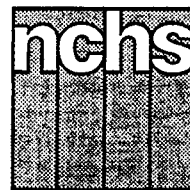


Advance Data



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

Office Visits to Cardiovascular Disease Specialists: United States, 1989–90

by Susan M. Schappert, M.A., Division of Health Care Statistics

Introduction

An estimated 22.1 million visits were made in the United States during 1989 and 1990 to nonfederally employed, office-based physicians specializing in cardiovascular diseases—an average of about 11 million visits per year. This report summarizes data pertaining to these visits in terms of patient characteristics, physician practice characteristics, and visit characteristics. Two earlier reports provide information on office visits to specialists in cardiovascular diseases for the years 1975–76 and 1985 (1,2).

The information in this report is based on data collected by means of 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 and again in 1985. It resumed an annual schedule with the 1989 survey.

The 1989 and 1990 NAMCS shared identical survey instruments, definitions, and procedures. The resulting two 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 1989 and 1990 data. The Patient Record, which is the survey instrument used by participating physicians to record information about their patients' office visits, is shown in figure 1.

The estimates presented in this report are based on a sample, rather than on the entire universe, of office visits, and are subject to sampling variability. The sample design, sampling errors, and guidelines for judging the precision of NAMCS estimates are discussed in the technical notes. Several publications are available that discuss overall findings from the 1989 and 1990 NAMCS (3,4,5), and reports on special topics are also available (6,7,8,9,10). Additional reports on visits made during 1989 and 1990 to other physician specialties are forthcoming.

Patient characteristics

Visits to specialists in cardiovascular diseases by patient's

age, sex, and race are displayed in table 1. Overall, this specialty received an average of 4.5 office visits per 100 persons per year for 1989 and 1990. The visit rate increased with age for both sexes and was highest among persons 65 years of age and over, who made an average of 20.3 visits per 100 persons per year. Visit rates were not significantly different for persons 65–74 years and 75 years of age and over. Also, no significant differences were found by sex within any of the five age groups analyzed (figure 2). However, white persons had a significantly higher rate of visits to cardiovascular disease specialists (4.8 visits per 100 persons per year) than did black persons (2.2 visits per 100 persons per year). In general, visit rates were not significantly different than those noted in 1985.

Patients over the age of 44 years accounted for 88.7 percent of all visits to this specialty during the 2-year period covered in this report; more than half (54.7 percent) of all office visits to cardiovascular disease specialists were made by persons 65 years of age and over. This age distribution is in sharp contrast to that of visits to all other specialists, where, in general, less than half of



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics



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		B																																				
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9. 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 _____			10. PHYSICIAN'S DIAGNOSES a. PRINCIPAL DIAGNOSIS/PROBLEM ASSOCIATED WITH ITEM 9a. _____ b. OTHER SIGNIFICANT CURRENT DIAGNOSES _____		11. HAVE YOU SEEN PATIENT BEFORE? 1 ☐ YES 2 ☐ NO IF YES, FOR THE CONDITION IN ITEM 10a? 1 ☐ YES 2 ☐ NO																																			
12. DIAGNOSTIC/SCREENING SERVICES <i>[Check all ordered or provided]</i> 1 ☐ NONE 7 ☐ BLOOD PRESSURE CHECK 13 ☐ ORAL GLUCOSE TOL. 2 ☐ PAP TEST 8 ☐ URINALYSIS 14 ☐ CHOLESTEROL MEASURE 3 ☐ PELVIC EXAM 9 ☐ CHEST X-RAY 15 ☐ HIV SEROLOGY 4 ☐ BREAST PALPATION 10 ☐ DIGITAL RECTAL EXAM 16 ☐ OTHER BLOOD TEST 5 ☐ MAMMOGRAM 11 ☐ PROCT/SIGMOIDOSCOPY 17 ☐ OTHER (Specify) 6 ☐ VISUAL ACUITY 12 ☐ STOOL BLOOD EXAM			13. COUNSELING/ADVICE <i>[Check all ordered or provided]</i> 1 ☐ NONE 2 ☐ WEIGHT REDUCTION 3 ☐ CHOLESTEROL REDUCTION 4 ☐ SMOKING CESSATION 5 ☐ HIV TRANSMISSION 6 ☐ BREAST SELF-EXAM 7 ☐ OTHER		14. NON-MEDICATION THERAPY <i>[Check all ordered or provided]</i> 1 ☐ NONE 2 ☐ PSYCHOTHERAPY 3 ☐ CORRECTIVE LENSES 4 ☐ AMBULATORY SURGERY 5 ☐ PHYSIOTHERAPY 6 ☐ OTHER (Specify)																																			
15. MEDICATION THERAPY <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 ☐ <table style="width: 100%; border: none;"> <thead> <tr> <th></th> <th colspan="2" style="font-size: x-small;">a. NEW MEDICATION?</th> <th colspan="2" style="font-size: x-small;">b. FOR DX IN ITEM 10a?</th> </tr> <tr> <th></th> <th style="font-size: x-small;">YES</th> <th style="font-size: x-small;">NO</th> <th style="font-size: x-small;">YES</th> <th style="font-size: x-small;">NO</th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td>1 ☐</td> <td>2 ☐</td> <td>1 ☐</td> <td>2 ☐</td> </tr> <tr> <td>2. _____</td> <td>1 ☐</td> <td>2 ☐</td> <td>1 ☐</td> <td>2 ☐</td> </tr> <tr> <td>3. _____</td> <td>1 ☐</td> <td>2 ☐</td> <td>1 ☐</td> <td>2 ☐</td> </tr> <tr> <td>4. _____</td> <td>1 ☐</td> <td>2 ☐</td> <td>1 ☐</td> <td>2 ☐</td> </tr> <tr> <td>5. _____</td> <td>1 ☐</td> <td>2 ☐</td> <td>1 ☐</td> <td>2 ☐</td> </tr> </tbody> </table>					a. NEW MEDICATION?		b. FOR DX IN ITEM 10a?			YES	NO	YES	NO	1. _____	1 ☐	2 ☐	1 ☐	2 ☐	2. _____	1 ☐	2 ☐	1 ☐	2 ☐	3. _____	1 ☐	2 ☐	1 ☐	2 ☐	4. _____	1 ☐	2 ☐	1 ☐	2 ☐	5. _____	1 ☐	2 ☐	1 ☐	2 ☐	16. DISPOSITION THIS VISIT <i>[Check all that apply]</i> 1 ☐ NO FOLLOW-UP PLANNED 2 ☐ RETURN AT SPECIFIED TIME 3 ☐ RETURN IF NEEDED, P.R.N. 4 ☐ TELEPHONE FOLLOW-UP PLANNED 5 ☐ REFERRED TO OTHER PHYSICIAN 6 ☐ RETURNED TO REFERRING PHYSICIAN 7 ☐ ADMIT TO HOSPITAL 8 ☐ OTHER (Specify) _____	
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Figure 1. 1989 National Ambulatory Medical Care Survey Patient Record

* U.S. GOVERNMENT PRINTING OFFICE:1989-226-197

the visits were made by persons over the age of 44 years (figure 3).

