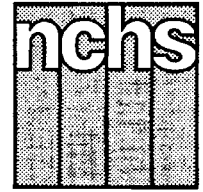


# Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

## Office Visits to Neurologists: United States, 1991–92

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### Introduction

During 1991–92 an estimated 14.5 million visits were made in the United States to nonfederally employed, office-based physicians specializing in neurology, the diagnosis and treatment of disorders of the nervous system—an average of 7.3 million visits per year. This report summarizes data pertaining to office visits to neurologists in terms of physician practice characteristics, patient characteristics, and visit characteristics.

The information presented in this report is based on data collected by the National Ambulatory Medical Care Survey (NAMCS), a national probability sample survey conducted by the Division of Health Care Statistics of the National Center for Health Statistics, Centers for Disease Control and Prevention. This survey was conducted yearly from 1973 through 1981, again in 1985, and has resumed an annual schedule with the 1989 survey.

The 1991 and 1992 NAMCS shared identical survey instruments, definitions, and procedures. The resulting 2 years of data have been combined to provide more reliable estimates, and the reader should note that the estimates, percent distributions, and rates presented in this report reflect average annual estimates based on the combined 1991 and 1992 data, unless otherwise stated. Figure 1

shows the Patient Record form, which is the survey instrument used by participating physicians to record information about their patients' office visits.

Only visits to the offices of nonfederally employed physicians who were classified by the American Medical Association or the American Osteopathic Association as "office-based, patient care" were included in the NAMCS sample. Visits to private nonhospital-based clinics and health maintenance organizations were considered to be within scope of the survey, but those that took place in government-operated facilities were not. Physicians specializing in anesthesiology, pathology, or radiology were not included in the sample, nor were visits to hospital-based physicians or physicians primarily engaged in training, research, or administration. Telephone contacts and visits made outside the physician's office were also excluded. The National Hospital Ambulatory Medical Care Survey (NHAMCS) collects patient and visit data from hospital-based outpatient departments and emergency departments. Results from that survey are available in other published reports (1–4).

It is necessary to keep in mind that the estimates presented in this report are based on a sample, rather than on the entire universe of office visits, and, as

such, they are subject to sampling variability. The Technical notes at the end of this report discuss briefly the sample design, sampling errors, and guidelines for judging the precision of NAMCS estimates. Additional publications summarizing NAMCS data from 1991 and 1992 are available (5–7).

### Physician practice characteristics

On average, 2.9 visits per 100 persons per year were made to neurologists during 1991 and 1992 (table 1). This specialty received 1.0 percent of all office visits made to ambulatory care physicians during the 2-year period.

Visit rates did not differ by geographic region, except that the West had a higher annual visit rate (3.8 visits per 100 persons) than did the Northeast (2.4 visits per 100 persons). The majority of neurology visits (95.4 percent) were made to doctors of medicine; 4.6 percent were made to doctors of osteopathy (table 2).

### Patient characteristics

Visits to neurologists are shown by patient's age, sex, and race in table 3. The visit rate was significantly higher for persons 25 years and over compared with those under age 25. However, no



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Assurance of Confidentiality—All information which would permit identification of an individual, a practice, or an establishment will be held confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to other persons or used for any other purpose.		Department of Health and Human Services Centers for Disease Control Public Health Service National Center for Health Statistics		D	
1. DATE OF VISIT ____/____/____ Month Day Year		<b>PATIENT RECORD</b> <b>NATIONAL AMBULATORY MEDICAL CARE SURVEY</b>			OMB No. 0920-0234 Expires 4-30-93 CDC 64.21D
2. DATE OF BIRTH ____/____/____ Month Day Year	4. COLOR OR RACE 1 <input type="checkbox"/> White 2 <input type="checkbox"/> Black 3 <input type="checkbox"/> Asian / Pacific Islander 4 <input type="checkbox"/> American Indian / Eskimo / Aleut	5. ETHNICITY 1 <input type="checkbox"/> Hispanic origin 2 <input type="checkbox"/> Not Hispanic	6. EXPECTED SOURCE(S) OF PAYMENT <i>[Check all that apply]</i> 1 <input type="checkbox"/> HMO/other prepaid 5 <input type="checkbox"/> Private / commercial 2 <input type="checkbox"/> Medicare 6 <input type="checkbox"/> Patient paid 3 <input type="checkbox"/> Medicaid 7 <input type="checkbox"/> No charge 4 <input type="checkbox"/> Other government 8 <input type="checkbox"/> Other		7. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
3. SEX 1 <input type="checkbox"/> Female 2 <input type="checkbox"/> Male	10. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT <i>[In patient's own words]</i> a. Most important: _____ b. Other: _____ c. Other: _____		11. PHYSICIAN'S DIAGNOSES a. Principal diagnosis / problem associated with item 10.a: _____ b. Other: _____ c. Other: _____		8. IS THIS VISIT INJURY RELATED? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
14. AMBULATORY SURGICAL PROCEDURE(S) <i>[Record any outpatient diagnostic or therapeutic procedure. For the first, check appropriate boxes.]</i> a. _____ 1 <input type="checkbox"/> Scheduled 3 <input type="checkbox"/> Local anesthesia 2 <input type="checkbox"/> Performed 4 <input type="checkbox"/> Regional anesthesia 5 <input type="checkbox"/> General anesthesia b. _____		15. DIAGNOSTIC / SCREENING SERVICES <i>[Check all ordered or provided]</i> 1 <input type="checkbox"/> None 11 <input type="checkbox"/> Pap test 2 <input type="checkbox"/> Blood pressure 12 <input type="checkbox"/> Strep throat test 3 <input type="checkbox"/> Urinalysis 13 <input type="checkbox"/> HIV serology 4 <input type="checkbox"/> EKG - resting 14 <input type="checkbox"/> Cholesterol measure 5 <input type="checkbox"/> EKG - exercise 15 <input type="checkbox"/> Other lab test 6 <input type="checkbox"/> Mammogram 16 <input type="checkbox"/> Hearing test 7 <input type="checkbox"/> Chest x-ray 17 <input type="checkbox"/> Visual acuity 8 <input type="checkbox"/> Other radiology 18 <input type="checkbox"/> Mental status exam 9 <input type="checkbox"/> Allergy testing 19 <input type="checkbox"/> Other <i>[Specify]</i> 10 <input type="checkbox"/> Spirometry		16. THERAPEUTIC SERVICES <i>[Check all ordered or provided. Exclude medication]</i> 1 <input type="checkbox"/> None 6 <input type="checkbox"/> Drug abuse COUNSELING / EDUCATION: 7 <input type="checkbox"/> Alcohol abuse 2 <input type="checkbox"/> Diet 8 <input type="checkbox"/> Smoking cessation 3 <input type="checkbox"/> Exercise 9 <input type="checkbox"/> Family / social 4 <input type="checkbox"/> Cholesterol reduction 10 <input type="checkbox"/> Growth / development 5 <input type="checkbox"/> Weight reduction 11 <input type="checkbox"/> Family planning 12 <input type="checkbox"/> Other counseling OTHER THERAPY: 13 <input type="checkbox"/> Psychotherapy 14 <input type="checkbox"/> Corrective lenses 15 <input type="checkbox"/> Hearing aid 16 <input type="checkbox"/> Physiotherapy 17 <input type="checkbox"/> Other therapy <i>[Specify]</i>	
17. MEDICATION <i>[Record all new or continued medications ordered or provided at this visit. Use the same brand name or generic name entered on any Rx or office medical record. Include immunizing and desensitizing agents.]</i> If none, check here <input type="checkbox"/> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____		18. DISPOSITION THIS VISIT <i>[Check all that apply]</i> 1 <input type="checkbox"/> No follow-up planned 2 <input type="checkbox"/> Return at specified time 3 <input type="checkbox"/> Return if needed, P,R,N. 4 <input type="checkbox"/> Telephone follow-up planned 5 <input type="checkbox"/> Referred to other physician 6 <input type="checkbox"/> Returned to referring physician 7 <input type="checkbox"/> Admit to hospital 8 <input type="checkbox"/> Other <i>[Specify]</i> _____		19. DURATION OF THIS VISIT <i>[Time actually spent with physician]</i> _____ Minutes	

Figure 1. Patient Record form

significant differences were noted among visit rates for those in the age groups 24–44 years, 45–64 years, 65–74 years, and 75 years and over. In addition, visit rates for persons under 15 years and 15–24 years of age did not differ significantly from each other. Females had a higher visit rate to neurologists than did males (3.3 visits per 100 females per year compared with 2.5 visits per 100 males). Significant differences were confined to the age group 25–44 years, with females in that group making 4.0 visits per 100 compared with 2.3 visits per 100 males. White persons had a significantly higher

rate of visits to neurologists (3.2 visits per 100 persons per year) than did black persons (1.6 visits per 100 persons per year).

Persons 25–44 years of age accounted for more than one-third (35.3 percent) of all office visits to neurologists; those 44 years and over accounted for slightly less than half of the visits (46.1 percent). Females made a higher proportion of visits to neurologists than did males, 58.0 percent and 42.0 percent, respectively. White persons made 91.1 percent of the visits to this specialty, and black persons accounted for 7.0 percent.

