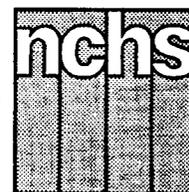


Advance Data



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

Characteristics of Prepaid Plan Visits to Office-Based Physicians: United States, 1991

David A. Woodwell, Division of Health Care Statistics

Introduction

This report presents data from the National Ambulatory Medical Care Survey (NAMCS) on visits to private office-based physicians at which the expected source of payment was a health maintenance organization or other prepaid health care plan. The NAMCS is a national probability sample survey of visits to nonfederally employed, office-based physicians conducted by the Division of Health Care Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention. This survey is used to collect data on the demographic characteristics, the medical problem(s), and the medical treatment of patients making visits to private office-based physicians. The NAMCS was conducted annually from 1973 through 1981, again in 1985, and resumed as an annual survey in 1989.

Health maintenance organizations (HMO) were first developed in the early 1970's with the passage of the HMO Act of 1973. This new initiative provided grants and loans to enable the development of HMO's in an attempt to halt increasing health care costs. Since then, HMO's and other more recent prepaid plans have attracted younger and healthier enrollees than traditional

fee-for-service plans, which may result in inherently lower costs and affects comparisons between plans (1-5). Much of the current literature compares prepaid plans and traditional fee-for-service plans in regards to health outcomes and quality of care (6-10). This report provides data on health care delivery by private office-based physicians involved with patients seeking care under prepaid health insurance plans.

Because the estimates presented in this report are based on a sample rather than on the entire universe of office visits, they are subject to sampling variability. The Technical notes at the end of this report include an overview of the sample design used in the 1991 NAMCS, an explanation of sampling errors, and guidelines for judging the precision of the estimates.

The Patient Record form is reproduced in figure 1 and is intended to serve as a reference for readers as they review the survey findings. For purposes of this report, visits made by patients 65 years of age and older were excluded from analysis due to their high utilization and type of medical care received as compared with visits made by patients younger than 65 years of age. Since a much larger proportion of

nonprepaid than prepaid plan visits were for patients over 65 years of age (16.2 and 9.1 percent, respectively), inclusion of visits by the elderly would bias comparisons. *Prepaid plan visits* are defined as those at which "HMO/other prepaid" was checked on the Patient Record form, regardless of whether another expected pay source was checked as well. *Nonprepaid visits* are defined as visits for which "HMO/other prepaid" was not checked as an expected source of payment. An expected source of payment was unspecified in 2.1 percent of the visits. These records are also excluded from this report. Visits by expected sources of payment are shown in table 1. The expected sources of payment for nonprepaid visits include patient-paid (31.4 percent), private/commercial insurance (46.7 percent), Medicaid (12.1 percent), and Medicare (3.7 percent).

To understand the usefulness and limitations of these data, two characteristics of the NAMCS should be noted. First, expected sources of payment are not mutually exclusive. Because of co-payments, participation in governmental medical care programs, and affiliations with other health insurance organizations, more than one



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
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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		D		
1. DATE OF VISIT ____/____/____ Month Day Year		PATIENT RECORD NATIONAL AMBULATORY MEDICAL CARE SURVEY				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 [Check all that apply] 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	8. IS THIS VISIT INJURY RELATED? 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 [In patient's own words] a. Most important: _____ b. Other: _____ c. Other: _____		11. PHYSICIAN'S DIAGNOSES a. Principal diagnosis / problem associated with item 10.a: _____ b. Other: _____ c. Other: _____		9. DOES PATIENT SMOKE CIGARETTES? 1 <input type="checkbox"/> Yes 3 <input type="checkbox"/> Unknown 2 <input type="checkbox"/> No	
14. AMBULATORY SURGICAL PROCEDURE(S) [Record any outpatient diagnostic or therapeutic procedure. For the first, check appropriate boxes.] 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 [Check all ordered or provided] 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 [Specify] _____ 10 <input type="checkbox"/> Spirometry		16. THERAPEUTIC SERVICES [Check all ordered or provided. Exclude medication] 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 [Specify] _____		
17. MEDICATION [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.] If none, check here <input type="checkbox"/> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____			a. New medication? Yes No 1 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/>		18. DISPOSITION THIS VISIT [Check all that apply] 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 [Specify] _____	
			19. DURATION OF THIS VISIT [Time actually spent with physician] _____ Minutes			

Figure 1. Patient record form

expected source of payment is possible. In addition, a patient who has insurance may have a visit with "patient paid" designated as the expected source of payment because of copayments or deductibles. For these reasons all nonprepaid visits have been combined into one category. Second, the prepaid plan visits that are the subject of this report cannot be analyzed according to the type of prepaid plan because all prepaid plans were grouped together into a single category on the survey instrument.

Highlights

- Between 1985 and 1991 the proportion of physician office visits by persons under 65 years of age that had an expected source of payment of "prepaid plan" almost doubled (10 and 18 percent, respectively) with a higher proportion of 1991 visits to nonprimary care specialties.
- A higher proportion of prepaid than nonprepaid visits were to office-based physicians in the primary care specialties of general and family practice, internal medicine, pediatrics, and obstetrics and gynecology (70 and 62 percent, respectively).
- A higher proportion of prepaid visits than nonprepaid visits to nonprimary care specialties were referrals from another physician (19 and 12 percent, respectively).
- A higher proportion of prepaid than nonprepaid visits by new patients were referrals (39 and 27 percent, respectively).
- The West represented 33 percent of all prepaid plan visits and 21 percent of nonprepaid visits. Less than 18 percent of prepaid visits were made in the South compared with 31 percent of nonprepaid visits.
- Prepaid and nonprepaid visits were similar with respect to the principal reason for visit, physicians' principal diagnosis, and medications prescribed.
- Excluding visits in which there was no face-to-face contact between patient and physician, the average

duration of prepaid plan visits was similar to that of nonprepaid visits (16 minutes vs. 17 minutes, respectively).

- After the exclusion of patients 65 years of age and older, the average age of patients making prepaid plan visits was 29.2 years compared with 31.4 years for patients making nonprepaid visits.
- A significantly higher proportion of prepaid plan visits had at least one diagnostic or screening test ordered or performed (76 percent) compared with nonprepaid visits (70 percent) for patients 45–64 years of age.

Physician characteristics

In 1991, there were an estimated 91.8 million visits to nonfederally employed office-based physicians at which a prepaid plan was an expected source of payment, not including visits made by patients 65 years of age and older. This is a significant increase from 1985 in which there were an estimated 51.4 million visits with an expected source of payment of a prepaid plan. In 1991, about 18 percent of the visits by persons under 65 years of age had a prepaid plan as an expected source of payment compared with 10 percent in 1985.