No significant difference was found in the percent of visits made by males and females (50.2 percent compared with 49.8 percent, respectively). This pattern is strikingly different from that found among visits to all other specialties, where the percent of visits by males was much lower overall (39.4 percent) than the percent of visits by females (60.6 percent). Among the 13 most visited physician specialties, the percentage

of visits by females exceeded that of visits by males for all but four specialties—pediatrics, urology, orthopedic surgery, and cardiovascular diseases.

White persons made 90.2 percent of all visits to specialists in cardiovascular diseases and black persons accounted for 6.1 percent of the visits. Approximately 2.3 percent of the visits were made by Asians/Pacific Islanders.

Physician practice characteristics

Specialists in cardiovascular diseases received an average of 1.6 percent of the office visits made to ambulatory care physicians for 1989–90, making them the 11th most visited physician specialty (table 2). However, cardiovascular specialists received 2.5 percent of all visits made by persons 45–64 years of age. The share was even higher for visits made by older patients, with cardiovascular specialists receiving 4.0 percent of all

Table 1. Annual number, percent distribution, and rate of office visits to cardiovascular disease specialists, by patient's age, sex, and race, averaged over a 2-year period: United States, 1989–90

Patient characteristic	Number of visits in thousands	Percent distribution	Visit rate per 100 persons ¹
Age			
All ages	11,040	100.0	4.5
Less than 25 years	260	2.4	0.3
25–44 years	990	9.0	1.2
45–64 years	3,754	34.0	8.1
65–74 years	3,334	30.2	18.6
75 years and over	2,703	24.5	23.4
Sex and age			
Female:			
All ages	5,497	49.8	4.4
Less than 25 years	146	1.3	0.3
25–44 years	504	4.6	1.2
45–64 years	1,606	14.5	6.6
65–74 years	1,666	15.1	16.7
75 years and over	1,576	14.3	21.7
Male:			
All ages	5,543	50.2	4.7
Less than 25 years	115	1.0	0.3
25–44 years	485	4.4	1.2
45–64 years	2,148	19.5	9.7
65–74 years	1,668	15.1	20.8
75 years and over	1,127	10.2	26.4
Race			
White	9,956	90.2	4.8
Black	674	6.1	2.2
Asian/Pacific Islander	259	2.3	---
American Indian/Eskimo/Aleut.	*43	*0.4	---
Unspecified	109	1.0	---

¹Visit rates are based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized U.S. population for July 1, 1989 and 1990, averaged over the 2-year period.

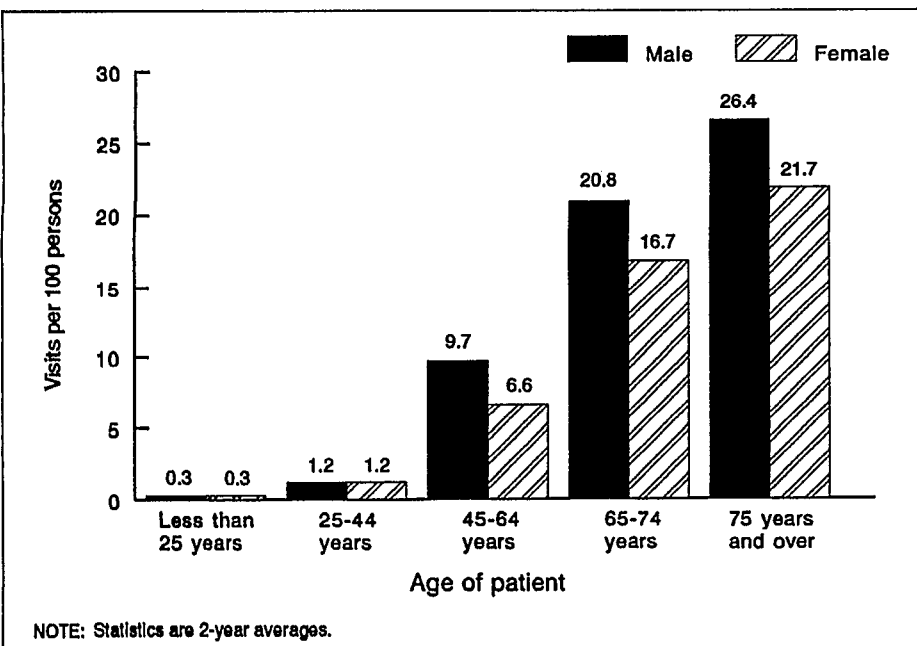


Figure 2. Annual rate of office visits to cardiovascular disease specialists, by patient's age and sex: United States, 1989–90

visits made by persons 65 years of age and over, an average of 6 million visits per year by persons in this age group.

Between 1975 and 1990, the number of visits made to cardiovascular disease specialists increased by about 64 percent, from a 2-year total of 13.5 million for 1975–76 to a 2-year total of 22.1 million visits for 1989–90. The 1975–76 total represented 1.2 percent of all visits to office-based physicians during that time. This was not significantly different than their 1989–90 share.

Visit characteristics

Referral status and prior-visit status

Nearly 10 percent of office visits to specialists in cardiovascular diseases were the result of a referral by another physician, compared with only 5.4 percent of visits to all other specialties. The chronic nature of cardiovascular diseases is underscored by the fact that more than three-quarters (78.7 percent) of the visits to this specialty were made by patients returning to the physician for care of a previously treated condition. Of the 13 most visited physician specialties, only psychiatry showed a higher percentage of visits of this type. Visits by referral status and prior-visit status are summarized in table 3.