**Visit characteristics**

**Referral status and prior-visit status**

Nearly one-third (30.2 percent) of office visits to neurologists were the result of a referral by another physician compared with 6.0 percent of the visits to all other physicians (figure 2). While 60.5 percent of neurology visits were made by patients returning for care of a previously treated problem, more than one-third (35.8 percent) were made by new patients. In comparison, only 15.5 percent of the visits to all other

**Table 1. Annual number, percent distribution, and rate of office visits by physician specialty, averaged over a 2-year period: United States, 1991–92**

Physician specialty	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year <sup>1</sup>
All visits . . . . .	715,867	100.0	286.3
General and family practice . . . . .	192,051	26.8	76.8
Internal medicine . . . . .	101,598	14.2	40.6
Pediatrics . . . . .	85,387	11.9	34.1
Obstetrics and gynecology . . . . .	62,601	8.7	25.0
Ophthalmology . . . . .	43,884	6.1	17.5
Orthopedic surgery . . . . .	36,958	5.2	14.8
Dermatology . . . . .	29,179	4.1	11.7
General surgery . . . . .	22,797	3.2	9.1
Otolaryngology . . . . .	21,007	2.9	8.4
Psychiatry . . . . .	17,769	2.5	7.1
Urological surgery . . . . .	13,857	1.9	5.5
Cardiovascular diseases . . . . .	13,146	1.8	5.3
Neurology . . . . .	7,253	1.0	2.9
All other specialties . . . . .	68,382	9.6	27.3

<sup>1</sup>Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States for July 1, 1991, and July 1, 1992, averaged over the 2-year period.

**Table 2. Annual number, percent distribution, and rate of office visits to neurologists by selected physician practice characteristics, averaged over a 2-year period: United States, 1991–92**

Physician practice characteristics	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year <sup>1</sup>
All visits . . . . .	7,253	100.0	2.9
Geographic region			
Northeast . . . . .	1,191	16.4	2.4
Midwest . . . . .	1,815	25.0	3.0
South . . . . .	2,172	30.0	2.6
West . . . . .	2,076	28.6	3.8
Professional Identity			
Doctor of medicine . . . . .	6,921	95.4	2.8
Doctor of osteopathy . . . . .	332	4.6	0.1

<sup>1</sup>Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States for July 1, 1991, and July 1, 1992, averaged over the 2-year period.

physicians were by new patients (figure 3). Visits by referral status and prior-visit status are summarized in table 4.

**Expected sources of payment**

Private insurance was an expected source of payment at nearly one-half (44.4 percent) of all visits to neurologists compared with one-third (34.1 percent) of visits to all other specialties. Medicare was an expected pay source at one-fifth of all neurology visits (21.8 percent). Data on expected sources of payment are shown in table 5. It should be noted that more than one expected source of payment could be recorded per visit.

**Patient's principal reason for visit**

Table 6 shows the patient's principal reason for visiting the physician, according to the eight modules, or groups of reasons, outlined in *A Reason for Visit Classification for Ambulatory Care (RVC)* (8). Principal reason for visit (item 10a on the Patient Record form) is the patient's most important complaint(s), symptom(s), or other reason(s) for this visit expressed in the patient's (or patient's spokesperson's) own words. Up to three reasons per visit may be coded based upon the classification system found in the RVC.

Eight out of ten visits to this specialty (81.1 percent) were due to a

symptomatic problem or complaint, with the largest proportion of symptoms being those referable to the nervous system (excluding sense organs) (43.3 percent). Musculoskeletal symptoms were listed at 22.9 percent of the visits.

Specific reasons for visit are listed in table 7. The single most frequently mentioned principal reason for visiting the neurologist was headache or pain in head, accounting for 18.4 percent of the visits. A higher proportion of visits by females were for this reason (22.5 percent) compared with males (12.7 percent). Convulsions, mentioned at 9.1 percent of visits, was the second most frequent reason, followed by disturbances of sensation (5.5 percent). It should be noted that estimates that differ in rank order may not be significantly different from each other.

**Diagnostic services**

About one-third of all visits to neurologists included no diagnostic or screening services; 4 of every 10 visits (42.2 percent) included one service. The most frequently mentioned specific category was blood pressure check, which was reported at more than one-third of the visits (37.3 percent).

Mental status exams were more likely to be ordered or provided at visits to neurologists compared with visits to all other physicians (8.8 percent and 1.1 percent, respectively), as was "other radiology" (radiology other than chest x ray). Unspecified diagnostic services were reported at 29.6 percent of all visits to neurologists. Table 8 displays visits by the number and type of diagnostic services ordered or provided.

**Principal diagnosis**

Data on principal diagnoses rendered at office visits are obtained from item 11a of the Patient Record form where physicians are asked to record the principal diagnosis associated with the patient's most important reason for visit. Diagnoses are classified and coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* (9).

**Table 3. Annual number, percent distribution, and rate of office visits to neurologists by selected patient characteristics, averaged over a 2-year period: United States, 1991–92**

<i>Patient characteristic</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Visit rate per 100 persons<sup>1</sup></i>
All visits . . . . .	7,253	100.0	2.9
<i>Age</i>			
Under 15 years . . . . .	770	10.6	1.4
15–24 years . . . . .	577	8.0	1.7
25–44 years . . . . .	2,559	35.3	3.2
45–64 years . . . . .	1,893	26.1	4.0
65–74 years . . . . .	820	11.3	4.5
75 years and over . . . . .	633	8.7	5.2
<i>Sex and age</i>			
Female . . . . .	4,210	58.0	3.3
Under 15 years . . . . .	329	4.5	1.2
15–24 years . . . . .	312	4.3	1.8
25–44 years . . . . .	1,647	22.7	4.0
45–64 years . . . . .	1,071	14.8	4.3
65–74 years . . . . .	441	6.1	4.3
75 years and over . . . . .	410	5.6	5.4
Male . . . . .	3,044	42.0	2.5
Under 15 years . . . . .	442	6.1	1.5
15–24 years . . . . .	265	3.7	1.5
25–44 years . . . . .	912	12.6	2.3
45–64 years . . . . .	822	11.3	3.6
65–74 years . . . . .	380	5.2	4.6
75 years and over . . . . .	224	3.1	4.9
<i>Race</i>			
White . . . . .	6,605	91.1	3.2
Black . . . . .	508	7.0	1.6
Asian/Pacific Islander . . . . .	113	1.6	---
American Indian/Eskimo/Aleut . . . . .	*27	*0.4	---

<sup>1</sup>Visit rates are based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized U.S. population for July 1, 1991, and July 1, 1992, averaged over the 2-year period.

More than one-third (36.1 percent) of all visits to neurologists resulted in a principal diagnosis that was classifiable to a disease of the nervous system and sense organs (table 9). About one-fifth of the visits (21.3 percent) were recorded as “symptoms, signs, and ill-defined conditions.” Diseases of the musculoskeletal system and connective tissue accounted for 14.6 percent of the visits.

The top 20 principal diagnoses at visits to neurologists are shown in table 10. The most frequently listed specific diagnosis was “general symptoms” (ICD–9–CM code 780), occurring at 13.3 percent of visits. This category falls within the larger classification of “symptoms, signs, and ill-defined conditions” of the ICD–9–CM. This classification includes signs and symptoms for which no more specific diagnosis can be made even after investigation of the facts, transient

symptoms whose causes could not be determined, provisional diagnoses, cases referred elsewhere before a diagnosis was made, cases in which a precise diagnosis was unavailable for any other reason, and certain symptoms that represent important problems in medical care and that might be desired to classify in addition to a known cause. General symptoms (ICD–9–CM code 780) may include any of the following subcategories: coma and stupor, hallucinations, syncope (fainting) and collapse, convulsions, dizziness and giddiness, sleep disturbances, pyrexia (fever) of unknown origin, malaise and fatigue, hyperhidrosis (excessive sweating), and other general symptoms. Among the neurology visits reported here, convulsions (ICD–9–CM code 780.3) accounted for more than three-quarters of the “general symptoms” diagnoses.

The second and third most frequently reported diagnoses at

neurology visits were migraine (10.3 percent) and symptoms involving head and neck (5.7 percent). A higher proportion of visits by females listed diagnoses of migraine and symptoms involving head and neck than did visits by males. (Among visits with the latter diagnosis, 97.1 percent were coded to ICD–9–CM subcategory 784.0, headache). Parkinson’s disease, which accounted for 4.6 percent of the visits overall, was listed at 6.6 percent of visits by males compared with 3.1 percent of visits by females. The most frequently reported diagnoses by age group are presented in table 11.

Interestingly, one-fifth (19.8 percent) of visits to neurologists were reported to be injury related in item 13 of the Patient Record form compared with about one-tenth (9.1 percent) of visits to all other physicians. This is not readily apparent from an examination of the reported ICD–9–CM codes, however, as only 6.7 percent of neurology visits were classified to the “injury and poisoning” category of the ICD–9–CM.