Of the 91.8 million prepaid plan office visits in 1991, about 70 percent were to primary care physicians—including general and family practitioners, internists, pediatricians, and obstetricians and gynecologists (table 2). The percent of prepaid visits to primary care physicians was down from 77 percent in 1985; the first year data were collected on an expected source of payment. The decrease in the proportion of prepaid visits to primary care physicians was due to a decline in the percent of visits to general and family practitioners from 35 percent in 1985 to 26 percent in 1991. The proportion of prepaid visits to obstetricians and gynecologists increased from 7.6 percent in 1985 to 11.0 percent in 1991. Among nonprepaid visits, general and family practitioners also dropped as a percent of visits, from 30 percent in 1985 to 25 percent in 1991. Internists increased as a percent of

Table 1. Number and percent of visits by expected sources of payment: United States, 1991

<i>Expected sources of payment¹</i>	<i>Number of visits in thousands</i>	<i>Percent</i>
All visits ²	513,819	100.0
Prepaid plans	91,824	17.9
Nonprepaid plans	421,995	82.1
All nonprepaid plan visits	421,995	100.0
Medicare	15,736	3.7
Medicaid	51,055	12.1
Other government	12,078	2.7
Private/commercial insurance	197,046	46.7
Patient paid	132,453	31.4
No charge	8,635	2.0
Other	22,742	5.4

¹Numbers do not add to totals because more than one source of payment may be reported per visit.
²An additional 155,870,000 visits were for patients 65 years of age and over and 10,964,000 visits had no expected source of payment indicated. These visits have been excluded from this report.

Table 2. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by physician specialty: United States, 1991

<i>Physician specialty</i>	<i>Prepaid plan visits</i>		<i>Nonprepaid visits</i>
	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent distribution</i>
All visits	91,824	100.0	100.0
Primary care:			
General and family practice	24,204	26.4	25.1
Internal medicine	14,395	15.7	11.9
Pediatrics	15,247	16.6	14.4
Obstetrics and gynecology	10,095	11.0	10.6
Other than primary care:			
Orthopedic surgery	5,931	6.5	5.6
Dermatology	3,061	3.3	4.2
Otolaryngology	2,774	3.0	3.1
General surgery	1,875	2.0	3.0
Urological surgery	1,533	1.7	1.2
Cardiovascular diseases	1,282	1.4	0.9
Ophthalmology	1,067	1.2	4.1
Psychiatry	1,340	1.5	3.2
Neurology	481	*0.5	1.2
All other specialties	8,540	9.3	11.6

nonprepaid visits from 8 percent in 1985 to 12 percent in 1991. Sixty-two percent of the nonprepaid visits were to primary care physicians.

One possible explanation for the increasing percent of prepaid plan visits to nonprimary care specialties is the increased use of network models and point-of-service/open-ended plans in 1991 as compared with traditional HMO's, which dominated the prepaid plan market in 1985 (11,12). Traditional HMO's limit visits to specialists by

requiring the patient to obtain a referral by their primary care specialist whereas the requirements for a patient enrolled in an open-ended plan are not as stringent.

Table 3 shows that the geographical distribution of prepaid plan visits and nonprepaid visits differ. The West accounted for the largest proportion of prepaid plan visits (33.0 percent) while the South accounted for the smallest proportion (17.9 percent). The distribution of nonprepaid visits was the

Table 3. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by geographical region: United States, 1991

Region	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Northeast	19,199	20.9	24.2
Midwest	25,930	28.2	24.0
South	16,420	17.9	31.1
West	30,276	33.0	20.8

reverse, with 31.1 percent occurring in the South and 20.8 percent in the West. Comparing the geographical distribution of prepaid plan visits over time, NAMCS data show that in 1985 the West had the largest number of prepaid plan visits (20.1 million visits) and the Northeast had the smallest number of prepaid plan visits (7.4 million visits) (figure 2).

Patient characteristics

Approximately two-fifths (39.9 percent) of prepaid plan visits were made by patients 25–44 years of age, and about one-quarter (26.2 percent) were made by patients under 15 years of age. This pattern holds true for visits for nonprepaid sources of payment as well (table 4). However, patients 25–44 years of age made up a relatively larger portion of prepaid plan visits compared with nonprepaid visits (39.9 vs. 35.4 percent). Correspondingly, patients 45–64 years of age made up a relatively smaller portion of prepaid plan visits compared with nonprepaid visits (21.9 vs. 28.1 percent). The majority of visits by persons with both prepaid and nonprepaid sources of payment were made by females, who accounted for a higher percent of visits than males in all age categories except under 15 years.

As shown in table 5, the majority of prepaid plan visits were made by white persons (80.2 percent). Black persons made 15.7 percent of these visits, with all other races accounting for the remaining 4.0 percent. In all race categories, females made a higher percent of visits than did males. A greater proportion of office-based prepaid plan visits were made by black persons (15.7 percent) compared with office-based nonprepaid visits (8.5 percent). However, data from 1992 show that the percent of office-based visits by black persons were similar for prepaid and nonprepaid visits based on that year (see Discussion section).

Visit characteristics

Item 7 on the Patient Record form asks if the patient was referred by another physician for this visit. In

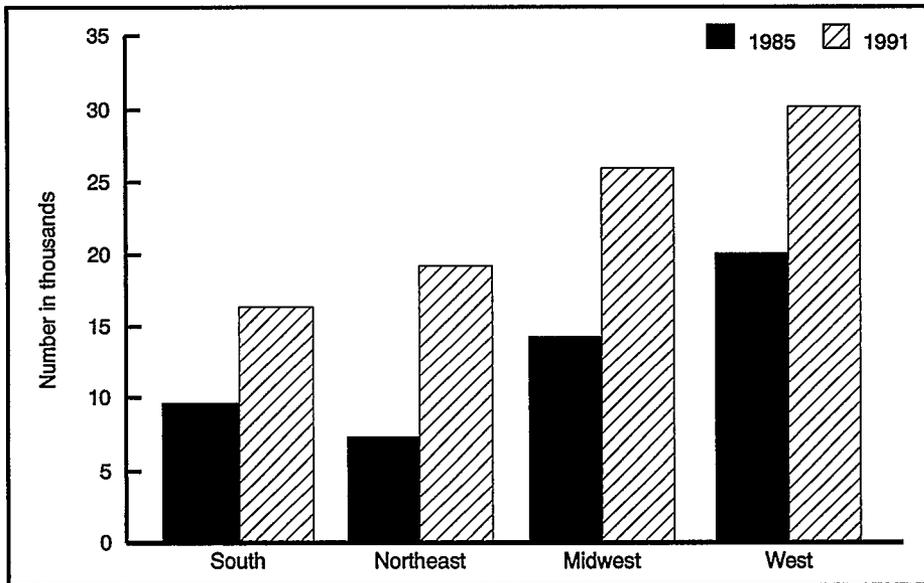


Figure 2. Number of prepaid plan visits, by geographical region: United States, 1985 and 1991

Table 4. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's age and sex: United States, 1991

Age and sex	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Under 15 years	24,058	26.2	24.4
15–24 years	11,009	12.0	12.1
25–44 years	36,659	39.9	35.4
45–64 years	20,099	21.9	28.1
Male	37,226	40.5	40.2
Under 15 years	12,964	14.1	12.5
15–24 years	3,588	3.9	4.2
25–44 years	12,235	13.3	12.0
45–64 years	8,439	9.2	11.5
Female	54,599	59.5	59.8
Under 15 years	11,094	12.1	11.9
15–24 years	7,421	8.1	8.0
25–44 years	24,424	26.6	23.3
45–64 years	11,660	12.7	16.6

Table 5. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's race and sex: United States, 1991

Race and sex	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
Total visits	91,824	100.0	100.0
Black	14,462	15.7	8.5
Male	5,176	5.6	3.1
Female	9,286	10.1	5.4
White	73,687	80.2	87.7
Male	30,596	33.3	35.5
Female	43,091	46.9	52.2
Other ¹	3,675	4.0	3.8
Male	1,454	1.6	1.6
Female	2,222	2.4	2.2

¹Includes Asian/Pacific Islander and American Indian/Eskimo/Aleut.