Expected source of payment

Private insurance (including Blue Cross/Blue Shield and other commercial insurance) and Medicare were the expected sources of payment listed most frequently at visits to specialists in cardiovascular diseases (74.8 percent and 50.8 percent of visits, respectively), while self-payment was recorded at only 17.5 percent of visits. (It should be noted that more than one expected source of payment may be recorded per visit.) The emphasis on Medicare as an expected source of payment reflects the older age distribution of patients visiting this specialty. In contrast, among visits to all other

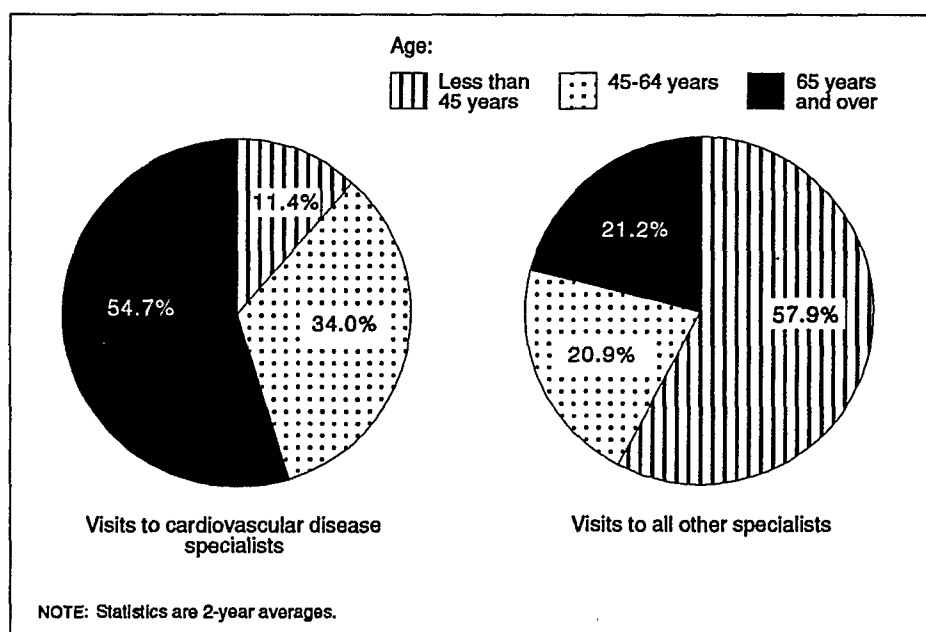


Figure 3. Percent distribution of office visits to cardiovascular disease specialists and to all other specialists, by patient's age: United States, 1989-90

Table 2. Annual number, percent distribution, and rate of office visits by physician specialty, averaged over a 2-year period: United States, 1989-90

Physician specialty	Number of visits in thousands	Percent distribution	Visit rate per 100 persons ¹
All visits	698,653	100.0	285.4
General and family practice	208,045	29.8	85.0
Internal medicine	87,719	12.6	35.8
Pediatrics	84,280	12.1	34.4
Obstetrics and gynecology	59,812	8.6	² 47.2
Ophthalmology	41,302	5.9	16.9
Orthopedic surgery	34,033	4.9	13.9
Dermatology	25,165	3.6	10.3
General surgery	23,891	3.4	9.8
Psychiatry	18,790	2.7	7.7
Otolaryngology	16,958	2.4	6.9
Cardiovascular diseases	11,040	1.6	4.5
Urological surgery	9,852	1.4	4.0
Neurology	6,167	0.9	2.5
Other	71,603	10.2	29.2

¹Visit rates are based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States for July 1 of 1989 and 1990, averaged over the 2-year period.

²Rate based on visits by females and female population. Females made 99.4 percent of all visits to this specialty during 1989-90, for an average annual estimate of 59,475,000 visits.

specialists, Medicare was listed at only 18.5 percent of visits, while self-payment was mentioned at 31.4 percent. Visits to cardiovascular specialists by expected source of payment are shown in table 4.

Patient's principal reason for visit

The patient's principal reason for visiting the physician, according to the eight reason for visit modules or groups of reasons outlined in A

Reason for Visit Classification for Ambulatory Care (RVC) (11), is shown in table 5. The principal reason for visit (item 9a on the Patient Record) is the patient's most important complaint(s), symptom(s), or other reason(s) for this visit expressed in the patient's (or patient surrogate's) own words. Up to three reasons per visit may be coded based upon the classification system found in the RVC.

Nearly half (47.7 percent) of all visits to this specialty were due to a symptomatic problem or complaint, with the largest percentage of symptoms falling into the general category (17.7 percent). Also prominent were the disease module (16.8 percent) and the treatment module (16.2 percent), followed by the diagnostic, screening, and preventive module (12.3 percent of visits).

Specific reasons for visit are listed in table 6. The single most frequently mentioned principal reason for visiting a cardiovascular specialist was chest pain and related symptoms, recorded at 13.1 percent of visits. Ischemic heart disease and hypertension were the second and third most frequently mentioned reasons (5.6 percent and 5.0 percent of visits, respectively). It is important to keep in mind that the rank ordering in this and other tables in this report may not always be reliable because near estimates may not differ from one another because of sampling variability.