### Therapeutic services

Table 12 presents data on therapeutic services ordered or provided at visits to neurologists. Medication therapy was mentioned at nearly two-thirds of the visits (63.7 percent), and nonmedication therapy was ordered or provided at more than one-quarter of the visits (27.9 percent). The most frequently mentioned types of nonmedication therapy included “other counseling” (8.0 percent), exercise counseling or education (7.1 percent), physiotherapy (6.4 percent), and diet counseling or education (5.2 percent). Ambulatory surgery was scheduled or performed at 1.3 percent of visits to neurologists, significantly less than the corresponding 6.1 percent of visits to all other physicians.

Tables 13, 14, and 15 present more detailed drug data relating to neurology visits. As used in the NAMCS, the term “drug” is interchangeable with the term “medication” and includes all new or continued medications ordered or provided at the visit. This includes both prescription and nonprescription preparations, immunizing agents, and desensitizing agents. “Drug mentions” refer to the total number of medications

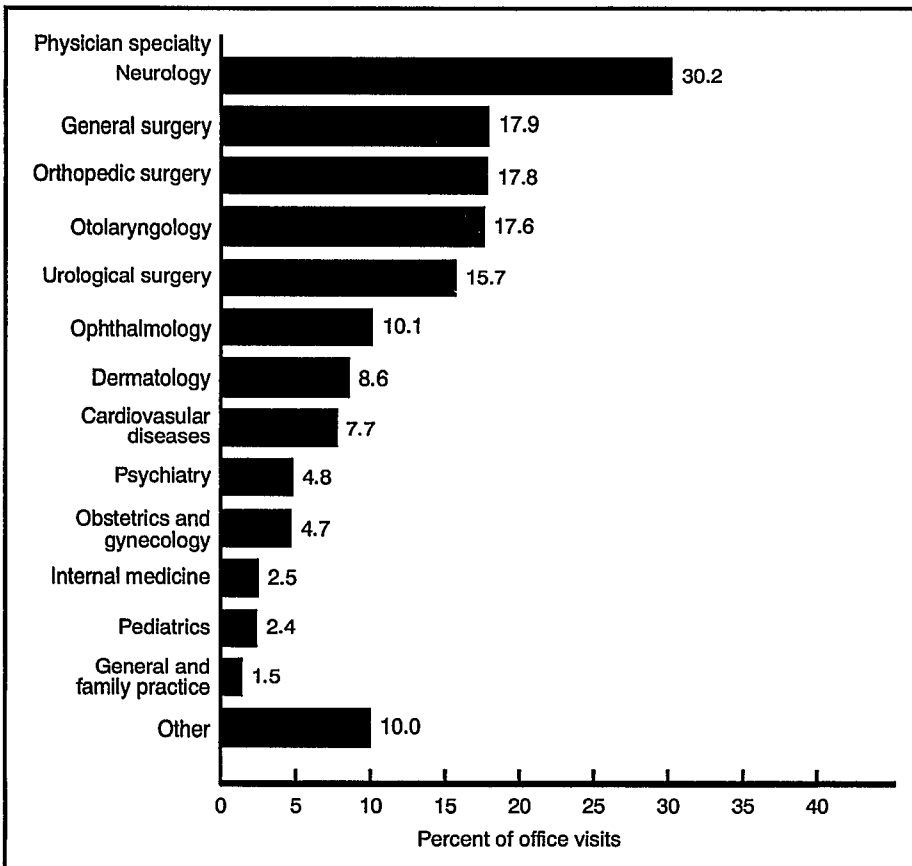


Figure 2. Percent of office visits that are referrals, according to physician specialty: United States, 1991-92

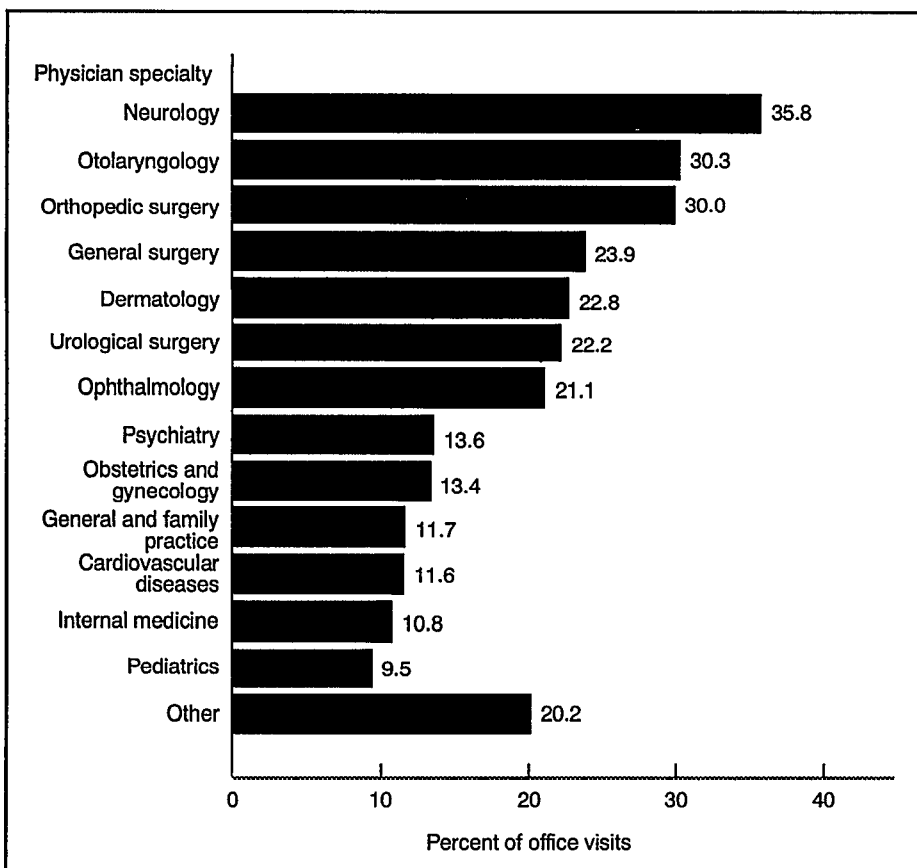


Figure 3. Percent of office visits made by new patients, according to physician specialty: United States, 1991-92

listed in item 17 of the Patient Record form. Physicians may record more than one medication per visit, so that the total number of drug mentions may exceed the total number of visits. "Drug visits" refer to visits with at least one mention of medication ordered or provided by the physician. An earlier report describes in detail the method and instruments used in the collection and processing of NAMCS drug data (10).

Among visits to neurologists, there was an average of 8.1 million drug mentions per year for 1991 and 1992, yielding 1.8 mentions per drug visit and 1.1 mentions per visit overall. Table 13 shows the number of drug mentions by therapeutic classification, adapted from therapeutic categories used in the *National Drug Code, 1985 edition* (11). In cases where a particular drug was classifiable to more than one therapeutic category, it was listed under the category that occurred with the greatest frequency. Neurologic drugs (25.9 percent), drugs used for pain relief (22.4 percent), and psychopharmacologic drugs (20.2 percent) were reported most frequently, together accounting for about two-thirds (68.5 percent) of the drugs mentioned at visits to neurologists.

The generic substances used most frequently in medications ordered or provided at neurology visits are shown in table 14. Acetaminophen was the most frequently occurring substance (8.3 percent of mentions), followed by carbamazepine (6.0 percent) and amitriptyline (4.9 percent). It should be noted that drugs containing more than one ingredient are listed in the data for each ingredient. For example, acetaminophen with codeine would be listed both under the count for acetaminophen as well as the count for codeine.

Table 15 displays drug mentions according to entry name, that is, the name recorded by the physician in item 17 of the Patient Record form. This could be a trade name, generic name, or simply a desired therapeutic effect. Tegretol was the specific entry listed most frequently (6.0 percent of mentions), followed by Dilantin (4.3 percent) and Sinemet (3.5 percent).

#### Disposition of visit

Visits to neurologists were more likely to include instructions to return at

**Table 4. Annual number and percent distribution of office visits to neurologists and to all other physicians by patient's referral status and prior-visit status, averaged over a 2-year period: United States, 1991-92**

Visit characteristic	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits . . . . .	7,253	100.0	708,614	100.0
Referral status				
Referred by another physician . . . . .	2,189	30.2	42,598	6.0
Not referred by another physician . . . . .	5,064	69.8	666,016	94.0
Prior-visit status				
New patient . . . . .	2,597	35.8	109,494	15.5
Old patient, new problem . . . . .	269	3.7	159,512	22.5
Old patient, old problem . . . . .	4,388	60.5	439,608	62.0

**Table 5. Annual number and percent distribution of office visits to neurologists and to all other physicians by patient's expected source(s) of payment, averaged over a 2-year period: United States, 1991-92**

Expected source(s) of payment <sup>1</sup>	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits . . . . .	7,253	100.0	708,614	100.0
Private/commercial insurance . . . . .	3,220	44.4	241,927	34.1
Medicare . . . . .	1,581	21.8	145,086	20.5
Patient-paid . . . . .	983	13.5	150,664	21.3
HMO/other prepaid plan . . . . .	827	11.4	122,833	17.3
Medicaid . . . . .	523	7.2	73,231	10.3
Other government . . . . .	221	3.1	14,795	2.1
No charge . . . . .	64	0.9	11,381	1.6
Other . . . . .	736	10.1	28,123	4.0
Unknown . . . . .	68	0.9	15,732	2.2

<sup>1</sup>Total may exceed total number of visits because more than one category may be reported per visit.