8.2 percent of prepaid plan visits the patient had been referred compared with 6.0 percent of the nonprepaid visits (table 6). There was a significant difference in the referral rate for primary care physicians compared with other specialists. Patients were referred in 3.4 percent of the prepaid plan visits for primary care physicians but were referred in 19.2 percent of visits for other specialists. Note that only 11.5 percent of the nonprepaid visits to other specialists were referrals.

The majority of prepaid plan visits were made by patients who had seen the physician previously for the same problem (54.9 percent). In addition, over one-quarter of the prepaid plan visits were made by "old patients" with a new problem (28.6 percent). New patients made up less than one-fifth of the visits (16.5 percent). These patterns

were also observed for nonprepaid visits. However, a higher proportion of prepaid than nonprepaid visits by new persons were referrals (38.8 and 26.5 percent, respectively).

Patients that had an expected source of payment of a prepaid plan were less likely to smoke cigarettes compared with those patients that had another expected source of payment. As shown in table 7, about two-thirds of the visits with a prepaid plan source were made by patients who did not smoke cigarettes (68.5 percent), 8.4 percent were by patients who did smoke. In comparison, one-tenth of nonprepaid visits were made by patients who smoke (11.7 percent) and three-fifths were made by patients who did not smoke (62.1 percent). Smoking status of the patient was not specified for about one-quarter of the visits.

Prepaid plan visits were less likely to be associated with injuries compared with nonprepaid visits (table 7). Over all age groups, about 9 out of every 100 prepaid plan visits were injury related (9.4 percent) compared with 12 out of every 100 for nonprepaid visits (12.2 percent). The only age group to show a statistically significant difference, however, was for persons 25–44-years-old. For persons in this age group, nonprepaid visits were 50 percent more likely to be injury related compared with prepaid plan visits.

Item 10 of the Patient Record form asks for the patient's (or patient's surrogate) "complaint(s), symptom(s), or other reason(s) for this visit (In patient's own words)." Up to three reasons for visit are coded and classified according to *A Reason for Visit Classification for Ambulatory Care (RVC)* (13). The principal reason is the problem, complaint, or reason listed on item 10a of the Patient Record form.

Approximately 61.0 percent of prepaid plan visits were classified in the symptom module of the RVC, one of the eight modules that makes up the classification (table 8). Of these symptoms, 14.0 percent were classifiable to the respiratory system and 11.2 percent were classifiable to the musculoskeletal system. Nonprepaid visits followed the same pattern.

Table 9 shows the 20 most frequently mentioned principal reasons for visit, accounting for almost 47 percent of the prepaid plan visits. Note that estimates that differ in ranked order may not be significantly different

Table 6. Number, percent distribution, and percent of visits referred by another physician by physician specialty and visit status for prepaid plan and nonprepaid visits, United States, 1991

Visit characteristics	Prepaid plan visits		Nonprepaid visits			
	Number of visits	Percent distribution	Number of visits referred	Percent referred	Percent distribution	Percent referred
All visits	91,824	100.0	7,505	8.2	100.0	6.0
Primary care ¹	63,941	69.6	2,151	3.4	61.7	2.5
Other specialties	27,884	30.4	5,354	19.2	38.3	11.5
New patient	15,111	16.5	5,860	38.8	18.8	26.5
Old patient-new problem	26,277	28.6	1,644	6.3	22.5	4.5
Old patient-old problem ²	50,436	54.9	0.0	0.0	58.7	0.0

¹Primary care specialties include general and family practice, internal medicine, pediatrics, and obstetrics/gynecology.

²Survey edit specifications did not allow referrals for old patient-old problem cases.

Table 7. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's cigarette-smoking status and whether visit is injury related: United States, 1991

Visit characteristics	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Does patient smoke cigarettes?			
Yes	7,709	8.4	11.7
No	62,878	68.5	62.1
Unknown	21,238	23.1	26.2
Is visit injury related?			
Yes	8,613	9.4	12.2
No	83,212	90.6	87.8

from each other. A general medical exam, accounting for about 5.2 million visits, or 5.7 percent, was most frequently mentioned at prepaid plan visits. Cough (4.5 percent), symptoms referable to throat (3.7 percent), and prenatal examination (3.3 percent) followed, all similar to the top principal reasons for visits from other expected payment sources.

Data on the principal diagnoses rendered by physicians are shown in tables 10 and 11. The principal diagnosis is the first-recorded diagnosis in item 11 of the Patient Record form

and is associated with the principal reason for visit as recorded in item 10a. The principal diagnosis was coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (14)*.

The ICD-9-CM is organized into broad categories, most relating to the major systems of the body as shown in table 10. Diseases of the respiratory system and the supplementary classification (for diagnoses that are not illness or injury related), each accounted for about 18.5 percent of prepaid plan visits, followed by injury and poisoning

and diseases of the nervous system and sense organs each representing about 8.0 percent of the visits. Nonprepaid visits followed the same pattern.

Table 11 lists the 20 most frequently mentioned principal diagnoses rendered by the physician at the three-digit coding level of the ICD-9-CM. Approximately 40 percent of the visits are accounted for by the top 20 principal diagnoses. Health supervision of infant or child was the most frequent principal diagnosis, accounting for 4.9 percent of the prepaid plan visits. Health supervision of infant or child was followed by normal pregnancy and acute upper respiratory infections of multiple or unspecified sites, accounting for 4.5 and 3.4 percent, respectively. Comparing the principal diagnoses of the two types of visits, there is a difference in the percent of visits for health supervision of infant or child (4.9 vs. 3.0 percent). This diagnosis represented 18.8 percent of the prepaid plan visits for children under age 15, which was significantly higher than the corresponding 12.5 percent of nonprepaid visits. However, this difference was not found in the 1992 NAMCS data (see Discussion section).

On item 13 of the Patient Record form, the physician was asked to

Table 8. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's principal reason for visit: United States, 1991

Principal reason for visit module and RVC code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Symptom module S100-S999	55,980	61.0	59.4
General symptoms S001-S099	6,356	6.9	6.9
Symptoms referable to psychological and mental disorders S100-S199	1,798	2.0	3.3
Symptoms referable to the nervous system (excluding sense organs) S200-S259	2,923	3.2	3.1
Symptoms referable to the cardiovascular and lymphatic system S260-S299	*487	*0.5	0.4
Symptoms referable to the eyes and ears S300-S399	6,046	6.6	6.5
Symptoms referable to the respiratory system S400-S499	12,866	14.0	12.4
Symptoms referable to the digestive system S500-S639	3,500	3.8	4.0
Symptoms referable to the genitourinary system S640-S829	5,340	5.8	4.6
Systems referable to the skin, nails, and hair S830-S899	6,337	6.9	6.6
Symptoms referable to the musculoskeletal system S900-S999	10,328	11.2	11.7
Disease module D001-D999	7,314	8.0	7.5
Diagnostic, screening, and preventive module X100-X599	15,593	17.0	16.0
Treatment module T100-T899	7,102	7.7	8.6
Injury and adverse effects module J001-J999	3,041	3.3	3.6
All other modules ²	2,795	3.0	4.9

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (13).

