, and their prescribing patterns are reported based on their identified "main specialty." Of respondents who also identified an area of clinical subspecialization, those practicing in sports medicine, dermatology, and allergy/immunology were the most likely to prescribe, compared to NPs practicing in complementary health or rheumatology who were less likely to prescribe (Table 3). The NPs practicing in allergy/immunology or dermatology practices reported writing the greatest number of prescriptions each day; NPs practicing in hematology/oncology or gastroenterology reportedly wrote the fewest prescriptions per day (Table 3).

Table 4 displays prescribing frequency for specific practice settings; the report is limited to those settings in which more than 1% of respondents practiced. NPs practicing in Veterans Administration facilities reported writing the greatest numbers of prescriptions daily. NPs practicing in rural health practices and college health settings were the most likely to prescribe. NPs in school health and occupational health settings were less likely than others to prescribe and also wrote the fewest prescriptions, on average.

FREQUENCY OF PRESCRIBING SPECIFIC DRUG CLASSIFICATIONS

The two drug classifications most frequently prescribed by NP respondents were nonsteroidal anti-inflammatory drugs (NSAIDs) and antibiotics, each prescribed by over 90% of respondents. Classifications prescribed by less than 50% of respondents included antineoplastic agents, psychoactive agents other than those used to treat depression and anxiety, anticoagulants, hormone replacements, sexual dysfunction agents, and incontinence agents. Figure 1 illustrates the prescribing patterns, across all specialties and settings,

Table 1 Prescribing by Community Served

<i>Size of Community</i>	<i>Percentage Prescribing</i>	<i>Number of Prescriptions/Day</i>
<1000	96.7	16.8
1000–24,999	97.5	21.2
25,000–50,000	96.5	20.1
>50,000	96.2	18.5
Suburban	96.7	19.8
Inner city	95.8	17.1
Other	95.5	18.5

for select classifications of drugs. Table 5 identifies detailed variation in prescribing of the most frequently prescribed drugs, by the most common NP specialties.

According to the survey, 64% of respondents were authorized to write prescriptions for controlled substances and 61% of respondents had their own Drug Enforcement Administration registration number. The frequency with which each category of controlled agents was described as prescribed is depicted in Table 6.

Approximately one half of the respondents indicated that they prescribed or recommended herbal agents (Table 7). Given a list of 12 agents, the most frequently selected agent (by 21.6%) was black cohosh; horse chestnut was selected by the smallest percentage of respondents (0.8%).

RESOURCES FOR DRUG INFORMATION

According to the survey, the majority of NPs consult a pharmacist at least monthly. Table 8 illustrates the frequency with which respondents consulted a pharmacist, with comparison

Table 2 Prescribing by Clinical Specialty

<i>Specialty</i>	<i>Percentage Prescribing</i>	<i>Number of Prescriptions/Day</i>
Acute	97.4	17.4
Adult	95.7	20.4
Emergency	98.8	26.2
Family	97.8	23.4
Gerontological	95.6	16.1
Neonatal	88.5	6.3
Occupational health	92.0	9.3
Oncology	96.2	12.4
Pediatric	95.9	14.0
Psychiatric/mental health	94.9	20.5
School	92.6	8.4
Women's health	97.1	15.0