**Table 6. Annual number and percent distribution of office visits to neurologists by patient's principal reason for visit, averaged over a 2-year period: United States, 1991-92**

Principal reason for visit and RVC code <sup>1</sup>	Number of visits in thousands	Percent distribution
All visits . . . . .	7,253	100.0
Symptom module . . . . .	5,881	81.1
Symptoms referable to the nervous system (excluding sense organs) . . . . .	3,141	43.3
Symptoms referable to the musculoskeletal system . . . . .	1,662	22.9
General symptoms . . . . .	508	7.0
Symptoms referable to psychological and mental disorders . . . . .	262	3.6
Symptoms referable to the eyes and ears . . . . .	193	2.7
Symptoms referable to the respiratory system . . . . .	51	0.7
All other symptoms <sup>2</sup> . . . . .	65	0.9
Disease module . . . . .	459	6.3
Diagnostic, screening, and preventive module . . . . .	95	1.3
Treatment module . . . . .	382	5.3
Injury and adverse effects module . . . . .	83	1.1
Test results module . . . . .	58	0.8
Administrative module . . . . .	*6	*0.1
Other <sup>3</sup> . . . . .	289	4.0

<sup>1</sup>Based on A Reason for Visit Classification for Ambulatory Care (RVC) (8).

<sup>2</sup>Includes symptoms referable to the cardiovascular and lymphatic system (S260-S299); symptoms referable to the digestive system (S500-S639); symptoms referable to the genitourinary system (S640-S829); and symptoms referable to the skin, hair, and nails (S830-S899).

<sup>3</sup>Includes blanks, problems, and complaints not elsewhere classified, entries of "none," and illegible entries.

a specific time (70.5 percent) than were visits to all other specialties (62.3 percent). Also, a higher proportion of these visits resulted in instructions for the patient to return to the referring physician (7.7 percent) compared with visits to all other physicians (0.9 percent). This is a reflection, to some degree, of the large number of referrals made to this specialty relative to other physician specialties. Data on disposition of visit are displayed in table 16.

### Duration of visit

About three-quarters (73.3 percent) of visits to neurologists lasted more than 15 minutes, compared with one-third (32.3 percent) of visits to all other physicians. Average duration of neurology visits was 30.5 minutes compared with 17.2 minutes for all other visits. Average duration is based on the time spent in direct, face-to-face contact between the physician and the patient. It does not include visits of "zero" minutes duration, that is, visits in which the patient did not meet with the physician directly. Data on duration of visits are shown in table 17.

### Visits to neurologists between 1975 and 1992

The overall number of visits to neurologists increased by 283.3 percent,

**Table 7. Annual number and percent distribution of office visits to neurologists by the 20 most frequently mentioned principal reasons for visit, according to patient's sex, averaged over a 2-year period: United States, 1991-92**

Principal reason for visit and RVC code <sup>1</sup>	Number of visits in thousands	Total	Patient's sex	
			Male	Female
			Percent distribution	
All visits . . . . .	7,253	100.0	100.0	100.0
Headache, pain in head . . . . .S210	1,334	18.4	12.7	22.5
Convulsions . . . . .S205	659	9.1	10.1	8.3
Disturbances of sensation . . . . .S220	397	5.5	5.5	5.4
Neck symptoms . . . . .S900	374	5.2	3.8	6.1
Back symptoms . . . . .S905	344	4.7	5.2	4.4
Vertigo-dizziness . . . . .S225	256	3.5	3.9	3.2
Progress visit, not otherwise specified . . . . .T800	254	3.5	3.0	3.9
Leg symptoms . . . . .S920	251	3.5	4.0	3.1
Abnormal involuntary movements . . . . .S200	239	3.3	4.7	2.3
Low back symptoms . . . . .S910	198	2.7	3.2	2.4
Disorders of motor functions . . . . .S095	135	1.9	1.6	2.1
Vision dysfunctions . . . . .S305	131	1.8	1.3	2.2
Hand and finger symptoms . . . . .S960	117	1.6	1.2	1.9
Arm symptoms . . . . .S945	113	1.6	1.7	1.4
Disturbances of memory . . . . .S215	105	1.4	1.3	1.6
Migraine headache . . . . .D365	85	1.2	*0.8	1.4
Shoulder symptoms . . . . .S940	84	1.2	1.2	1.1
General weakness . . . . .S020	84	1.2	*0.6	1.6
Disturbances of sleep . . . . .S135	74	1.0	1.3	*0.8
Other diseases of central nervous system . . . . .D370	69	1.0	*1.1	0.9
All other reasons . . . . .	1,951	26.9	31.8	23.4

<sup>1</sup>Based on A Reason for Visit Classification for Ambulatory Care (RVC) (8).

**Table 8. Annual number and percent distribution of office visits to neurologists and to all other physicians by diagnostic services ordered or performed, averaged over a 2-year period: United States, 1991-92**

Visit characteristic	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits . . . . .	7,253	100.0	708,614	100.0
Number of diagnostic services ordered or performed				
None . . . . .	2,388	32.9	250,765	35.4
One . . . . .	3,061	42.2	246,957	34.9
Two . . . . .	1,154	15.9	123,726	17.5
Three . . . . .	450	6.2	52,095	7.4
Four . . . . .	122	1.7	21,450	3.0
Five or more . . . . .	78	1.1	13,621	1.9
Diagnostic services ordered or performed <sup>1</sup>				
None . . . . .	2,388	32.9	250,765	35.4
Blood pressure check . . . . .	2,702	37.3	307,770	43.4
Urinalysis . . . . .	130	1.8	95,565	13.5
EKG-resting <sup>2</sup> . . . . .	86	1.2	21,419	3.0
Other radiology . . . . .	602	8.3	38,315	5.4
Cholesterol measure . . . . .	42	0.6	25,360	3.6
Other lab test . . . . .	977	13.5	119,980	16.9
Hearing test . . . . .	66	0.9	10,130	1.4
Visual acuity . . . . .	165	2.3	41,088	5.8
Mental status exam . . . . .	638	8.8	8,102	1.1
Other <sup>3</sup> . . . . .	2,196	30.3	143,983	20.3

<sup>1</sup>Total may exceed total number of visits because more than one category may be reported per visit.

<sup>2</sup>EKG is electrocardiogram.

<sup>3</sup>The following diagnostic service categories were not reported at visits to neurologists: allergy testing, spirometry, and pap test. The following diagnostic service categories were reported at visits to neurologists, but with frequencies that were too low to produce reliable estimates: EKG-exercise, mammogram, strep throat test, chest x ray, and HIV (human immunodeficiency virus) serology. These services have been included in the "other" category. Unspecified diagnostic services accounted for 29.6 percent of all reported services at visits to neurologists.

from a 2-year total of 3.8 million in 1975-76 to 14.5 million in 1991-92. The 1975-76 total represented approximately 0.3 percent of all visits to office-based physicians during that time period. The 1991-92 share, 1.0 percent, was significantly higher. According to data from the American Medical Association, there were 6,257 nonfederally employed, office-based neurologists in the United States (excluding possessions) in 1992 compared with 1,847 in 1975, an increase of 238.8 percent (12,13).

The rate of visits to neurologists increased from an average of 0.9 visits per 100 persons per year in 1975-76 to 2.9 visits per 100 persons per year in 1991-92. The age-adjusted visit rate for 1991-92 was 2.3 visits per 100 persons, using the 1975-76 U.S. population as the standard (figure 4). Visits to neurologists during 1975-92 are shown by patient's age in table 18.

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**Table 9. Annual number and percent distribution of office visits to neurologists by principal diagnosis, averaged over a 2-year period: United States, 1991–92**

Principal diagnosis and ICD-9-CM code <sup>1</sup>	Number of visits in thousands	Percent distribution	
		Total	Male
All visits . . . . .	7,253	100.0	100.0
Infectious and parasitic diseases . . . . .	65	0.9	0.9
Neoplasms . . . . .	60	0.8	0.8
Endocrine, nutritional and metabolic diseases, and immunity disorders . . . . .	75	1.0	1.0
Mental disorders . . . . .	602	8.3	8.3
Diseases of the nervous system and sense organs . . . . .	2,618	36.1	36.1
Diseases of the circulatory system . . . . .	344	4.7	4.7
Diseases of the respiratory system . . . . .	41	0.6	0.6
Diseases of the musculoskeletal system and connective tissue . . . . .	1,060	14.6	14.6
Symptoms, signs, and ill-defined conditions . . . . .	1,544	21.3	21.3
Injury and poisoning . . . . .	484	6.7	6.7
Supplementary classification . . . . .	159	2.2	2.2
All other diagnoses <sup>2</sup> . . . . .	71	1.0	1.0
Unknown <sup>3</sup> . . . . .	132	1.8	1.8

<sup>1</sup>Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) (9).

<sup>2</sup>Includes diseases of the blood and blood-forming organs (280–289); diseases of the digestive system (520–579); diseases of the genitourinary system (580–629); complications of pregnancy, childbirth, and the puerperium (630–676); diseases of the skin and subcutaneous tissue (680–709); congenital anomalies (740–759); and certain conditions originating in the perinatal period (760–779).