²Includes test results module, administrative module, uncodable and blank entries.

Table 9. Number, and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by the 20 principal reasons for visit most frequently mentioned by patients: United States, 1991

Principal reason for visit and RVC code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
General medical examination X100	5,247	5.7	4.3
Cough S440	4,158	4.5	3.9
Symptoms referable to throat S455	3,377	3.7	3.2
Prenatal examination, routine X205	3,064	3.3	3.9
Well-baby examination X105	2,966	3.2	2.4
Progress visit T800	2,528	2.8	2.8
Earache or ear infection S355	2,511	2.7	2.4
Skin rash S860	2,175	2.4	1.9
Knee symptoms S925	1,839	2.0	1.2
Postoperative visit T205	1,777	1.9	2.0
Stomach pain, cramps, and spasms S545	1,776	1.9	1.6
Fever S010	1,726	1.9	2.0
Headache, pain in head S210	1,703	1.9	1.7
Nasal congestion S400	1,514	1.6	1.5
Head cold, upper respiratory infection S445	1,283	1.4	1.3
Allergy S090	1,277	1.4	0.8
Back symptoms S905	1,223	1.3	2.0
Asthma D625	1,000	1.1	0.4
Shoulder symptoms S940	992	1.1	1.0
Sinus problems S410	933	1.0	0.7
All other reasons	48,755	53.2	59.0

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (13).

indicate if the patient, at the time of visit, was afflicted with any of the chronic conditions listed, despite what

was reported as the patient diagnosis in item 11. Obesity and hypertension were checked most frequently, at 7.8 and

6.5 percent of prepaid plan visits, respectively. In contrast, nonprepaid visits recorded a significantly higher percent of visits by patients suffering from depression, 6.3 percent, as compared with 4.7 percent for prepaid plans (table 12). However, when examining the differences at various age groups, only the patients between the ages of 15 and 24 years were more likely to have depression in the nonprepaid visits (3.5 percent) compared with prepaid plan visits (1.0 percent). Past analysis of this question has shown that physicians seem to underreport chronic conditions as diagnoses on item 11 of the Patient Record form (15). The same would hold true for visits to prepaid and nonprepaid sources of payment.

Diagnostic services performed or ordered at the time of visit are shown in table 13. The most common service recorded at prepaid plan visits was a blood pressure test, 43.0 percent. A urinalysis was performed or ordered in 13.9 percent while "all other diagnostic services" accounted for 34.7 percent. Diagnostic services utilization rates in nonprepaid visits followed the same pattern (table 14). Looking at age

Table 10. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by principal diagnosis: United States, 1991

Principal diagnosis and ICD-9-CM code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Infectious and parasitic diseases 001-139	4,476	4.9	4.2
Neoplasms 140-239	2,438	2.7	2.5
Endocrine, nutritional, and metabolic diseases and immunity disorders 240-279	2,664	2.9	3.3
Mental disorders 290-319	2,880	3.1	4.8
Diseases of the nervous system and sense organs 320-389	7,445	8.1	10.7
Diseases of the circulatory system 390-459	3,577	3.9	4.3
Diseases of the respiratory system 460-519	16,977	18.5	14.9
Diseases of the digestive system 520-579	2,673	2.9	3.3
Diseases of the genitourinary system 580-629	5,486	6.0	6.0
Diseases of the skin and subcutaneous tissue 680-709	5,320	5.8	6.0
Diseases of the musculoskeletal system and connective tissue 710-739	6,608	7.2	6.5
Symptoms, signs, and ill-defined conditions 780-799	3,235	3.5	3.7
Injury and poisoning 800-999	7,870	8.6	9.3
Supplementary classification V01-V82	16,839	18.3	17.5
All other diagnoses ²	1,700	1.9	1.4
Unknown diagnoses ³	1,639	1.8	1.7

¹Based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (14).

²Includes diseases of the 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 (760-779).

³Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

Table 11. Number and percent of prepaid plan visits by 20 principal diagnoses most frequently rendered by physicians: United States, 1991

Principal diagnosis and ICD-9-CM code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Health supervision of infant or child V20	4,531	4.9	3.0
Normal pregnancy V22	4,091	4.5	3.9
Acute upper respiratory infections of multiple or unspecified sites 465	3,160	3.4	3.0
Suppurative and unspecified otitis media 382	2,917	3.2	3.0
Allergic rhinitis 477	2,670	2.9	1.5
Chronic sinusitis 473	2,659	2.9	1.9
General medical examination V70	2,404	2.6	3.5
Essential hypertension 401	2,150	2.3	2.3
Asthma 493	1,983	2.2	1.3
Acute pharyngitis 462	1,802	2.0	2.1
Diseases of sebaceous glands 706	1,496	1.6	1.7
Bronchitis, not specified as acute or chronic 490	1,392	1.5	1.6
Contact dermatitis and other eczema 692	1,221	1.3	1.1
Diabetes mellitus 250	1,098	1.2	1.2
Other disorders of synovium, tendon, and bursa 727	989	1.1	0.6
Acute tonsillitis 463	940	1.0	0.7
Certain adverse effects not elsewhere classified 995	930	1.0	0.5
Peripheral enthesopathies and allied syndromes 726	907	1.0	0.8
Sprains and strains of other and unspecified parts of back 847	846	0.9	1.1
Personal history of certain other diseases V12	782	0.9	0.6
All other diagnoses	52,856	57.6	64.6

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (14)*.

differences, children under 15 years of age were less likely to receive diagnostic tests compared with older age groups in both types of visits (40 vs. 72 percent for prepaid plan visits and 37 vs. 65 percent in nonprepaid visits). Persons 45-64 years of age were more likely to receive diagnostic tests in prepaid plan visits compared with nonprepaid visits (76 vs. 70 percent, respectively).

Visits at which at least one nonmedication therapeutic service was ordered or provided represented one-third of the total prepaid plan visits, as shown in table 15. The most frequently checked therapeutic service was diet counseling/education, reported at 10.7 percent of the visits. Exercise and growth development counseling/education followed with percents of 8.6 and 3.8, respectively. "All other therapeutic services" ordered or provided accounted for 14.8 percent of the visits. No significant differences were found between prepaid and nonprepaid visits.

The majority of both types of visits were drug visits in which the patient was given, prescribed, and/or continued on at least one medication (table 16).

Table 12. Number and percent of prepaid plan visits and percent of nonprepaid visits by selected medical conditions: United States, 1991

Medical condition ^{1,2}	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent	Percent
All visits	91,824	...	...
Depression	4,298	4.7	6.3
Hypertension	5,987	6.5	7.0
Hypercholesterolemia	3,791	4.1	3.4
Obesity	7,194	7.8	7.5

¹Refers to question 13 on the Patient Record form.