Table 3 Prescribing by Subspecialty

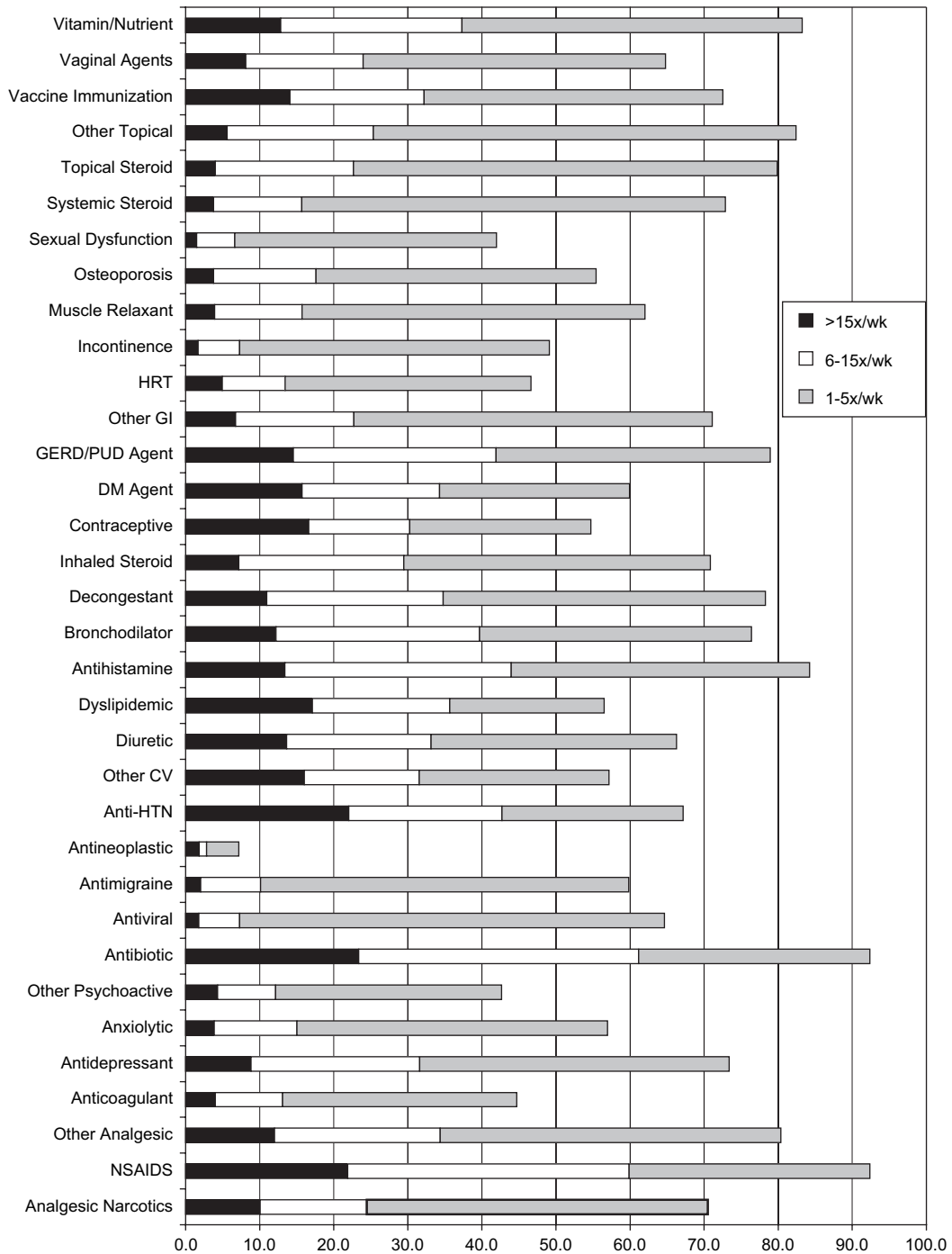
<i>Subspecialty</i>	<i>Percentage Prescribing</i>	<i>Number of Prescriptions/Day</i>
Allergy/immunology	98.1	25.8
Cardiovascular	97.2	15.5
Complementary health	93.8	19.4
Dermatology	98.8	26.1
Endocrinology	95.4	20.6
Gastroenterology	97.4	14.2
Hematology/oncology	95.6	13.1
Human immunodeficiency virus/acquired immunodeficiency syndrome	97.9	18.0
Infectious disease	96.4	17.3
Nephrology	97.6	14.0
Neurology	95.6	17.8
Orthopedics	96.8	14.6
ENT	96.4	22.2
Palliative/pain	95.2	24.3
Pulmonology	95.4	22.3
Rheumatology	93.8	24.5
Sports medicine	100.0	17.8
Urology	96.8	15.4

based on the size of community in which the NP practiced. Almost all respondents (94.2%) reported that the pharmacist was usually very helpful or moderately helpful, 5.3% reported