<sup>3</sup>Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

**Table 10. Annual number and percent distribution of office visits to neurologists by the 20 most frequently mentioned principal diagnoses, according to patient's sex, averaged over a 2-year period: United States, 1991–92**

Principal diagnosis and ICD-9-CM code <sup>1</sup>	Number of visits in thousands	Patient's sex		
		Total	Male	Female
		Percent distribution		
All visits . . . . .	7,253	100.0	100.0	100.0
General symptoms . . . . .	965	13.3	15.8	11.5
Convulsions . . . . .	769	10.6	13.1	8.8
Coma and stupor, hallucinations, syncope and collapse, dizziness and giddiness, sleep disturbances, malaise and fatigue, other general symptoms . . . . .	195	2.7	2.7	2.7
Migraine . . . . .	746	10.3	5.7	13.6
Symptoms involving head and neck . . . . .	414	5.7	3.4	7.4
Headache . . . . .	402	5.5	3.3	7.2
Aphasia, other speech disturbance, other symbolic dysfunction, epistaxis . . . . .	*12	*0.2	*0.1	*0.2
Parkinson's disease . . . . .	331	4.6	6.6	3.1
Other and unspecified disorders of back . . . . .	274	3.8	4.2	3.5
Mononeuritis of upper limb and mononeuritis multiplex . . . . .	269	3.7	2.5	4.6
Multiple sclerosis . . . . .	244	3.4	*0.8	5.2
Sprains and strains of other and unspecified parts of back . . . . .	231	3.2	3.2	3.5
Other disorders of soft tissues . . . . .	198	2.7	3.6	2.1
Other disorders of cervical region . . . . .	197	2.7	3.1	2.5
Special symptoms or syndromes, not elsewhere classified . . . . .	152	2.1	1.3	2.7
Epilepsy . . . . .	150	2.1	1.9	2.2
Acute, but ill-defined, cerebrovascular disease . . . . .	131	1.8	2.2	1.5
Hyperkinetic syndrome of childhood . . . . .	121	1.7	3.0	*0.7
Spondylosis and allied disorders . . . . .	119	1.6	1.5	1.8
Intervertebral disc disorders . . . . .	115	1.6	*1.1	2.0
Other extrapyramidal disease and abnormal movement disorders . . . . .	114	1.6	1.6	1.5
Hereditary and idiopathic peripheral neuropathy . . . . .	108	1.5	1.6	1.4
Mononeuritis of lower limb . . . . .	90	1.2	1.9	*0.7
Neurotic disorders . . . . .	79	1.1	*0.6	1.5
All other diagnoses . . . . .	839	11.6	15.3	8.4

<sup>1</sup>Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) (9).

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**Table 11. Annual number and percent distribution of office visits to neurologists by the most frequently mentioned principal diagnoses, according to patient's age, averaged over a 2-year period: United States, 1991–92**

<i>Principal diagnosis and ICD-9-CM code<sup>1</sup></i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Cumulative percent</i>
<b>Under 15 years</b>			
All visits . . . . .	770	100.0	...
General symptoms . . . . .780	287	37.3	37.3
Hyperkinetic syndrome of childhood . . . . .314	102	13.3	50.6
Migraine . . . . .346	53	6.8	57.4
Symptoms involving head and neck . . . . .784	41	5.4	62.8
All other diagnoses . . . . .	287	37.2	100.0
<b>15–24 years</b>			
All visits . . . . .	577	100.0	...
General symptoms . . . . .780	120	20.8	20.8
Migraine . . . . .346	64	11.1	31.9
Symptoms involving head and neck . . . . .784	57	9.8	41.7
Sprains and strains of other and unspecified parts of back . . . . .847	56	9.7	51.3
All other diagnoses . . . . .	281	48.7	100.0
<b>25–44 years</b>			
All visits . . . . .	2,559	100.0	...
Migraine . . . . .346	421	16.4	16.4
General symptoms . . . . .780	256	10.0	26.4
Symptoms involving head and neck . . . . .784	198	7.8	34.1
Multiple sclerosis . . . . .340	139	5.4	39.6
Sprains and strains of other and unspecified parts of back . . . . .847	126	4.9	44.5
Other and unspecified disorders of back . . . . .724	120	4.7	49.2
Mononeuritis of upper limb and mononeuritis multiplex . . . . .354	100	3.9	53.1
Other disorders of soft tissues . . . . .729	95	3.7	56.8
Other disorders of cervical region . . . . .723	95	3.7	60.5
Epilepsy . . . . .345	79	3.1	63.6
All other diagnoses . . . . .	930	36.4	100.0
<b>45–64 years</b>			
All visits . . . . .	1,893	100.0	...
General symptoms . . . . .780	194	10.2	10.2
Migraine . . . . .346	183	9.6	19.8
Other and unspecified disorders of back . . . . .724	97	5.1	25.0
Symptoms involving head and neck . . . . .784	96	5.1	30.1
Multiple sclerosis . . . . .340	94	5.0	35.0
Mononeuritis of upper limb and mononeuritis multiplex . . . . .354	86	4.5	39.6
Parkinson's disease . . . . .332	83	4.4	44.0
Other disorders of soft tissues . . . . .729	69	3.6	47.6
Other disorders of cervical region . . . . .723	69	3.6	51.2
Spondylosis and allied disorders . . . . .721	56	3.0	54.2
All other diagnoses . . . . .	867	45.8	100.0
<b>65 years and over</b>			
All visits . . . . .	1,454	100.0	...
Parkinson's disease . . . . .332	246	16.9	16.9
General symptoms . . . . .780	108	7.4	24.3
Acute, but ill-defined, cerebrovascular disease . . . . .436	86	5.9	30.2
Mononeuritis of upper limb and mononeuritis multiplex . . . . .354	78	5.4	35.6
Hereditary and idiopathic peripheral neuropathy . . . . .356	58	4.0	39.6
Other extrapyramidal disease and abnormal movement disorders . . . . .333	53	3.7	43.2
Other and unspecified disorders of back . . . . .724	53	3.6	46.8
All other diagnoses . . . . .	772	53.1	100.0

<sup>1</sup>Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (9)*.

NOTE: A maximum of 10 diagnoses were listed per age group. Only reliable estimates were included in the table, so some categories may have fewer than 10 diagnoses.

Table 12. Annual number and percent distribution of office visits to neurologists and to all other physicians by therapeutic services ordered or provided, averaged over a 2-year period: United States, 1991–92

Therapeutic service ordered or provided <sup>1</sup>	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits . . . . .	7,253	100.0	708,614	100.0
Medication therapy				
New or continued medication . . . . .	4,624	63.7	450,237	63.5
No medication reported . . . . .	2,629	36.3	258,377	36.5
Counseling, education, and other nonmedication therapy				
None . . . . .	5,230	72.1	481,938	68.0
Diet . . . . .	379	5.2	82,639	11.7
Exercise . . . . .	513	7.1	54,426	7.7
Cholesterol reduction . . . . .	73	1.0	21,567	3.0
Weight reduction . . . . .	174	2.4	27,773	3.9
Drug abuse . . . . .	37	0.5	1,787	0.3
Alcohol abuse . . . . .	*17	*0.2	3,157	0.4
Smoking cessation . . . . .	49	0.7	15,621	2.2
Family/social . . . . .	152	2.1	13,574	1.9
Growth/development . . . . .	90	1.2	17,145	2.4
Family planning . . . . .	*14	*0.2	6,220	0.9
Other counseling . . . . .	579	8.0	58,119	8.2
Psychotherapy . . . . .	163	2.2	18,970	2.7
Corrective lenses . . . . .	—	—	7,763	1.1
Hearing aid . . . . .	—	—	432	0.1
Physiotherapy . . . . .	465	6.4	14,829	2.1
Other . . . . .	178	2.5	20,163	2.8
Ambulatory surgery scheduled or performed				
No procedures . . . . .	7,159	98.7	665,389	93.9
One or more procedures . . . . .	94	1.3	43,225	6.1

<sup>1</sup>Total may exceed total number of visits because more than one category may be reported per visit.

**Table 13. Annual number and percent distribution of drug mentions at office visits to neurologists by therapeutic classification, averaged over a 2-year period: United States, 1991-92**

<i>Therapeutic classification</i> <sup>1</sup>	<i>Number of drug mentions in thousands</i>	<i>Percent distribution</i>
All mentions . . . . .	8,143	100.0
Neurologic drugs . . . . .	2,109	25.9
Anticonvulsants . . . . .	1,294	15.9
Drugs used to treat skeletal muscle hyperactivity . . . . .	419	5.1
Drugs used in extrapyramidal movement disorders . . . . .	375	4.6
Drugs used in myasthenia gravis . . . . .	*20	*0.2
Drugs used for relief of pain . . . . .	1,825	22.4
General analgesics . . . . .	910	11.2
Antiarthritics . . . . .	612	7.5
Drugs used to treat migraine and other headaches . . . . .	280	3.4
Other . . . . .	*23	*0.3
Psychopharmacologic drugs . . . . .	1,642	20.2
Antidepressants . . . . .	920	11.3
Antianxiety drugs . . . . .	269	3.3
Sedatives and hypnotics . . . . .	224	2.7
Antipsychotic drugs . . . . .	116	1.4
CNS stimulants, anorexiant . . . . .	113	1.4
Cardiovascular-renal drugs . . . . .	929	11.4
Antihypertensive agents . . . . .	435	5.3
Antiarrhythmic agents . . . . .	166	2.0
Diuretics . . . . .	137	1.7
Other . . . . .	191	2.3
Hormones and agents affecting hormonal mechanisms . . . . .	310	3.8
Respiratory tract drugs . . . . .	184	2.3
Antimicrobial drugs . . . . .	178	2.2
Gastrointestinal drugs . . . . .	145	1.8
Metabolic and nutrient agents . . . . .	127	1.6
Hematologic drugs . . . . .	79	1.0
Otologic drugs . . . . .	70	0.9
Skin/mucous membrane	55	0.7
Other <sup>2</sup> . . . . .	68	0.8
Unclassified, miscellaneous . . . . .	423	5.2

<sup>1</sup>Therapeutic classification is based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (NDC) (11).