²Numbers do not add to totals because more than one medical condition may be reported per visit and not all categories are shown.

Physicians were asked to record all new or continued medications provided at the visit, including prescription and nonprescription preparations and immunizing and desensitizing agents. About one-third of both prepaid and nonprepaid visits included only one drug mention (35.4 and 34.6 percent, respectively). The drugs entered on item 17 of the Patient Record form are classified based on the therapeutic categories used in the *National Drug Code Directory, 1985* edition (16). The reader should understand that some drugs have more

than one therapeutic application and in these cases, each drug was assigned to the category that occurred with the greatest frequency.

As shown in table 17, antimicrobial agents represented the largest share of the 95.1 million drug mentions in prepaid plan visits, 21.2 percent. Of these, penicillins were the largest group (7.9 percent). Of the drug mentions, 14.7 percent were respiratory tract drugs, and drugs used for relief of pain accounted for 12 percent. Two significant differences were found between the prepaid and nonprepaid

visits in the distribution of drug mentions by therapeutic class.

Psychopharmacologic drugs represented a larger percent of drug mentions at nonprepaid visits compared with prepaid plan visits (7.0 percent and 4.5 percent, respectively). This strengthened the earlier finding that physicians involved in nonprepaid visits recorded a higher percent of visits with a diagnosis of depression than did those involved with prepaid plan visits (item 13). The only age group to show a significant difference, however, was the 25–44 years group. On the other hand, respiratory tract drugs represented a larger portion of drug mentions at prepaid plan visits compared with nonprepaid visits for persons in this same age group (15.2 vs. 9.9 percent).

Table 18 shows the most frequently occurring generic ingredients of the drug mentions at prepaid plans visits during 1991. Note that drug products containing more than one ingredient are included in the data for each ingredient. For example, acetaminophen with codeine is included in both the count for acetaminophen and the count for codeine. Amoxicillin was the most frequently occurring generic ingredient, with 7.1 million mentions; it represented 7.4 percent of the total. The second and third listed generic ingredients were acetaminophen and erythromycin representing 4.3 and 2.7 percent, respectively. A report describing the method and instructions used to collect and process drug information for the NAMCS is available (17).

More than one-half (57.7 percent) of prepaid plan visits resulted in instructions for the patient to return at a specific time (table 19), and about one-quarter of the visits resulted in instructions to return if needed (27.0 percent). These percents are not significantly different from the 1985 estimates for prepaid plan visits (55.3 percent and 26.6 percent, respectively) and follow the same pattern as the nonprepaid visits.

Table 19 also shows the duration of visit. Of the prepaid plan visits, 61.7 percent lasted between 6 and 15 minutes, 21.6 percent lasted 16 to 30

Table 13. Number and percent of prepaid plan visits and percent of nonprepaid visits by diagnostic and screening services ordered or provided: United States, 1991

Diagnostic and screening services ordered or provided	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent	Percent
Total visits ¹	91,824	...	...
Blood pressure	39,485	43.0	39.9
Urinalysis	12,771	13.9	13.3
EKG resting	1,807	2.0	1.9
EKG exercise	*197	*0.2	0.4
Mammogram	1,636	1.8	1.7
Chest x ray	1,740	1.9	1.8
Pap test	4,737	5.2	5.0
Strep throat test	2,710	3.0	2.5
Cholesterol measure	3,389	3.7	3.2
Hearing test	1,723	1.9	1.6
Visual acuity	2,030	2.2	4.8
Mental status exam	1,254	1.4	1.6
All other diagnostic services ²	31,832	34.7	30.1
None	33,350	36.3	39.6

¹Numbers do not add to totals because more than one service may be reported per visit.

²Includes other radiology, allergy testing, spirometry, HIV serology, other lab tests, and other.

Table 14. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by number of diagnostic services ordered or provided: United States, 1991

Number of diagnostic services ordered or provided	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
None	33,350	36.3	39.6
1	31,754	34.6	32.1
2	14,739	16.1	16.4
3	7,142	7.8	7.5
4 or more	4,839	5.3	4.5

Table 15. Number and percent of prepaid plan visits and percent of nonprepaid visits by nonmedication therapy ordered or provided: United States, 1991

Nonmedication therapy	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent	Percent
All visits ¹	91,824	...	...
Diet	9,855	10.7	11.2
Exercise	7,888	8.6	8.1
Cholesterol reduction	2,620	2.9	2.5
Weight reduction	3,090	3.4	3.9
Alcohol abuse	*424	*0.5	0.6
Smoking cessation	1,406	1.5	2.3
Family/social	1,944	2.1	2.3
Growth development	3,450	3.8	4.2
Family planning	877	1.0	1.1
Psychotherapy	1,644	1.8	3.4
Physiotherapy	1,913	2.1	3.0
All other therapeutic services ²	13,574	14.8	13.0
None	61,495	67.0	65.2

¹Numbers do not add to totals because more than one type of nonmedication therapy may be reported per visit.

²Includes drug abuse, other counseling, corrective lenses, hearing aid, and other therapy.

Table 16. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by number of medications provided or prescribed: United States, 1991

Medication therapy ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Type of visit:			
Nondrug visit (0 medications)	35,176	38.3	38.3
Drug visit ²	56,648	61.7	61.7
Number of medications:			
1	32,514	35.4	34.6
2	14,890	16.2	16.3
3 or more	9,244	10.1	10.9

¹Includes prescription drugs, over-the-counter preparations, immunizing agents, and desensitizing agents.

²Visits at which one or more drugs were provided or prescribed by the physician.

Table 17. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits for drug mentions by therapeutic classification: United States, 1991

Therapeutic classification ¹	Prepaid plan visits		Nonprepaid visits
	Number of drug mentions in thousands	Percent distribution	Percent distribution
All drug mentions	95,104	100.0	100.0
Antimicrobial agents	20,191	21.2	18.8
Penicillins	7,546	7.9	6.1
Cephalosporins	3,645	3.8	3.8
Erythromycins and lincosamides	3,126	3.3	3.2
Cardiovascular-renal drugs	7,181	7.6	8.9
Psychopharmacologic drugs	4,242	4.5	7.0
Radiopharmaceuticals/contrast media	2,371	2.5	1.4
Gastrointestinal agents	2,912	3.1	3.9
Metabolic and nutrient agents	3,798	4.0	4.3
Hormones and agents affecting hormonal mechanisms	7,942	8.4	9.5
Immunologic agents	5,390	5.7	4.5
Skin/mucous membrane	6,024	6.3	6.7
Neurologic drugs	1,716	1.8	2.5
Ophthalmics	1,750	1.8	2.6
Drugs used for relief of pain	11,187	11.8	10.9
General analgesics	5,384	5.7	5.5
Antiarthritics	5,448	5.7	5.1
Respiratory tract drugs	13,956	14.7	11.3
Nasal decongestants	3,823	4.0	3.1
Antihistamines	3,600	3.8	2.4
Unclassified and miscellaneous	3,797	4.0	4.5
All others ²	2,479	2.6	2.7

¹Based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (16).