It should also be noted that a large number of visits relating to cardiovascular symptoms and diseases were made to primary care physicians. Cardiologists received about 16 percent of all physicians' office visits made for the reason of chest pain during 1989-90. The majority were directed to primary care physicians, with general and family practitioners receiving 37.0 percent and internists receiving 29.2 percent. Similarly, about half of all visits for hypertension (that is, visits at which the patient's principal reason for visiting the physician was recorded as hypertension) were made to general and family practitioners (50.1 percent) and an additional one-third were made to internists (32.9 percent). Cardiovascular specialists received only 5.4 percent of these visits. However, for visits where patients expressed their principal reason for the current visit as ischemic heart disease, indicating an established diagnosis and ongoing treatment for this condition, cardiovascular specialists received

Table 3. Annual number and percent distribution of office visits to cardiovascular disease specialists and to all other specialists, by selected visit characteristics, averaged over a 2-year period: United States, 1989–90

Visit characteristic	Visits to cardiovascular disease specialists		Visits to all other specialists	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	11,040	100.0	687,613	100.0
Patient's referral status				
Patient was referred to this visit by another physician.	1,065	9.6	37,160	5.4
Patient was not referred to this visit by another physician.	9,975	90.4	650,453	94.6
Patient's prior-visit status				
New patient	1,401	12.7	113,008	16.4
Old patient, new problem	953	8.6	156,685	22.8
Old patient, old problem	8,687	78.7	417,920	60.8

Table 4. Annual number and percent distribution of office visits to cardiovascular disease specialists and to all other specialists, by patient's expected source of payment, averaged over a 2-year period: United States, 1989–90

Expected source of payment ¹	Visits to cardiovascular disease specialists		Visits to all other specialists	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	11,040	100.0	687,613	100.0
Commercial insurance	5,647	51.2	235,238	34.2
Medicare	5,613	50.8	127,422	18.5
Blue Cross/Blue Shield	2,604	23.6	79,015	11.5
Self-pay	1,930	17.5	216,132	31.4
Prepaid plan/HMO/IPA/PPO ²	572	5.2	102,770	14.9
Medicaid	510	4.6	56,134	8.2
No charge	89	0.8	12,820	1.9
Other	392	3.6	37,861	5.5
Unknown	146	1.3	13,976	2.0

¹Numbers may not add to totals because more than one pay source may be coded for each visit.²HMO is health maintenance organization, IPA is independent practice association, and PPO is preferred provider organization.

39.9 percent of the total, compared with internists (31.1 percent) and general and family practitioners (23.5 percent).

Diagnostic services

Visits made to cardiovascular disease specialists were more likely to include diagnostic services ordered or provided by the physician than were visits to all other specialists. About 89.5 percent of the former included at least one diagnostic service, compared with 62.3 percent of the latter. About three-quarters (74.0 percent) of the visits included a blood pressure check, compared with 36.1

percent of visits to all other specialties. Other blood test, cholesterol measure, and chest x ray were also performed more often at visits to cardiovascular specialists. Visits by the number and type of diagnostic services ordered or performed at cardiovascular visits are shown in table 7.

Principal diagnosis rendered by the physician

Data on principal diagnoses made at office visits are obtained from item 10a of the Patient Record, which asks physicians 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) (12).

Nearly two-thirds (65.4 percent) of all visits to specialists in cardiovascular diseases resulted in a principal diagnosis classifiable to a disease of the circulatory system (table 8). The most frequently listed diagnosis was "other forms of chronic ischemic heart disease"^a occurring at 20.3 percent of visits, followed by essential hypertension, listed at 13.0 percent of visits (table 9).

The distribution of visits for selected cardiovascular diagnoses by physician specialty is shown in figure 4. Cardiovascular specialists received about 36.9 percent of all visits in which the principal diagnosis was other forms of chronic ischemic heart disease, 35.3 percent of all visits for angina pectoris, and 26.5 percent of all visits for cardiac dysrhythmias. However, following the pattern seen with reasons for visit, cardiovascular disease specialists received only 5.2 percent of all visits with a principal diagnosis of essential hypertension. More than half of visits with a principal diagnosis of essential hypertension were made to general and family practitioners (51.2 percent), and nearly one-third were to internists (32.0 percent).

Therapeutic services

Data on therapeutic services ordered or provided at visits to cardiovascular disease specialists are presented in table 10. Medication therapy was mentioned most frequently, at 80.2 percent of visits, compared with 59.9 percent of visits to all other specialists. More than

^aThe *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) defines "other forms of chronic ischemic heart disease" (ICD-9-CM code 414) to include coronary atherosclerosis, aneurysm of heart, other specified forms of chronic ischemic heart disease, and chronic ischemic heart disease, unspecified.

Table 5. Annual number and percent distribution of office visits to cardiovascular disease specialists by patient's principal reason for visit, averaged over a 2-year period: United States, 1989–90

Principal reason for visit and RVC code ¹	Number of visits in thousands	Percent distribution
All visits	11,040	100.0
Symptom moduleS001–S999	5,263	47.7
General symptomsS001–S099	1,954	17.7
Symptoms referable to psychological and mental disorders . .S100–S199	70	0.6
Symptoms referable to the nervous system (excluding sense organs)S200–S259	428	3.9
Symptoms referable to the cardiovascular and lymphatic systemS260–S299	798	7.2
Symptoms referable to eyes and earsS300–S399	55	0.5
Symptoms referable to the respiratory systemS400–S499	1,094	9.9
Symptoms referable to the digestive systemS500–S639	209	1.9
Symptoms referable to the genitourinary systemS640–S829	69	0.6
Symptoms referable to the skin, hair, and nailsS830–S899	100	0.9
Symptoms referable to the musculoskeletal systemS900–S999	489	4.4
Disease moduleD001–D999	1,859	16.8
Diagnostic, screening, and preventive moduleX100–X599	1,353	12.3
Treatment moduleT100–T899	1,785	16.2
Injury and adverse effects moduleJ001–J999	67	0.6
Test results moduleR100–R700	361	3.3
Administrative moduleA100–A140	*36	*0.3
Other ²U990–U999	319	2.9

¹Based on *A Reason for Visit Classification for Ambulatory Care (RVC)*, Vital Health Stat 2(78), Feb. 1979.

²Includes blanks, problems, and complaints not elsewhere classified, entries of "none," and illegible entries.