<sup>2</sup>Includes anesthetics, radiopharmaceuticals/contrast media, oncolytics, immunologic agents, ophthalmic drugs, and antiparasitic agents.

**Table 14. Number and percent of drug mentions at office visits to neurologists by the 20 most frequently used generic substances, averaged over a 2-year period: United States, 1991-92**

<i>Generic substance</i>	<i>Number of occurrences in thousands<sup>1</sup></i>	<i>Percent of all drug mentions<sup>2</sup></i>
All mentions . . . . .	10,186	...
Acetaminophen . . . . .	673	8.3
Carbamazepine . . . . .	491	6.0
Amitriptyline . . . . .	398	4.9
Phenytoin . . . . .	352	4.3
Aspirin . . . . .	345	4.2
Caffeine . . . . .	283	3.5
Levodopa . . . . .	281	3.5
Carbidopa . . . . .	281	3.5
Butalbital . . . . .	241	3.0
Naproxen . . . . .	230	2.8
Divalproex sodium . . . . .	216	2.7
Propranolol . . . . .	213	2.6
Verapamil . . . . .	175	2.1
Dichloralantipyrine . . . . .	162	2.0
Isometheptene mucate . . . . .	162	2.0
Nortriptyline . . . . .	159	2.0
Phenobarbital . . . . .	147	1.8
Codeine . . . . .	139	1.7
Ibuprofen . . . . .	139	1.7
Cyclobenzaprine . . . . .	125	1.5

<sup>1</sup>Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.

<sup>2</sup>Based on an average of 8,143,000 drug mentions per year at office visits to neurologists during 1991-92.

**Table 15. Annual number, percent distribution, and therapeutic classification of the 20 drugs most frequently prescribed at office visits to neurologists by entry name, averaged over a 2-year period: United States, 1991-92**

<i>Entry name of drug<sup>1</sup></i>	<i>Number of drug mentions in thousands</i>	<i>Percent distribution</i>	<i>Therapeutic classification<sup>2</sup></i>
All mentions . . . . .	8,143	100.0	...
Tegretol . . . . .	491	6.0	Neurologic drugs (anticonvulsants)
Dilantin . . . . .	352	4.3	Neurologic drugs (anticonvulsants)
Sinemet . . . . .	281	3.5	Neurologic drugs (drugs used in extrapyramidal movement disorders)
Elavil . . . . .	251	3.1	Psychopharmacologic drugs (antidepressants)
Depakote . . . . .	216	2.7	Neurologic drugs (anticonvulsants)
Inderal . . . . .	211	2.6	Cardiovascular-renal drugs (antihypertensive agents)
Midrin . . . . .	162	2.0	Drugs used for relief of pain (drugs used to treat migraine and other headaches)
Pamelor . . . . .	145	1.8	Psychopharmacologic drugs (antidepressants)
Anaprox . . . . .	131	1.6	Drugs used for relief of pain (antiarthritics)
Phenobarbital . . . . .	126	1.5	Psychopharmacologic drugs (sedatives and hypnotics)
Amitriptyline . . . . .	125	1.5	Psychopharmacologic drugs (antidepressants)
Flexeril . . . . .	125	1.5	Neurologic drugs (drugs used to treat skeletal muscle hyperactivity)
Calan . . . . .	113	1.4	Cardiovascular-renal drugs (antiarrhythmic agents)
Prozac . . . . .	109	1.3	Psychopharmacologic drugs (antidepressants)
Naprosyn . . . . .	98	1.2	Drugs used for relief of pain (antiarthritics)
Mysoline . . . . .	95	1.2	Neurologic drugs (anticonvulsants)
Aspirin . . . . .	92	1.1	Drugs used for relief of pain (general analgesics)
Ritalin . . . . .	92	1.1	Psychopharmacologic drugs (CNS stimulants, anorexiant)
Darvocet-N . . . . .	90	1.1	Drugs used for relief of pain (general analgesics)
Fioricet . . . . .	85	1.0	Drugs used for relief of pain (general analgesics)
All other . . . . .	4,754	58.4	...

<sup>1</sup>The trade or generic name used by the physician on the prescription or other medical records.

<sup>2</sup>Therapeutic classification is based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (NDC) (11).

**Table 16. Annual number and percent distribution of office visits to neurologists and to all other physicians by disposition of visit, averaged over a 2-year period: United States, 1991-92**

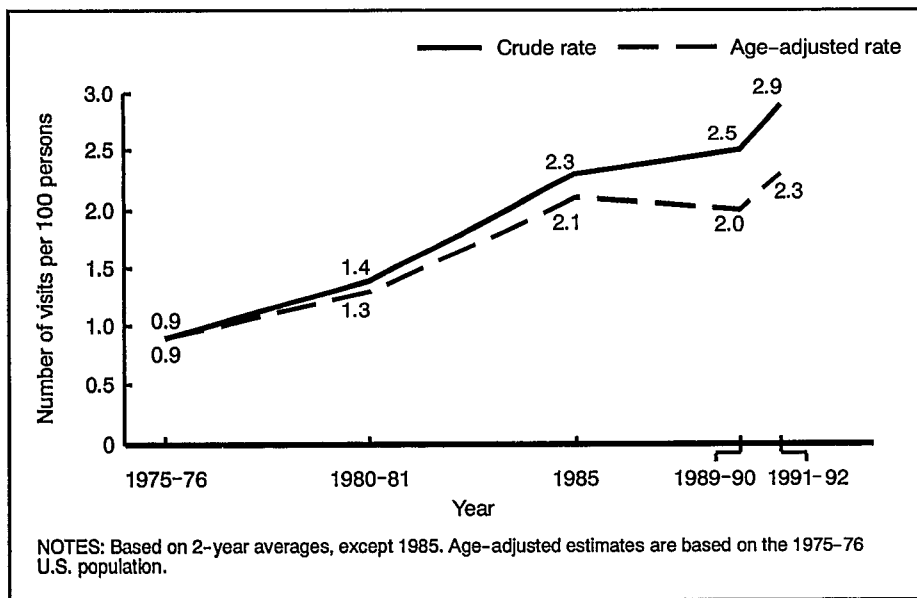
Disposition of visit <sup>1</sup>	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits . . . . .	7,253	100.0	708,614	100.0
Return at specified time. . . . .	5,117	70.5	441,353	62.3
Return if needed . . . . .	827	11.4	163,592	23.1
Return to referring physician. . . . .	560	7.7	6,285	0.9
No followup planned. . . . .	490	6.8	67,719	9.6
Telephone followup planned . . . . .	433	6.0	21,575	3.0
Refer to other physician . . . . .	276	3.8	21,838	3.1
Admit to hospital . . . . .	50	0.7	5,570	0.8
Other disposition . . . . .	47	0.6	7,115	1.0

<sup>1</sup>Total may exceed total number of visits because more than one category may be reported for each visit.

**Table 17. Annual number and percent distribution of office visits to neurologists and to all other physicians by duration of visit, averaged over a 2-year period: United States, 1991-92**

Duration of visit	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits . . . . .	7,253	100.0	708,614	100.0
0 minutes <sup>1</sup> . . . . .	*9	*0.1	8,502	1.2
1-5 minutes . . . . .	*20	*0.3	57,800	8.2
6-10 minutes . . . . .	399	5.5	186,473	26.3
11-15 minutes . . . . .	1,502	20.7	227,145	32.1
16-30 minutes . . . . .	2,964	40.9	179,208	25.3
31-60 minutes . . . . .	2,088	28.8	45,710	6.5
More than 60 minutes . . . . .	271	3.7	3,777	0.5

<sup>1</sup>Visits in which there was no face-to-face contact between the physician and the patient.