²Includes anesthetic drugs, antidotes, hematologic agents, oncology drugs, otologic drugs, and antiparasitic agents.

minutes. Visits with a duration of "zero" minutes are those in which there was no face-to-face contact between the patient and physician. In 1991, 1.7 percent of the visits had a duration of zero minutes. No significant difference was found between the average durations of prepaid and

nonprepaid visits (16 minutes vs. 17 minutes, respectively).

Discussion

In describing the patient and visit characteristics of HMO/other prepaid plan visits found in the 1991 NAMCS,

it appears that such visits are generally similar to nonprepaid visits for patients under 65 years of age with respect to the principal reason for visit, physicians' diagnosis, medications prescribed, and duration of visit. This report focused only on visits made by patients under the age of 65 to reduce the confounding effects of age and health conditions on the characteristics examined. Prepaid visits were found to differ from nonprepaid visits as follows:

- relative to nonprepaid visits, a higher proportion of prepaid visits were to physicians in the primary care specialties
- HMO/other prepaid plans tend to have a higher proportion of visits with diagnostic tests performed or ordered but especially for persons between the ages of 45 and 64 years
- a higher proportion of prepaid plan visits to nonprimary care specialties were referrals
- a lower proportion of prepaid plan visits were for patients over 65 years of age
- a higher proportion of prepaid plan visits were in the West

The comparisons of visit and patient characteristics between prepaid plan and nonprepaid visits based on the 1991 NAMCS must be interpreted with caution. This report focused on describing characteristics of prepaid plan visits. For comparison purposes, the corresponding statistics for visits from other expected sources of payment were presented. However, nonprepaid visits are for a very diverse set of people with respect to expected sources of payment. For example, 12 percent of the nonprepaid visits had an expected source of payment identified as "Medicaid." Thirty-one percent were identified as "patient paid." Only 47 percent were identified as "private/commercial." In comparing the statistics presented in this report, one must consider how the diversity of coverage in the nonprepaid group may influence prepaid and nonprepaid visit comparisons. The results should not be interpreted as a straight comparison between HMO/other prepaid plans and fee-for-service plans. The reader must also consider that this report focuses on

describing patient and visit characteristics of prepaid plan visits to office-based physicians and does not represent characteristics of all visits by persons who are insured with a prepaid health plan. The variable that differentiates the two comparison groups in this report is an expected source of payment for the visit. Persons insured in an HMO may pay out-of-pocket expenses to seek health care from a provider other than the HMO to obtain either noncovered health care or care from a provider that is not associated with the prepaid plan.

This report does not include all possible providers of physician services. Physicians in hospital-based practices are not in-scope for the NAMCS, therefore, hospital-based managed care offices may not be included if the physician indicated that he/she was employed by a hospital. Similarly, visits to hospital outpatient clinics are not included in this report. For example, women seeking mammograms may use mobile units associated with radiology clinics of hospitals. Such sources would not be included in the NAMCS. Data from population-based surveys may obtain different estimates of health care resource use compared with event-based surveys. The reader is encouraged to examine data from the National Health Interview Survey for population-based estimates of use of cancer screening by women insured by an HMO or other prepaid health insurance plans (18).

Examining data from the 1992 NAMCS for cross-validation purposes we found that some differences between the 1991 prepaid plan and nonprepaid plan visits were not significant. These differences were noted where applicable. All of the findings presented in the Highlights section were replicated using results from the 1992 NAMCS.

Examining 1992 data also allows us to look at visits to hospital outpatients and emergency departments, which make up approximately 17 percent of the ambulatory care visits for persons under the age of 65. The National Hospital Ambulatory Medical Care Survey (NHAMCS) first collected data in 1992 from hospital providers to help round out the description of ambulatory care visits (19). Considering all three

Table 18. Number and percent of drug mentions for prepaid plan visits and percent of drug mentions for nonprepaid visits for the 20 most frequently used generic substances: United States, 1991

Generic substance	Prepaid plan visits		Nonprepaid visits
	Number of drug mentions in thousands ¹	Percent of all drug mentions	Percent of all drug mentions
All drug mentions	95,104	...	...
Amoxicillin	7,085	7.4	5.4
Acetaminophen	4,099	4.3	4.2
Erythromycin	2,566	2.7	2.7
Phenylephrine	2,489	2.6	1.9
Ibuprofen	2,325	2.4	1.9
Phenylpropranolamine	2,110	2.2	1.9
Pseudoephedrine	2,056	2.2	1.0
Guaifenesin	1,934	2.0	1.5
Albuterol	1,840	1.9	1.5
Alcohol	1,827	1.9	1.2
Codeine	1,722	1.8	2.0
Diph pertussis tetanus vaccine	1,716	1.8	1.2
Vitamin A	1,685	1.8	1.7
Trimethoprim	1,668	1.8	1.4
Sulfamethoxazole	1,665	1.7	1.4
Ergocalciferol	1,614	1.7	1.5
Naproxen	1,597	1.7	1.5
Terfenadine	1,442	1.5	0.8
Riboflavin	1,390	1.5	1.5
Cefaclor	1,388	1.5	1.5

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

Table 19. Number and percent of prepaid plan visits and percent of nonprepaid visits by disposition and duration: United States, 1991

Visit characteristic	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent	Percent
All visits	91,824	...	...
Disposition: ¹			
No followup planned	7,797	8.5	11.4
Return at specific time	53,001	57.7	59.5
Return if needed	24,791	27.0	23.8
Telephone followup planned	3,357	3.7	3.6
Referred to other physician	4,308	4.7	2.6
Referred to referring physician	693	0.8	0.7
Admit to hospital	635	0.7	0.8
Other	906	1.0	1.2
Duration:			
0 minutes ²	1,595	1.7	1.1
1-5 minutes	8,943	9.7	9.4
6-10 minutes	27,786	30.3	27.4
11-15 minutes	28,815	31.4	30.9
16-30 minutes	19,859	21.6	23.7
31-60 minutes	4,665	5.1	7.0
60 minutes and over	*161	*0.2	0.5

¹Numbers may not add to totals because more than one disposition may be reported per visit.

²Visits in which there was no face-to-face contact between patient and physician.

types of ambulatory care providers (physician offices, hospital outpatients, and emergency departments), black persons comprised the same proportion

of prepaid and nonprepaid visits (11.6 vs. 13.5 percent, respectively) (20,21). Figure 3 shows the 1992 distributions of both prepaid plan and nonprepaid visits