Table 6. Annual number and percent distribution of office visits to cardiovascular disease specialists by the 20 most frequently mentioned principal reasons for visit, averaged over a 2-year period: United States, 1989–90

Principal reason for visit and RVC code ¹	Number of visits in thousands	Percent distribution
All visits	11,040	100.0
Chest pain and related symptoms (not referable to body system)S050	1,447	13.1
Ischemic heart diseaseD515	623	5.6
HypertensionD510	550	5.0
Abnormal pulsations and palpitationsS260	540	4.9
General medical examinationX100	533	4.8
Shortness of breathS415	432	3.9
Postoperative visitT205	340	3.1
Blood pressure testX320	314	2.8
Other heart diseaseD520	280	2.5
For other and unspecified test resultsR700	275	2.5
Vertigo-dizzinessS225	274	2.5
Other heart symptomsS270	256	2.3
Labored or difficult breathingS420	223	2.0
CoughS440	195	1.8
Tiredness, exhaustionS015	159	1.4
Leg symptomsS920	135	1.2
Other blood testX315	125	1.1
Other special examinationX240	105	0.9
EKG, ECG, electrocardiogram, treadmill, stress testing . . .X350	96	0.9
Preoperative visit for specified and unspecified types of surgeryT200	93	0.8
All other reasons	4,051	36.7

¹Based on *A Reason for Visit Classification for Ambulatory Care (RVC)*, Vital Health Stat 2(78), Feb. 1979.

half (53.9 percent) of the cardiovascular visits included some form of counseling or advice, with weight and cholesterol reduction

being cited at 18.8 percent and 19.7 percent of visits, respectively. In comparison, only 6.1 percent of all other visits included counseling for

weight reduction, and 2.9 percent mentioned counseling for cholesterol reduction.

Data in tables 11, 12, and 13 present additional information pertaining to the utilization of medication therapy at visits to cardiovascular disease specialists. 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 listed in item 15 of the Patient Record. Because physicians may record more than one medication per visit, 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 (13) describes in detail the method and instruments used in the collection and processing of NAMCS drug data.

Among visits to cardiovascular specialists, there were an average of 25.4 million drug mentions per year for 1989 and 1990, yielding about 2.9 mentions per drug visit and about 2.3 mentions per visit overall. The number of drug mentions by therapeutic classification, adapted from therapeutic categories used in the *National Drug Code Directory*, 1985 edition (14), is shown in table 11. In cases where a particular drug was classifiable to more than one therapeutic category, it was listed under the category for which it was most frequently prescribed. As expected, cardiovascular-renal drugs were prescribed most frequently (55.8 percent of drug mentions). Within this broad category, antihypertensive agents and antihypertensive drugs represented 31.2 percent of all of the drug mentions.

The generic substances used most frequently in medications ordered or provided at cardiovascular visits are shown in table 12. The first six of these—digoxin, aspirin, nitroglycerin,

Table 7. Annual number and percent distribution of office visits to cardiovascular disease specialists and to all other specialists by diagnostic service, averaged over a 2-year period: United States, 1989–90

Visit characteristic	Visits to cardiovascular disease specialists		Visits to all other specialists	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	11,040	100.0	687,613	100.0
Number of diagnostic services ordered or performed at visit				
0	1,161	10.5	258,909	37.7
1	3,895	35.3	219,563	31.9
2	3,291	29.8	43,750	6.4
3	1,522	13.8	43,750	6.4
4	659	6.0	19,360	2.8
5 or more	513	4.6	33,381	4.9
Diagnostic services ordered or performed at visit ¹				
Blood pressure check	8,173	74.0	248,472	36.1
Other blood test	2,970	26.9	88,140	12.8
Cholesterol measure	2,037	18.5	23,455	3.4
Chest x ray	986	8.9	18,371	2.7
Urinalysis	817	7.4	87,993	12.8
Stool blood exam	261	2.4	16,268	2.4
Digital-rectal exam	205	1.9	25,242	3.7
Breast palpation	183	1.7	38,536	5.6
Oral glucose tolerance	137	1.2	3,102	0.5
HIV serology ²	124	1.1	1,023	0.1
Visual acuity	79	0.7	45,163	6.6
Mammogram	55	0.5	11,159	1.6
Pelvic exam	*36	*0.3	51,658	7.5
Pap test	*31	*0.3	33,302	4.8
Proctoscopy/sigmoidoscopy	*25	*0.2	3,066	0.4
Other diagnostic service	4,667	42.3	171,650	25.0

¹Numbers may not add to totals because more than one diagnostic service may be performed at each visit.²HIV is human immunodeficiency virus.**Table 8. Annual number and percent distribution of office visits to cardiovascular disease specialists by principal diagnosis, averaged over a 2-year period: United States, 1989–90**

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Percent distribution
All visits	11,040	100.0
Infectious and parasitic diseases001–139	*20	*0.2
Neoplasm140–239	*50	0.5
Endocrine, nutritional and metabolic diseases and immunity disorders240–279	400	3.6
Mental disorders280–319	108	1.0
Diseases of the nervous system and sense organs320–389	138	1.3
Diseases of the circulatory system390–459	7,225	65.4
Diseases of the respiratory system460–519	563	5.1
Diseases of the digestive system520–579	136	1.2
Diseases of the genitourinary system580–629	94	0.9
Diseases of the skin and subcutaneous tissue680–709	59	0.5
Diseases of the musculoskeletal system and connective tissue710–739	300	2.7
Symptoms, signs, and ill-defined conditions780–799	654	5.9
Injury and poisoning800–999	119	1.1
Supplementary classificationV01–V82	948	8.6
All other diagnoses ²	62	0.6
Unknown ³	168	1.5

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*.²Includes diseases of the blood and blood-forming organs (280–289); complications of pregnancy, childbirth, and the puerperium (630–676); congenital anomalies (740–759); and certain conditions originating in the perinatal period (760–799).³Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

diltiazem, furosemide, and hydrochlorothiazide—were found in 32.5 percent of all of the drugs mentioned at cardiovascular visits. 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.

Drug mentions according to entry name, that is, the name recorded by the physician in item 15 of the Patient Record, are shown in table 13. This could be a trade name, generic name, or simply a desired therapeutic effect. Cardizem was the specific entry listed most frequently (4.9 percent of mentions), followed by Lanoxin (4.7 percent), and Lasix (4.2 percent).

Disposition of visit

Visits to cardiovascular specialists were more likely to include instructions to return at a specific time (80.2 percent) than were visits to all other specialties (61.4 percent). Data on disposition of visit are shown in table 14.

Duration of visit

About half (49.2 percent) of the visits to cardiovascular disease specialists lasted more than 15 minutes, compared with less than one-third (29.9 percent) of the visits to all other specialists (table 15). Average duration of cardiovascular visits was relatively long—21.8 minutes compared with 16.4 minutes for visits to all other specialists. 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.