**Figure 4. Annual rate of office visits to neurologists: United States, 1975-92**

**Table 18. Number, percent distribution, and rate of office visits to neurologists, by patient's age: United States, 1975-92**

<i>Patient's age</i>	1975-76	1980-81	1985	1989-90	1991-92
	Number of visits in thousands <sup>1</sup>				
All visits . . . . .	1,892	3,013	4,992	6,167	7,253
Under 15 years . . . . .	*147	338	403	311	770
15-24 years . . . . .	248	311	500	542	577
25-44 years . . . . .	669	991	1,587	2,341	2,559
45-64 years . . . . .	577	1,029	1,454	1,612	1,893
65-74 years . . . . .	173	345	626	839	820
75 years and over . . . . .	*78	*176	422	521	633
	Percent distribution				
All visits . . . . .	100.0	100.0	100.0	100.0	100.0
Under 15 years . . . . .	*7.8	11.2	8.1	5.0	10.6
15-24 years . . . . .	13.1	10.3	10.0	8.8	8.0
25-44 years . . . . .	35.4	32.9	31.8	38.0	35.3
45-64 years . . . . .	30.5	34.1	29.1	26.1	26.1
65-74 years . . . . .	9.1	11.4	12.5	13.6	11.3
75 years and over . . . . .	*4.1	*5.5	8.5	8.4	8.7
	Visit rate per 100 persons <sup>2</sup>				
All visits . . . . .	0.9	1.4	2.3	2.5	2.9
Under 15 years . . . . .	*0.3	0.7	0.8	0.6	1.4
15-24 years . . . . .	0.6	0.8	1.3	1.5	1.7
25-44 years . . . . .	1.3	1.6	2.7	2.9	3.2
45-64 years . . . . .	1.3	2.4	3.3	3.5	4.0
65-74 years . . . . .	1.3	2.2	3.8	4.7	4.5
75 years and over . . . . .	*1.0	*2.0	4.1	4.5	5.2

<sup>1</sup>Numbers are shown as 2-year averages except for 1985.

<sup>2</sup>Based on Bureau of the Census estimates of the civilian noninstitutionalized population for July 1 of each survey year. Rates for combined years are based on an average of the population estimates for July 1 of each year of the 2-year period. Survey years from 1975-1985 did not include Alaska or Hawaii.

## Technical notes

### Source of data and sample design

The information presented in this report is based on data collected in the National Ambulatory Medical Care Survey (NAMCS) over the 2-year period from January 1991 through December 1992. The target universe of NAMCS includes office visits made in the United States by ambulatory patients to nonfederally employed physicians who are principally engaged in office practice, but not in the specialties of anesthesiology, pathology, or radiology. Telephone contacts and nonoffice visits are excluded.

A multistage probability sample design is used in NAMCS, involving samples of primary sampling units (PSU's), physician practices within PSU's, and patient visits within physician practices. The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England). For 1991, a sample of 2,540 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation. Of those screened, 1,887 physicians were eligible (in-scope) to participate in the survey. The remaining 653 physicians were ineligible (out-of-scope) due to reasons of being retired, employed primarily in teaching, research, or administration, or other reasons. The physician response rate for the 1991 NAMCS was 72 percent.

For 1992, a sample of 3,000 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Of those screened, 858 physicians were ruled ineligible (out-of-scope); 2,142 were in-scope for the survey. The physician response rate for the 1992 NAMCS was 71 percent.

Sample physicians were asked to complete Patient Record forms (figure 1) for a systematic random sample of office

visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 33,795 Patient Record forms in 1991 and 34,606 Patient Record forms in 1992.

Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained from the physicians during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Survey Section, Research Triangle Park, North Carolina.

For 1992, several changes were made in the sample design of the NAMCS that should be considered in the interpretation of the survey results. In an effort to even the precision of estimates across each of the physician specialty strata in the sample design, the decision was made to increase the proportion in the sample of specialists in general surgery, psychiatry, otolaryngology, and neurology. Although this would result in a corresponding decrease in the sample of the larger physician specialties, most notably general and family practice, internal medicine, and pediatrics, the precision of these estimates tended to be much higher relative to the smaller specialties, and it was expected that the end result would be an acceptable balance of precision levels across all strata.

However, the reduced numbers of general practitioners, internists, and pediatricians sampled in 1992, coupled with the high percents of sampled physicians in these specialties who were determined to be ineligible (out-of-scope) for survey participation, resulted in low numbers of survey respondents in these categories and a lowering of the precision of these estimates relative to other survey years, especially when disaggregated by other variables such as race. Because visits made by black patients were often found to be clustered among the sampled physicians and were more likely to be made to general and family practitioners, which were undersampled in 1992, it is recommended that caution be exercised

when interpreting differences in race data and individual physician specialties.

Despite the difference in sample sizes, the 1991 and 1992 surveys were identical in terms of survey instruments, definitions, and procedures. The resulting 2 years of data have been combined to provide more reliable estimates. All estimates, percent distributions, and rates presented here, unless otherwise noted, reflect 1991 and 1992 data that were averaged over the 2-year period.

### Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself; the result is then expressed as a percent of the estimate.

Relative standard errors (RSE's) for estimated numbers of office visits, expressed as 2-year averages for the period 1991-92, are shown in table I. Relative standard errors for estimated numbers of drug mentions, also expressed as 2-year averages, are presented in table II. Standard errors for estimated percents of visits and drug mentions are displayed in tables III-VI.

Alternatively, relative standard errors for 2-year averages may be calculated using the following general formula, where  $x$  is the average of interest in thousands multiplied by 2 to obtain the 2-year total, and  $A$  and  $B$  are the appropriate coefficients from table VII. The relative standard error obtained in this way applies to both the 2-year total and the 2-year average.

$$RSE(x) = \sqrt{A + \frac{B}{x}} \cdot 100$$

Similarly, relative standard errors for percents may be calculated using the following general formula, where  $p$  is the percent of interest and  $x$  is the denominator of the percent in thousands (and the denominator is the 2-year aggregate estimate rather than the average itself), using the appropriate coefficient from table VII. (The 2-year

**Table I. Approximate relative standard errors for estimated numbers of office visits by selected physician specialties: National Ambulatory Medical Care Survey, 1991-92**

Estimated number of office visits (expressed as annual average) in thousands	Physician specialty	
	All <sup>1</sup>	Neurology <sup>2</sup>
	Relative standard error in percent	
25 . . . . .	110.8	34.7
35 . . . . .	93.7	30.0
50 . . . . .	78.4	25.9
100 . . . . .	55.5	20.0
250 . . . . .	35.2	15.5
346 . . . . .	30.0	14.5
500 . . . . .	25.0	13.6
1,000 . . . . .	17.8	12.6
2,500 . . . . .	11.6	11.9
5,000 . . . . .	8.5	11.7
10,000 . . . . .	6.5	11.6
25,000 . . . . .	4.9	11.5
50,000 . . . . .	4.2	11.5
100,000 . . . . .	3.8	11.5
250,000 . . . . .	3.6	11.5
500,000 . . . . .	3.5	11.5

<sup>1</sup>The smallest reliable estimate for visits to aggregated specialties is 346,000 visits per year (or a 2-year total of 691,000 visits). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.  
<sup>2</sup>The smallest reliable estimate for visits to neurologists is 35,000 visits per year (or a 2-year total of 70,000 visits). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.  
 Example of use of table: For visits to neurologists, an estimate of 10 million visits per year has a relative standard error of 11.6 percent or a standard error of 1,160,000 visits (11.6 percent of 10 million).

**Table II. Approximate relative standard errors for estimated numbers of drug mentions by selected physician specialties: National Ambulatory Medical Care Survey, 1991-92**

Estimated number of office visits (expressed as annual average) in thousands	Physician specialty	
	All <sup>1</sup>	Neurology <sup>2</sup>
	Relative standard error in percent	
25 . . . . .	154.1	38.7
46 . . . . .	114.3	30.0
100 . . . . .	77.2	22.2
250 . . . . .	48.9	17.1
500 . . . . .	34.7	15.0
674 . . . . .	30.0	14.5
1,000 . . . . .	24.7	13.9
2,500 . . . . .	16.0	13.1
5,000 . . . . .	11.7	12.9
10,000 . . . . .	8.8	12.8
25,000 . . . . .	6.5	12.7
50,000 . . . . .	5.5	12.6
100,000 . . . . .	4.9	12.6
250,000 . . . . .	4.6	12.6
500,000 . . . . .	4.4	12.6

<sup>1</sup>The smallest reliable estimate of drug mentions at visits to aggregated specialties is 674,000 drug mentions per year (or a 2-year total of 1,347,000 mentions). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.  
<sup>2</sup>The smallest reliable estimate of drug mentions at visits to neurologists is 46,000 drug mentions per year (or a 2-year total of 91,000 mentions). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.  
 Example of use of table: For neurologists, an estimate of 25 million drug mentions per year has a relative standard error of 12.7 percent or a standard error of 3,175,000 drug mentions (12.7 percent of 25 million).

aggregate is obtained by multiplying the average estimate by 2.)

$$RSE(p) = \sqrt{\frac{B \cdot (1-p)}{p \cdot x}} \cdot 100$$

**Adjustments for nonresponse**

Estimates from NAMCS data were adjusted to account for sample physicians who were in-scope but did not participate in the study. This

adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding physicians data from visits to similar physicians. For this purpose, physicians were judged similar if they had the same specialty designation and practiced in the same PSU.

**Test of significance and rounding**

In this report, the determination of statistical inference is based on the two-tailed t-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of significance) based on the number of possible comparisons within a particular variable or (combination of variables) of interest. Terms relating to differences such as “greater than” or “less than” indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

**Definition of terms**

*Ambulatory patient*—An ambulatory patient is an individual seeking personal health services who is not currently admitted to any health care institution on the premises.