Table 4 Prescribing by Practice Setting

<i>Practice Setting</i>	<i>Percentage Prescribing</i>	<i>Number of Prescriptions/Day</i>
Private NP	96.2	20.1
Private physician	98.4	22.2
Health maintenance/managed care organization	99.4	17.0
Community health	97.7	22.1
Rural health	99.6	24.5
Family planning	96.7	17.5
Public health	94.2	14.4
Other freestanding primary care	97.9	24.5
Hospital outpatient	94.5	15.8
College health	99.5	13.4
School health	88.7	7.7
Occupational/employee	91.1	9.2
Emergency	98.5	26.0
Extended/long-term care	98.6	15.6
Hospital inpatient	93.6	12.3
Veteran administration	97.1	28.6

Figure 1 NP prescribing, all specialties and settings.



that the pharmacist was minimally helpful, and 0.5% reported that the pharmacist was not helpful.

Respondents were asked to identify where they obtained information about new drugs. Continuing education and journal articles were the most frequently identified sources for information on new drugs. Figure 2 illustrates the frequency with which each source was identified.

SUMMARY

The 2004 AANP National Nurse Practitioner Sample Survey provides the most detailed description of NP prescribing practices, to date. The survey confirms that NPs routinely prescribe in all 50 states and in the District of Columbia, as well as in all practice settings, regardless of specialty. The types of

Table 5 Specific Prescribing Patterns by Specialty

	<i>Number of Prescriptions/Week</i>	<i>ACNP</i>	<i>ANP</i>	<i>FNP</i>	<i>GNP</i>	<i>PNP</i>	<i>PMHNP</i>	<i>WHNP</i>
NSAIDs	Never	6.9	6.9	3.2	6.4	9.5	59.9	5.4
	1–5	35.9	35.0	23.7	42.6	43.0	31.3	44.1
	6–15	30.6	35.4	46.0	35.9	30.6	7.1	40.1
	>15	26.6	22.6	27.1	15.1	16.9	1.7	10.4
Analgesic, other	Never	12.3	18.3	13.1	7.4	27.3	72.5	31.1
	1–5	42.0	48.5	49.1	41.4	37.9	21.1	52.1
	6–15	24.5	20.8	25.7	35.2	21.3	4.1	13.9
	>15	21.2	12.5	12.1	16.0	13.5	2.3	2.8
Antidepressant	Never	28.1	23.5	14.4	6.3	63.0	1.5	29.2
	1–5	56.1	46.5	41.4	44.2	33.4	7.3	51.6
	6–15	12.9	23.3	33.4	37.3	2.9	21.5	16.4
	>15	2.9	6.7	10.8	12.2	0.7	69.7	2.8
Antihistamine	Never	25.1	18.1	6.7	16.5	11.0	35.6	26.1
	1–5	53.4	42.4	29.3	66.0	34.8	48.6	59.1
	6–15	15.7	28.4	42.1	13.0	38.0	12.7	12.8
	>15	5.9	11.1	21.9	4.6	16.2	3.1	2.1
Antibiotic	Never	6.3	9.5	2.9	5.7	6.9	81.3	5.3
	1–5	37.0	40.3	26.5	37.1	24.5	15.5	36.6
	6–15	32.9	33.3	41.2	41.4	36.1	2.7	46.2
	>15	23.9	17.0	29.4	15.8	32.5	0.5	12.0
Antimigraine	Never	63.8	43.0	20.4	65.2	49.0	69.9	46.6
	1–5	32.0	47.1	61.7	33.0	48.2	25.2	49.3
	6–15	3.2	7.8	14.4	1.0	2.2	4.2	3.8
	>15	1.0	2.1	3.4	0.7	0.5	0.7	0.3
Antivirals	Never	56.4	42.4	25.1	37.2	50.5	91.3	24.2
	1–5	36.2	49.3	68.5	59.6	45.9	8.5	61.8
	6–15	5.0	4.9	4.9	2.5	2.4	0.3	12.3
	>15	2.4	3.4	1.5	0.6	1.2	0.0	1.6
Antihypertensive	Never	13.8	17.5	15.4	7.5	82.7	69.1	64.2
	1–5	20.3	20.7	22.7	24.5	14.3	25.0	31.1
	6–15	24.1	24.8	31.7	37.2	2.1	4.7	3.3
	>15	41.9	37.0	30.1	30.8	0.9	1.2	1.4
Cardiovascular, other	Never	18.3	24.9	25.1	10.8	89.1	86.0	88.6
	1–5	21.3	25.4	33.7	32.0	8.3	11.7	9.9
	6–15	19.9	21.0	22.0	31.5	1.4	1.8	1.1
	>15	40.5	28.8	19.1	25.7	1.2	0.5	0.5
Bronchodilator	Never	20.7	25.1	11.6	9.4	15.8	87.0	60.4
	1–5	33.5	36.6	38.2	44.5	29.4	9.5	35.9
	6–15	27.0	26.3	35.1	32.4	36.4	3.0	3.2
	>15	18.8	12.0	15.1	13.7	18.4	0.5	0.6
Diabetes agents	Never	22.7	28.3	20.9	9.0	81.9	85.3	72.0
	1–5	29.1	24.5	28.7	27.8	14.6	10.6	23.9
	6–15	26.1	23.0	27.7	37.9	1.3	2.8	3.0
	>15	22.1	24.3	22.7	25.2	2.2	1.3	1.1
Diuretics	Never	14.3	18.8	18.2	7.3	85.3	85.9	61.5
	1–5	26.1	31.3	40.0	29.1	10.9	11.4	36.0
	6–15	23.2	26.4	26.4	38.9	2.0	2.3	2.0
	>15	36.4	23.5	15.4	24.7	1.8	0.5	0.5
Dyslipidemic	Never	25.0	24.2	22.1	11.8	92.1	86.6	77.5
	1–5	23.4	19.8	25.3	41.6	6.9	10.4	18.1
	6–15	17.9	25.4	29.3	26.9	0.8	2.0	3.5
	>15	33.8	30.6	23.2	19.7	0.2	1.0	0.9
Gastroesophageal reflux/peptic ulcer agents	Never	11.3	13.8	9.3	6.6	28.6	76.5	58.1
	1–5	26.6	31.9	34.0	36.2	56.5	17.5	36.1
	6–15	32.0	32.9	37.5	38.1	10.6	4.3	4.9
	>15	30.2	21.4	19.3	19.0	4.3	1.8	0.9
Gastrointestinal, other	Never	22.1	24.0	15.7	11.9	41.1	81.4	59.5
	1–5	41.8	48.3	55.0	55.9	48.7	14.8	37.2