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Table 9. Annual number and percent distribution of office visits to cardiovascular disease specialists by the 20 most frequently mentioned principal diagnoses, averaged over a 2-year period: United States, 1989–90

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Percent distribution
All visits	11,040	100.0
Other forms of chronic ischemic heart disease414	2,242	20.3
Essential hypertension401	1,433	13.0
Cardiac dysrhythmias427	848	7.7
Angina pectoris413	765	6.9
Other diseases of endocardium424	423	3.8
Symptoms involving respiratory system and other chest symptoms786	349	3.2
Observation and evaluation for suspected conditionsV71	344	3.1
Heart failure428	292	2.6
Other postsurgical statesV45	218	2.0
Diabetes mellitus250	181	1.6
Cardiomyopathy425	154	1.4
Hypertensive heart disease402	153	1.4
Old myocardial infarction412	124	1.1
Bronchitis, not specified as acute or chronic490	121	1.1
Symptoms involving cardiovascular system785	112	1.0
Disorders of lipid metabolism272	108	1.0
General medical examinationV70	104	0.9
Other acute and subacute forms of Ischemic heart disease411	103	0.9
Chronic airway obstruction, not elsewhere classified496	91	0.8
Osteoarthritis and allied disorders715	91	0.8
All other diagnoses	2,786	25.2

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

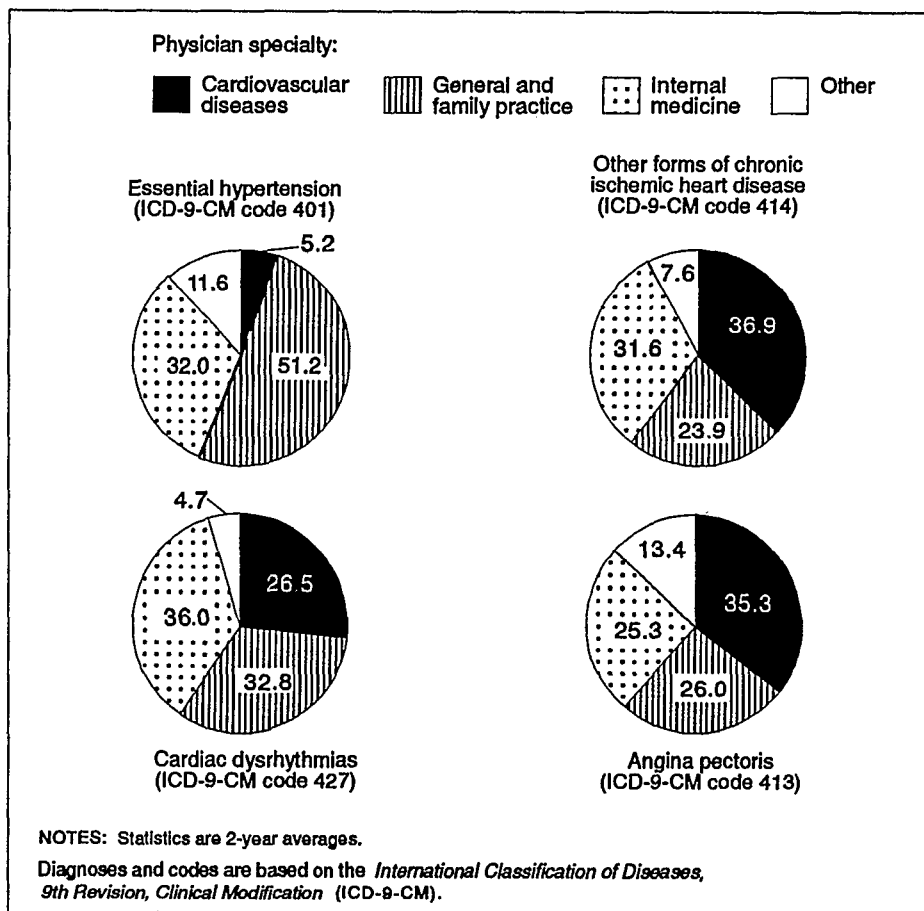


Figure 4. Percent distribution of office visits for selected diagnoses, by physician specialty: United States, 1989–90

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Table 10. Annual number and percent distribution of office visits to cardiovascular disease specialists and to all other specialists by therapeutic service, based on a 2-year average: United States, 1989–90

Therapeutic service ordered or provided at visit ¹	Visits to cardiovascular disease specialists		Visits to all other specialists	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	11,040	100.0	687,613	100.0
New or continuing medication.	8,859	80.2	411,828	59.9
Counseling/advice				
None	5,086	46.1	434,227	63.1
Weight reduction	2,079	18.8	42,037	6.1
Cholesterol reduction	2,180	19.7	19,870	2.9
Smoking cessation.	560	5.1	14,463	2.1
HIV transmission	*9	*0.1	1,383	0.2
Breast self-exam	68	0.6	15,909	2.3
Other	3,781	34.2	192,159	27.9
Other nonmedication therapy				
None	9,630	87.2	552,841	80.4
Psychotherapy	108	1.0	24,445	3.6
Corrective lenses.	*11	*0.1	9,066	1.3
Ambulatory surgery	*23	*0.2	13,631	2.0
Physiotherapy.	110	1.0	16,279	2.4
Other	1,194	10.8	75,874	11.0

¹Numbers may not add to totals because more than one type of therapy may be ordered or provided at each visit.

Table 11. Annual number and percent distribution of drug mentions at office visits to cardiovascular disease specialists by therapeutic classification, averaged over a 2-year period: United States, 1989–90

Therapeutic classification ¹	Number of drug mentions in thousands	Percent distribution
All mentions	25,369	100.0
Cardiovascular-renal.	14,158	55.8
Antianginal agents	3,995	15.7
Antihypertensive agents	3,931	15.5
Diuretics.	2,466	9.7
Cardiac glycosides	1,739	6.9
Antiarrhythmic agents	1,176	4.6
Agents used in peripheral or cerebral vascular disorders	751	3.0
Other.	102	0.4
Pain relief	2,543	10.0
Metabolic and nutrient agents.	1,797	7.1
Hormones and agents affecting hormonal mechanisms.	1,609	6.3
Respiratory tract	846	3.3
Psychopharmacologic.	844	3.3
Gastrointestinal.	737	2.9
Antimicrobial	690	2.7
Hematologic.	560	2.2
Other ²	529	2.1
Unclassified, miscellaneous	1,060	4.2

¹Therapeutic classification is based on the standard drug classification used in the *National Drug Code Directory*, 1985 Edition.