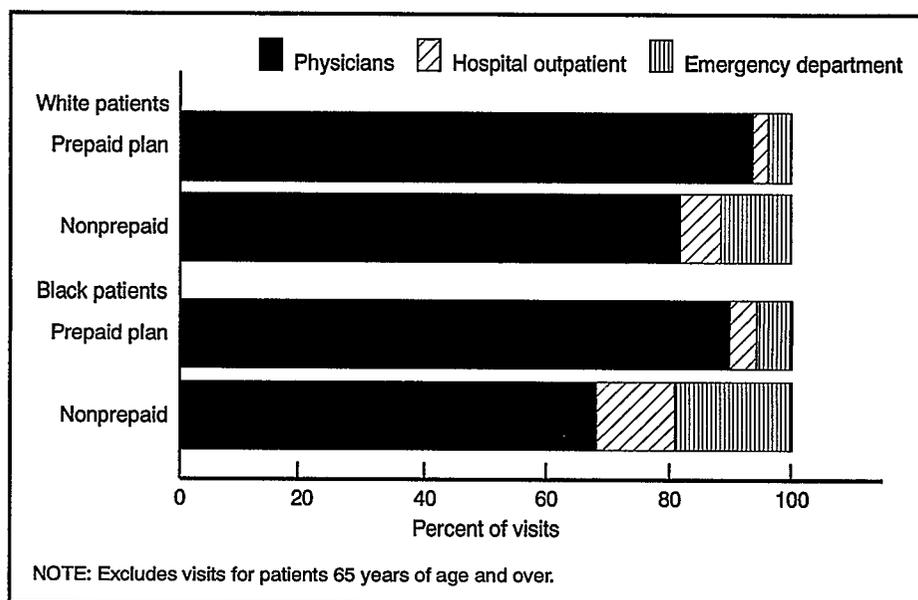


Figure 3. Percent distribution of visits to various providers for prepaid plan and nonprepaid visits by patient's race: United States, 1992

to various providers. More of the prepaid plan visits were to office-based physicians rather than hospital settings. Approximately 9 out of 10 prepaid plan visits made by black patients were to office-based physicians whereas the corresponding number for nonprepaid visits is 7 out of 10. For both races, the proportion of total prepaid plan visits to emergency departments are lower than for nonprepaid visits. The proportion of visits to emergency departments are approximately three times higher for nonprepaid visits compared with prepaid plan visits. The reader should note that the nonprepaid visits include visits made by people who have no health insurance and it has been shown that such populations receive more primary care from emergency settings (22–24).

In summary, results from this study indicate that after controlling for age differences between prepaid plan and nonprepaid visits, prepaid plan visits differ from nonprepaid visits on referral status, physician specialty, and regional distribution. The visits are similar with respect to reason for visit, diagnosis, treatments ordered or provided, and duration. The proportion of office-based physicians' visits that has an expected source of payment as "prepaid plan" has increased since 1985.

References:

- Roghamann KJ, Gavett JW, Sorensen AA, Wells S, Wersinger R. Who chooses prepaid medical care: Survey results from two marketings of three new prepayment plans. *Public Health Rep* 90:516–27. 1975.
- Nycz GR, Wenzel FJ, Lohrenz FN, Mitchell JH. Composition of the subscribers in a rural prepaid group practice plan. *Public Health Rep* 91:504–7. 1976.
- Jackson-Beeck M, Kleinman JH. Evidence for self-selection among health maintenance organization enrollees. *J Am Med Assoc* 250:2826–29. 1983.
- Lairson DR, Herd JA. The role of health practices, health status, and prior health care claims in HMO selection bias. *Inquiry* 24:276–84. 1987.
- Lichtenstein R, Thomas JW, Watkins B, Puto C, Lepkowski J, Adams-Watson J, Simone B, Vest D. HMO marketing and selection bias. *Med Care* 30:329–45. 1992.
- Ware Jr, JE, Rogers WH, Davies AR, Goldberg GA, et al. Comparison of health outcomes at a health maintenance organization with those of fee-for-service care. *Lancet* 1017–22. 1986.
- Stern RS, Juhn PI, Gertler PJ, Epstein AM. A comparison of length of stay and costs for health maintenance organization and fee-for-service patients. *Arch Intern Med* 149:1185–8. 1989.
- Young GJ, Cohen BB. Inequities in hospital care, the Massachusetts experience. *Inquiry* 28:255–62. 1991.
- Carlisle DM, Siu AL, Keeler EB, McGlynn EA, Kahn KL, Rubenstein LV, Brook RH. HMO vs fee-for-service care of older persons with acute myocardial infarction. *Am J Public Health* 82:1626–30. 1992.
- Greenwald HP, Henke CJ. HMO membership, treatment, and mortality risk among prostatic cancer patients. *Am J Public Health* 82:1099–1104. 1992.
- Szilagyi PG, Roghamann KJ, Foye HR, Parks C, et al. Increased ambulatory utilization in IPA plans among children receiving hyposensitization therapy. *Inquiry* 29:467–75. 1992.
- Gemson DH, Freudenheim E, Senie RT, Elinson J, Fink R. Health promotion and disease prevention in HMOs: A survey of newly established IPAs in New York City. *Am J Prev Med* 6:333–8. 1990.
- Schneider D, Appleton L, McLemore T. A reason for visit classification for ambulatory care. National Center for Health Statistics. *Vital and Health Stat* 2(78). 1979.
- Public Health Service and Health Care Financing Administration. International Classification of Diseases, 9th Revision, clinical modification. Washington: Public Health Service. 1980.
- Schappert SM. National Ambulatory Medical Care Survey: 1991 Summary. Advance data from vital and health statistics; no 230. Hyattsville, Maryland: National Center for Health Statistics. 1993.
- Food and Drug Administration. National Drug Code Directory, 1985 Edition. Washington: Public Health Service. 1985.
- Koch H, Campbell W. The collection and processing of drug information. National Ambulatory Medical Care Survey, 1980. National Center for Health Statistics. *Vital Health Stat* 2(90). 1982.
- Makuc D, Freid VM, Parsons PE. Health insurance and cancer screening among women. Advance data from vital and health statistics; no 254. Hyattsville, Maryland: National Center for Health Statistics. 1994.

19. McCaig LF, McLemore T. Plan and operation of the National Hospital Ambulatory Medical Care Survey. National Center for Health Statistics. Vital Health Stat 1(34). 1994.
20. Unpublished data from the National Ambulatory Medical Care Survey, 1992.
21. Unpublished data from the National Hospital Ambulatory Medical Care Survey, 1992.
22. Grumbach K, Keane D, Bindman A. Primary care and public emergency overcrowding. Am J Public Health 83(3):372-8. 1993.
23. Kellerman AL. Nonurgent emergency department visits: Meeting an unmet need. J Am Med Assoc 271(24):1953-4. 1994.
24. Schappert S. Race differences in hospital emergency department use. Stat Bull Vol 76 No 3. 1995.
25. Shah BV, Barnwell BG, Hunt PN, LaVange LM. SUDAAN user's manual, release 5.50. Research Triangle Park, North Carolina: Research Triangle Institute. 1991.

Technical notes

Source of data and sample design

The information presented in this report is based on data collected by means of the National Ambulatory Medical Care Survey (NAMCS) from January 1991 through December 1991. 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 PSU's in New England). For 1991, a sample of 2,540 nonfederal, office-based physicians was selected from the 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, 653 physicians were ruled ineligible (out-of-scope). The remaining 1,887 physicians were in-scope or eligible to participate in the survey. The physician response rate for the 1991 NAMCS was 72 percent. Sample physicians were asked to complete Patient Records (see 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 records.

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.

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 standard error also reflects part of the measurement error but does not measure any systematic biases in the data. The chances are 95 out of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

The standard errors that were used in tests of significance for this report were calculated using generalized linear models for predicting the relative standard error for estimates based on the linear relationship between the actual standard error, as approximated using SUDAAN software, and the size of the estimate. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (25). The relative standard error (RSE) 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 emergency department estimates are shown in tables I and II. Standard errors for estimates in percents of visits and drug mentions are shown in tables III and IV. Multiplying the estimate by the RSE will provide an estimate of the standard error for the estimate.