Table 5 (Continued)

	<i>Number of Prescriptions/Week</i>	<i>ACNP</i>	<i>ANP</i>	<i>FNP</i>	<i>GNP</i>	<i>PNP</i>	<i>PMHNP</i>	<i>WHNP</i>
Muscle relaxant	6–15	22.8	18.9	20.8	22.0	6.9	2.6	2.7
	>15	13.3	8.8	8.5	10.2	3.2	1.3	0.6
	Never	39.6	31.2	18.3	35.8	70.2	78.7	70.3
Steroid, inhaled	1–5	43.3	52.2	58.0	57.8	26.9	19.0	28.2
	6–15	10.5	12.7	18.6	4.9	2.1	1.8	1.2
	>15	6.6	3.9	5.1	1.5	0.9	0.5	0.2
Steroid, systemic	Never	33.4	31.2	14.4	12.7	20.1	90.2	69.0
	1–5	39.4	40.4	46.3	60.7	37.1	7.8	28.0
	6–15	19.0	21.0	30.4	20.5	31.1	2.0	2.4
Steroid, topical	>15	8.2	7.4	8.9	6.2	11.8	0.0	0.6
	Never	21.5	26.2	13.8	17.0	20.5	92.4	72.9
	1–5	46.9	59.2	69.4	71.1	60.0	7.3	26.0
Vaccines/immunization	6–15	20.2	11.0	13.0	10.0	15.0	0.3	0.9
	>15	11.4	3.6	3.7	1.9	4.5	0.0	0.1
	Never	41.1	25.5	9.8	9.7	14.2	84.6	25.6
Vaginal	1–5	45.6	54.0	61.8	66.9	50.6	12.6	63.6
	6–15	11.5	16.7	23.0	18.4	29.4	2.5	9.6
	>15	1.8	3.8	5.4	5.0	5.8	0.3	1.1
Vitamins/nutrients	Never	56.9	31.4	17.5	18.5	15.4	86.1	47.1
	1–5	33.0	46.7	44.4	58.5	16.6	11.1	40.9
	6–15	7.2	16.4	24.7	16.8	15.7	1.5	8.0
Vaginal	>15	2.9	5.5	13.4	6.3	52.3	1.3	4.0
	Never	67.7	49.0	20.2	34.3	54.9	88.9	2.4
	1–5	25.6	38.8	53.0	60.8	41.3	9.8	18.3
Vitamins/nutrients	6–15	5.4	9.2	20.2	4.2	2.8	0.8	41.3
	>15	1.3	3.0	6.6	0.7	1.0	0.5	38.0
	Never	22.0	18.2	13.8	6.3	19.1	41.5	7.4
Vitamins/nutrients	1–5	46.1	47.9	51.1	41.4	50.8	34.9	30.8
	6–15	20.7	22.8	24.6	34.9	18.9	17.0	35.0
	>15	11.1	11.2	10.6	17.4	11.2	6.6	26.8