*Drug mention*—A drug mention is the physician’s entry on the Patient Record form of a pharmaceutical agent—by any route of administration—for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription and prescription drugs. Along with all new drugs, the physician also records continued medications if the patient was specifically instructed during the visit to continue the



**Table III. Approximate standard errors of percents of estimated numbers of office visits to aggregated specialties: National Ambulatory Medical Care Survey, 1991-92**

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50	7.8	17.1	23.5	31.3	35.9	38.4	39.2
100	5.5	12.1	16.6	22.2	25.4	27.1	27.7
250	3.5	7.6	10.5	14.0	16.1	17.2	17.5
500	2.5	5.4	7.4	9.9	11.4	12.1	12.4
1,000	1.7	3.8	5.3	7.0	8.0	8.6	8.8
2,500	1.1	2.4	3.3	4.4	5.1	5.4	5.5
5,000	0.8	1.7	2.4	3.1	3.6	3.8	3.9
10,000	0.6	1.2	1.7	2.2	2.5	2.7	2.8
25,000	0.4	0.8	1.1	1.4	1.6	1.7	1.8
50,000	0.3	0.5	0.7	1.0	1.1	1.2	1.2
100,000	0.2	0.4	0.5	0.7	0.8	0.9	0.9
250,000	0.1	0.2	0.3	0.4	0.5	0.6	0.6
500,000	0.1	0.2	0.2	0.3	0.4	0.4	0.4

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 25 million visits per year has a standard error of 1.4 percent or a relative standard error of 7.0 percent (1.4 percent divided by 20 percent).

**Table IV. Approximate standard errors of percents of estimated numbers of office visits to neurologists: National Ambulatory Medical Care Survey, 1991-92**

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50	2.3	5.1	7.0	9.3	10.6	11.4	11.6
100	1.6	3.6	4.9	6.6	7.5	8.0	8.2
250	1.0	2.3	3.1	4.1	4.8	5.1	5.2
500	0.7	1.6	2.2	2.9	3.4	3.6	3.7
1,000	0.5	1.1	1.6	2.1	2.4	2.5	2.6
2,500	0.3	0.7	1.0	1.3	1.5	1.6	1.6
5,000	0.2	0.5	0.7	0.9	1.1	1.1	1.2
7,250	0.2	0.4	0.6	0.8	0.9	0.9	1.0
10,000	0.2	0.4	0.5	0.7	0.8	0.8	0.8

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 7,250,000 neurology visits per year has a standard error of 0.8 percent or a relative standard error of 4.0 percent (0.8 percent divided by 20 percent).

**Table V. Approximate standard errors of percents of estimated numbers of drug mentions at visits to aggregated specialties: National Ambulatory Medical Care Survey, 1991-92**

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50	10.8	23.7	32.7	43.6	49.9	53.4	54.5
100	7.7	16.8	23.1	30.8	35.3	37.7	38.5
250	4.9	10.6	14.6	19.5	22.3	23.9	24.4
500	3.4	7.5	10.3	13.8	15.8	16.9	17.2
1,000	2.4	5.3	7.3	9.7	11.2	11.9	12.2
2,500	1.5	3.4	4.6	6.2	7.1	7.6	7.7
5,000	1.1	2.4	3.3	4.4	5.0	5.3	5.5
10,000	0.8	1.7	2.3	3.1	3.5	3.8	3.9
25,000	0.5	1.1	1.5	2.0	2.2	2.4	2.4
50,000	0.3	0.8	1.0	1.4	1.6	1.7	1.7
100,000	0.2	0.5	0.7	1.0	1.0	1.2	1.2
250,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
500,000	0.1	0.2	0.3	0.4	0.5	0.5	0.6

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 10 million drug mentions has a standard error of 3.1 percent or a relative standard error of 15.5 percent (3.1 percent divided by 20 percent).

medication. Physicians may report up to five medications per visit.

*Drug visit*—A drug visit is a visit at which medication was prescribed or provided by the physician.

*Neurologist*—As defined in the NAMCS, a neurologist is a physician who has self-designated the practice specialty of neurology or child neurology on the American Medical Association's Physicians' Professional Activities Questionnaire. The physician's specialty is also verified during the NAMCS interview. The practice specialty of neurology is defined in the category of "other specialties" by the American Medical Association (additional categories include family/general practice, medical specialties, and surgical specialties), and the American Board of Psychiatry and Neurology certifies physicians in that specialty.

*Office*—An office is the space identified by a physician as a location for his or her ambulatory practice. Offices customarily include consultation, examination, or treatment spaces that patients associate with the particular physician.

*Physician*—A physician is a duly licensed doctor of medicine (M.D.) or doctor of osteopathy (D.O.) who is currently in office-based practice and who spends some time caring for ambulatory patients. Excluded from the NAMCS are physicians who are hospital based; who specialize in anesthesiology, pathology, or radiology; who are federally employed; who treat only institutionalized patients; or who are employed full time by an institution and spend no time seeing ambulatory patients.

*Visit*—A visit is a direct personal exchange between an ambulatory patient and a physician or a staff member working under the physician's supervision, for the purpose of seeking care and rendering personal health services. Excluded from the NAMCS are visits where medical care was not provided, such as visits made to drop off specimens, pay bills, make appointments, and walk-outs.

**Table VI. Approximate standard errors of percents of estimated numbers of drug mentions at office visits to neurologists: National Ambulatory Medical Care Survey, 1991-92**

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50 . . . . .	2.6	5.6	7.8	10.3	11.8	12.7	12.9
100 . . . . .	1.8	4.0	5.5	7.3	8.4	9.0	9.1
250 . . . . .	1.2	2.5	3.5	4.6	5.3	5.7	5.8
500 . . . . .	0.8	1.8	2.5	3.3	3.7	4.0	4.1
1,000 . . . . .	0.6	1.3	1.7	2.3	2.7	2.8	2.9
2,500 . . . . .	0.4	0.8	1.1	1.5	1.7	1.8	1.8
5,000 . . . . .	0.3	0.6	0.8	1.0	1.2	1.3	1.3
8,000 . . . . .	0.2	0.5	0.6	0.8	0.9	1.0	1.0
10,000 . . . . .	0.2	0.4	0.6	0.7	0.8	0.9	0.9
25,000 . . . . .	0.1	0.3	0.4	0.5	0.5	0.6	0.6

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 8 million drug mentions per year at neurology visits has a standard error of 0.8 percent or a relative standard error of 4.0 percent (0.8 percent divided by 20 percent).

**Table VII. Coefficients appropriate for determining relative standard errors by type of estimate and physician specialty: National Ambulatory Medical Care Survey, 1991-92**

Type of estimate and physician specialty	Coefficient for use with estimates in thousands	
	A	B
Visits		
Overall totals . . . . .	0.001157131	61.31199989
General and family practice . . . . .	0.007330504	54.54704362
Osteopathy . . . . .	0.01402452	18.13642054
Internal medicine . . . . .	0.008718567	55.2168744
Pediatrics . . . . .	0.007994386	35.33091768
General surgery . . . . .	0.006685247	10.65103125
Obstetrics and gynecology . . . . .	0.00919584	25.59962011
Orthopedic surgery . . . . .	0.005641337	24.20372144
Cardiovascular diseases . . . . .	0.01383253	12.58489271
Dermatology . . . . .	0.01275351	10.28901849
Urological surgery . . . . .	0.008000282	11.92853664
Psychiatry . . . . .	0.009414736	12.88530675
Neurology . . . . .	0.01314774	5.36720816
Ophthalmology . . . . .	0.007938148	23.84517495
Otolaryngology . . . . .	0.007549396	8.0936265
All other specialties . . . . .	0.01537018	35.00317779
Drug mentions		
Overall totals . . . . .	0.001853163	118.69462
General and family practice . . . . .	0.009085669	100.96778
Osteopathy . . . . .	0.01658477	23.4739982
Internal medicine . . . . .	0.01148498	103.21387
Pediatrics . . . . .	0.01245118	26.73517786
General surgery . . . . .	0.03935224	8.06806796
Obstetrics and gynecology . . . . .	0.01454044	31.24058408
Orthopedic surgery . . . . .	0.01568053	23.3833057
Cardiovascular diseases . . . . .	0.01575914	24.23751806
Dermatology . . . . .	0.01299377	15.94507357
Urological surgery . . . . .	0.01867719	10.6886669
Psychiatry . . . . .	0.01430555	15.99374434
Neurology . . . . .	0.01593433	6.67244993
Ophthalmology . . . . .	0.0251486	25.1381195
Otolaryngology . . . . .	0.008374063	12.25916054
All other specialties . . . . .	0.0226229	57.79950436

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**Symbols**

- - - Data not available
  - . . . Category not applicable
  - Quantity zero
  - 0.0 Quantity more than zero but less than 0.05
  - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
  - \* Figure does not meet standard of reliability or precision (see Technical notes)
  - # Figure suppressed to comply with confidentiality requirements
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**Suggested citation**

Schappert SM. Office visits to neurologists: United States, 1991–92. Advance data from vital and health statistics; no 267. Hyattsville, Maryland: National Center for Health Statistics. 1995.

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DHHS Publication No. (PHS) 95-1250  
5-1394 (8/95)