²Includes anesthetics, radiopharmaceuticals/contrast media, oncolytics, otological drugs, and antiparasitic agents.

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Table 12. Number, percent distribution, and therapeutic classification of drug mentions at office visits to cardiovascular disease specialists by the 20 most frequently used generic substances, averaged over a 2-year period: United States, 1989–90

<i>Generic substance</i>	<i>Number of drug mentions in thousands¹</i>	<i>Percent distribution</i>	<i>Therapeutic classification²</i>
All mentions	25,369	100.0	...
Digoxin	1,697	6.7	Cardiac glycoside
Aspirin	1,644	6.5	General analgesic
Nitroglycerin	1,459	5.7	Antianginal agent
Diltiazem	1,254	4.9	Antianginal agent
Furosemide	1,144	4.5	Diuretic
Hydrochlorothiazide	1,073	4.2	Diuretic
Captopril	784	3.1	Antihypertensive agent
Triamterene	713	2.8	Diuretic
Dipyridamole	694	2.7	Agent used in peripheral or cerebral vascular disorders
Nifedipine	664	2.6	Antianginal agent
Potassium replacement solutions	633	2.5	Replenisher and regulator of water and electrolytes
Verapamil	631	2.5	Antiarrhythmic agent
Isosorbide	607	2.4	Antianginal agent
Atenolol	566	2.2	Antihypertensive agent
Propanolol	538	2.1	Antihypertensive agent
Lovastatin	520	2.0	Agent used to treat hyperlipidemia
Enalapril	509	2.0	Antihypertensive agent
Warfarin	434	1.7	Anticoagulant or thrombolytic
Glyburide	342	1.3	Blood glucose regulator
Quinidine	299	1.2	Antiarrhythmic agent

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

²Therapeutic classification is based on the standard drug classification used in the *National Drug Code Directory*, 1985 Edition. In cases where a generic substance had more than one therapeutic classification, it was listed in the category for which it was most frequently prescribed.

Table 13. Annual number, percent distribution, and therapeutic classification of the 10 drugs most frequently prescribed at office visits to cardiovascular disease specialists, by entry name of drug, averaged over a 2-year period: United States, 1989–90

<i>Entry name of drug¹</i>	<i>Number of drug mentions in thousands</i>	<i>Percent distribution</i>	<i>Therapeutic classification²</i>
All mentions	25,369	100.0	...
Cardizem	1,254	4.9	Antianginal agent
Lanoxin	1,204	4.7	Cardiac glycoside
Lasix	1,075	4.2	Diuretic
Capoten	672	2.6	Antihypertensive agent
Acetylsalicylic acid (A.S.A.)	656	2.6	General analgesic
Persantine	598	2.4	Agent used in peripheral or cerebral vascular disorders
Aspirin	570	2.2	General analgesic
Procardia	540	2.1	Antianginal agent
Tenormin	524	2.1	Antihypertensive agent
Mevacor	520	2.0	Agent used to treat hyperlipidemia

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

²Therapeutic classification is based on the standard drug classification used in the *National Drug Code Directory*, 1985 Edition. In cases where a drug had more than one therapeutic classification, it was listed in the category for which it was most frequently prescribed.

Table 14. Number and percent distribution of office visits to cardiovascular disease specialists and to all other specialists by disposition of visit, averaged over a 2-year period: United States, 1989–90

<i>Disposition of visit¹</i>	<i>Visits to cardiovascular specialists</i>		<i>Visits to all other specialists</i>	
	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>
All visits	11,040	100.0	687,613	100.0
No followup planned	391	3.5	66,953	9.7
Return at specified time	8,851	80.2	422,206	61.4
Return if needed	1,327	12.0	158,365	23.0
Telephone followup planned.	347	3.1	25,737	3.7
Refer to other physician	357	3.2	21,149	3.1
Return to referring physician.	560	5.1	6,115	0.9
Admit to hospital	215	1.9	6,767	1.0
Other disposition.	233	2.1	13,292	1.9

¹Numbers may not add to totals because more than one disposition may be coded for each visit.

Table 15. Annual number and percent distribution of office visits to cardiovascular disease specialists and to all other specialists by duration of visit, averaged over a 2-year period: United States, 1989–90

<i>Duration of visit</i>	<i>Visits to cardiovascular disease specialists</i>		<i>Visits to all other specialists</i>	
	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>
All visits	11,040	100.0	687,613	100.0
0 minutes ¹	278	2.5	11,595	1.7
1–5 minutes.	207	1.9	64,061	9.3
6–10 minutes	1,637	14.8	193,458	28.1
11–15 minutes	3,487	31.6	212,826	31.0
16–30 minutes	4,160	37.7	162,107	23.6
31–60 minutes	1,064	9.6	40,582	5.9
More than 60 minutes.	208	1.9	2,985	0.4

¹Visits of zero minutes duration are those in which there was no face-to-face contact between the physician and the patient.

Technical notes

Source of data and sample design

This report is based on data collected through the National Ambulatory Medical Care Survey (NAMCS) over the 2-year period 1989–90. 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). Physicians were stratified into 15 specialty groups during the second stage of the survey design. Detailed descriptions of the 1989 and 1990 NAMCS design have been published (4,15,16), and the reader is urged to consult these sources for further technical information.

The 1989 NAMCS physician sample included 2,535 physicians selected from master files maintained by the American Medical Association and the American Osteopathic Association; 118 of these were specialists in cardiovascular diseases. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation, based upon a set of design criteria. Of those screened, 608 physicians (including 24 cardiovascular disease specialists) were ruled ineligible (out-of-scope) due to reasons such as being retired or employed primarily in teaching, administration, or research. Of the remaining 1,927 physicians, 74 percent responded to the survey, including 61 cardiovascular disease

specialists, or 65 percent of those surveyed.

Sample physicians were asked to complete Patient Records (see figure 1) for a systematic random sample of their office visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 38,384 forms, including 1,087 forms completed by cardiovascular specialists.