Note. ACNP, acute care NP; ANP, adult NP; FNP, family NP; GNP, gerontological NP; PNP, pediatric NP; PMHNP, psychiatric/mental health NP; WHNP, women's health NP.

drugs prescribed support that NPs employ pharmacotherapy in the management of acute and complex, chronic conditions, as well as in health maintenance and disease prevention.

As noted earlier, this survey replicated previous AANP projects, the first of which was completed in 1989. Copies of the original series of articles published in 1989 are available on AANP's Web site (www.aanp.org). Part II of the original series (Towers, 1989) dealt specifically with prescribing practice.

Table 6 Prescribing Frequency for Controlled Substances

<i>Category</i>	<i>>15/week</i>	<i>6–15/week</i>	<i>1–5/week</i>	<i>Never</i>
Schedule V	13.8	15.1	43.9	27.1
Schedule IV	8.4	16.2	43.9	31.5
Schedule III	5.6	14.4	43.0	37.0
Schedule II	4.1	7.6	33.7	54.5
Schedule I	0.8	1.1	5.3	92.8

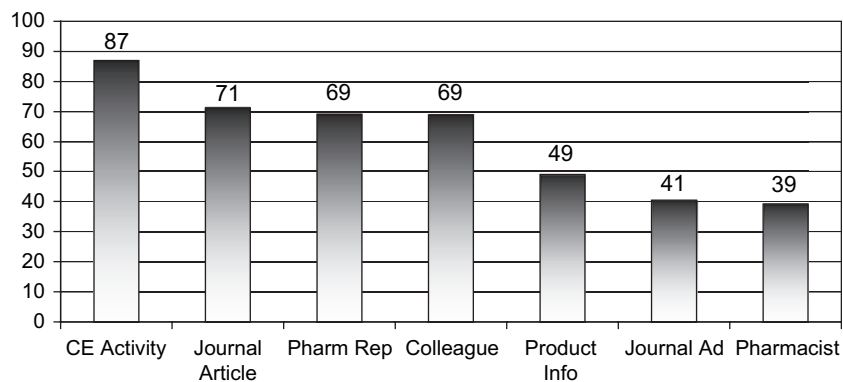
Table 7 Herbal Agents

<i>Agent</i>	<i>Percentage</i>
Black cohosh	21.6
Chamomile	11.7
Echinacea	16.8
Feverfew	2.7
Garlic	10.8
Gingko	6.8
Gensing	3.9
Green tea	15.9
Horse chestnut	0.8
Saw palmetto	10.8
St. John's wart	7.4
Valerian	6.5
Other	10.5

Table 8 Frequency of Pharmacist Consultation

	<i>Daily</i>	<i>Weekly</i>	<i>Monthly</i>	<i>1–2 Times/Year</i>	<i>Never</i>
Overall	6.3	29.1	32.1	29.4	3.1
<1000	8.7	39.3	27.1	21.8	3.1
1000–24,999	6.6	33.9	31.7	25.1	2.6
25,000–50,000	4.4	29.2	33.9	29.2	3.1
>50,000	6.7	27.5	31.9	30.7	3.2

Figure 2 Sources of information on new drugs.



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