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 V.

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

Similarly, relative standard errors for an estimate of a percent may be calculated using the following general formula, where p is the percent of

Table I. Approximate relative standard errors for estimated numbers of office visits: National Ambulatory Medical Care Survey, 1991

Estimated number of office visits in thousands	Relative standard error in percent
100	72.1
200	51.1
500	32.5
588	30.0
1,000	23.1
2,000	16.6
5,000	11.0
10,000	8.3
20,000	6.6
50,000	5.3
100,000	4.8
200,000	4.5
500,000	4.3
700,000	4.3

NOTES: The smallest reliable estimate for visits to aggregated specialties is 588,000 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: An aggregate estimate of 50 million visits has a relative standard error of 5.3 percent or a standard error of 2,650,000 visits (5.3 percent of 50 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions: National Ambulatory Medical Care Survey, 1991

Estimated number of drug mentions in thousands	Relative standard error in percent
100	78.1
200	68.8
500	43.7
1,000	31.2
1,083	30.0
2,000	22.4
5,000	14.8
10,000	11.2
20,000	8.9
50,000	7.1
100,000	6.5
200,000	6.1
600,000	5.8
800,000	5.8

NOTES: The smallest reliable estimate for drug mentions is 1,083,000 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: An aggregate estimate of 50 million drug mentions has a relative standard error of 7.1 percent or a standard error of 3,550,000 mentions (7.1 percent of 50 million).

interest, expressed as a proportion, and x is the denominator of the percent in thousands, using the appropriate coefficients from table V.

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

Table III. Approximate standard errors for percents of estimated number of office visits: National Ambulatory Medical Care Survey: United States, 1991

Base of percent (visits 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						
100	7.2	15.7	21.6	28.8	33.0	35.3	36.0
200	5.1	11.1	15.3	20.4	23.3	24.9	25.5
500	3.2	7.0	9.7	12.9	14.8	15.8	16.1
1,000	2.3	5.0	6.8	9.1	10.4	11.2	11.4
2,000	1.6	3.5	4.8	6.4	7.4	7.9	8.1
5,000	1.0	2.2	3.1	4.1	4.7	5.0	5.1
10,000	0.7	1.6	2.2	2.9	3.3	3.5	3.6
20,000	0.5	1.1	1.5	2.0	2.3	2.5	2.6
50,000	0.3	0.7	1.0	1.3	1.5	1.6	1.6
100,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
200,000	0.2	0.4	0.5	0.6	0.7	0.8	0.8
500,000	0.1	0.2	0.3	0.4	0.5	0.5	0.5
1,000,000	0.1	0.2	0.2	0.3	0.3	0.4	0.4

Example of use of table: An estimate of 30 percent based on an aggregate estimate of 10 million visits has a standard error of 3.3 percent or a relative standard error of 11.0 percent (3.3 percent divided by 30).

Table IV. Approximate standard errors of percents of estimated numbers of drug mentions: National Ambulatory Medical Care Survey: United States, 1991

Base of percent (drug mentions 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						
100	9.6	21.1	29.1	38.8	44.4	47.5	48.5
200	6.8	14.9	20.6	27.4	31.4	33.6	34.3
500	4.3	9.5	13.0	17.3	19.9	21.2	21.7
1,000	3.1	6.7	9.2	12.3	14.0	15.0	15.3
2,000	2.1	4.7	6.5	8.7	9.9	10.6	10.8
5,000	1.4	3.0	4.1	5.5	6.3	6.7	6.9
10,000	1.0	2.1	2.9	3.9	4.4	4.8	4.9
20,000	0.7	1.5	2.1	2.7	3.1	3.4	3.4
50,000	0.4	0.9	1.3	1.7	2.0	2.1	2.2
100,000	0.3	0.7	0.9	1.2	1.4	1.5	1.5
200,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
500,000	0.1	0.3	0.4	0.6	0.6	0.7	0.7
1,000,000	0.1	0.2	0.3	0.4	0.4	0.5	0.5

Example of use of table: An estimate of 20 percent based on an aggregate estimate of 10 million visits has a standard error of 3.9 percent or a relative standard error of 19.5 percent (3.9 percent divided by 20 percent).

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 statistical 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.

In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. A lack of comment regarding any two estimates does not mean that the difference was tested and found not to be significant. 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 (MD) or doctor of osteopathy (DO) 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

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

Type of estimate and physician specialty	Coefficient for use with estimates in thousands	
	A	B
<i>Visits:</i>		
Overall total	0.001744284	51.82697927
General and family practice	0.006617364	33.29640705
Osteopathy	0.0163602	10.90230286
Internal medicine	0.01573396	45.10067385
Pediatrics	0.0163602	10.90230286
General surgery	0.0163602	10.90230286
Obstetrics and gynecology	0.0163602	10.90230286
Orthopedic surgery	0.0163602	10.90230286
Cardiovascular diseases	0.0163602	10.90230286
Dermatology	0.0163602	10.90230286
Urological surgery	0.0163602	10.90230286
Psychiatry	0.0163602	10.90230286
Neurology	0.0163602	10.90230286
Ophthalmology	0.0163602	10.90230286
Otolaryngology	0.0163602	10.90230286
All other specialties	0.03340709	29.631108
<i>Drug mentions:</i>		
Overall total	0.003224617	93.92631687
General and family practice	0.0122584	57.64543271
Osteopathy	0.02784109	11.55212504
Internal medicine	0.0122584	57.64543271
Pediatrics	0.0122584	57.64543271
General surgery	0.0122584	57.64543271
Obstetrics and gynecology	0.0122584	57.64543271
Orthopedic surgery	0.0122584	57.64543271
Cardiovascular diseases	0.0122584	57.64543271
Dermatology	0.0122584	57.64543271
Urological surgery	0.0122584	57.64543271
Psychiatry	0.0122584	57.64543271
Neurology	0.0122584	57.64543271
Ophthalmology	0.0122584	57.64543271
Otolaryngology	0.0122584	57.64543271
All other specialties	0.0483582	46.53697419

(HMO's), independent practice organizations (IPA's), and all other prepaid health care plans.

Nonprepaid visit—A nonprepaid visit is a visit for which any expected source of payment with the exception of "HMO/other prepaid" was checked on item 6 of the Patient Record form.

employed full time by an institution and spend no time seeing ambulatory patients.

Office—Offices are the premises physicians identify as locations for their ambulatory practice; these 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.

Prepaid plan visit—A prepaid plan visit is one for which "HMO/other prepaid plan" was checked as an expected source of payment in item 6 of the Patient Record form. Instructions for completing this item on the 1991 Patient Record form defines "HMO/other prepaid" as including visits covered under health maintenance associations

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
-

Trade name disclaimer

The use of trade names is for identification only and does not imply endorsement by the Public Health Service, U.S. Department of Health and Human Services.

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National Center for Health Statistics

Acting Director
Jack R. Anderson

Acting Deputy Director
Jennifer H. Madans, Ph.D.

U.S. DEPARTMENT OF HEALTH AND
HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics
6525 Belcrest Road
Hyattsville, Maryland 20782

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