For 1990, a sample of 3,063 non-Federal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Of this number, 149 were specialists in cardiovascular diseases. The overall response rate for the 2,269 in-scope physicians was 74 percent; the rate was 67 percent for the 114 in-scope cardiovascular disease specialists. Responding physicians completed 43,469 patient records, including 1,243 forms from cardiovascular disease specialists.

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, Hospital Discharge and Ambulatory Care Survey Section, Research Triangle Park, North Carolina.

The 1989 and 1990 NAMCS 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 in this report, unless otherwise noted, reflect 1989 and 1990 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

Table I. Relative standard errors for estimated numbers of office visits to all specialists and to cardiovascular disease specialists: National Ambulatory Medical Care Survey, 1989–90

Estimated number of office visits in thousands	Visits to all specialists ¹	Visits to cardiovascular disease specialists ²
Relative standard error in percent		
100	72.7	31.1
200	51.5	23.4
500	32.6	17.1
1,000	23.2	14.4
2,000	16.5	12.9
5,000	10.7	11.9
10,000	7.9	11.9
20,000	6.0	11.3
50,000	4.5	11.2
100,000	3.9	11.2
200,000	3.5	11.1
500,000	3.9	11.1
1,000,000	3.2	11.1
1,400,000	3.2	11.1

¹For visits to aggregated specialists, the smallest reliable estimate is 593,000 visits. Estimates below this figure have a relative standard error greater than 30 percent.

²For visits to cardiovascular disease specialists, the smallest reliable estimate is 110,000 visits.

Example of use of table: An aggregate estimate of 2 million visits to cardiovascular disease specialists has a relative standard error of 12.9 percent, or a standard error of 258,000 visits (12.9 percent of 2 million).

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 for estimated numbers of office visits in

Table II. Relative standard errors for estimated numbers of drug mentions at visits to cardiovascular disease specialists: National Ambulatory Medical Care Survey, 1989–90

Estimated number of drug mentions in thousands ¹	Relative standard error in percent
100	36.1
200	27.0
500	19.7
1,000	16.6
2,000	14.7
5,000	13.5
10,000	13.1
20,000	12.9
50,000	12.8
100,000	12.7
1,000,000	12.7

¹The smallest reliable estimate of drug mentions at visits to cardiovascular disease specialists is 155,000. Estimates below this figure have a relative standard error greater than 30 percent.

Example of use of table: An aggregate estimate of 10 million drug mentions has a relative standard error of 13.1 percent, or a standard error of 1,310,000 mentions (13.1 percent of 10 million).

Table III. Standard errors for percents of estimated numbers of office visits to cardiovascular disease specialists: National Ambulatory Medical Care Survey: 1989–90

Base of percent (visits in thousands)	Estimated percent					
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	50
Standard error in percentage points						
200	2.1	4.5	6.2	8.2	9.4	10.3
500	1.3	2.8	3.9	5.2	6.0	6.5
1,000	0.9	2.0	2.8	3.7	4.2	4.6
2,000	0.6	1.4	2.0	2.6	3.0	3.3
5,000	0.4	0.9	1.2	1.7	1.9	2.1
10,000	0.3	0.6	0.9	1.2	1.3	1.5
20,000	0.2	0.5	0.6	0.8	1.0	1.0
50,000	0.1	0.3	0.4	0.5	0.6	0.7
100,000	0.1	0.2	0.3	0.4	0.4	0.5
600,000	<.1	0.1	0.1	0.2	0.2	0.2

Example of use of table: An estimate of 30 percent based on an aggregate estimate of 10 million visits has a standard error of 1.3 percent or a relative standard error of 4.3 percent (1.3 percent divided by 30 percent).

Table IV. Coefficients appropriate for determining relative standard errors by type of estimate and physician groups: National Ambulatory Medical Care Survey, 1989–90

Type of estimate and physician group	Coefficient	
	A	B
Visits		
Overall totals	0.00097549	52.77952184
General and family practice, internal medicine	0.00456412	37.27953208
Pediatrics, obstetrics and gynecology	0.00755165	23.43030623
Doctors of osteopathy, general surgery, orthopedic surgery, cardiovascular diseases, psychiatry, urological surgery, dermatology, neurology, ophthalmology, otolaryngology	0.01236777	8.46452955
All other	0.01169917	39.38793804
Drug mentions		
Overall totals	0.00157151	81.47054833
General and family practice, internal medicine	0.00589721	59.72807201
Psychiatry	0.0296738	30.9506771
Doctors of osteopathy, general surgery, orthopedic surgery, cardiovascular diseases, urological surgery, dermatology, neurology, ophthalmology, otolaryngology, obstetrics and gynecology, pediatrics	0.01603845	11.42009384
All other	0.01877082	70.35063675

1990 are shown in table I, relative standard errors for estimated numbers of drug mentions are shown in table II, and standard errors for estimated percents of visits are shown in table III. Readers using these tables should keep in mind that they refer to combined years of data rather than average annual estimates.

Alternatively, relative standard errors for aggregate estimates may be calculated using the following general formula, where x is the aggregate of interest in thousands, and A and B

are the appropriate coefficients from table IV.

$$RSE(x) = \sqrt{A + \frac{B}{x}} \times 100.0$$

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, using the appropriate coefficient from table IV:

$$RSE(p) = \sqrt{\frac{B(1-p)}{px}} \times 100.0$$

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 t-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of confidence). Terms relating to differences such as "greater than" or "less than" indicate that the difference is statistically significant. Lack of comment about 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.

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.

Cardiovascular disease

specialist—A cardiovascular disease specialist is a physician who has self-designated the practice specialty of cardiovascular diseases 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 cardiovascular diseases is defined as a medical specialty by the AMA (other categories include general practice, surgical specialties, and other specialties), and the American Board of Internal Medicine certifies physicians in that specialty. In the 1989 and 1990 NAMCS, 83.8 percent of all visits to cardiovascular disease specialists were made to physicians who were board certified in internal medicine, while 15.8 percent of visits were made to physicians who did not report board certification.

Office—An office is the space that physicians identify as a location for their ambulatory practice. Offices customarily include consultation, examination, or treatment spaces that patients associate with the particular physician.

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.

Drug mention—A drug mention is the physician's entry 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 medication.

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

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
-

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