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Advance Data

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Medication Therapy in Ambulatory Medical Care

National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 1992

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Abstract

Objectives—This report describes medications provided or prescribed during ambulatory medical care visits in 1992. Total ambulatory care medication therapy combines data from office-based physicians, hospital outpatient departments (OPD's), and hospital emergency departments (ED's). Drug therapy is described along three dimensions: number of drugs provided or prescribed (drug mention), whether a visit had any drugs mentioned (drug visit), and average number of drugs mentioned per 100 visits (drug mention rate). Utilization in ambulatory care settings is compared in terms of patient, drug, provider, and visit characteristics.

Methods—Annual use of medication therapy was determined using data collected in the 1992 National Ambulatory Medical Care Survey (NAMCS) and the National Hospital Ambulatory Medical Care Survey (NHAMCS). NAMCS includes office visits to nonfederal physicians principally engaged in office practice. The target universe of NHAMCS includes visits to ED's and OPD's of non-Federal, short-stay, or general hospitals. Sample data were weighted to produce annual estimates. Drug mentions are defined as the number of drugs mentioned on the patient record form.

Results—An estimated 1.1 billion medications were provided or prescribed at ambulatory care visits in 1992. The setting with the greatest percent of visits with medication therapy was the ED; OPD's had the lowest percent with medications. Patients at the ED were provided more pain relief type drugs. The rate of drug mentions and percent of visits with medications were significantly higher in OPD clinics of general medicine and pediatrics compared with other types of OPD clinics. In office-based settings, physicians specializing in cardiovascular diseases were most likely to prescribe medications. Also, cardiovascular-renal type drugs accounted for the largest percent of office-based drug mentions. Visits with illness diagnoses are most likely to receive medication therapy. Trend data comparing 1980 to 1992 office-based mentions showed significant changes on several characteristics: single-ingredient drug status, physician specialty, and patient age.

Conclusions—The profile of patients using office- and hospital-based ambulatory care settings are quite different as is the case-mix of conditions. These differences play an important role in medications utilized. The aging of the U.S. population from 1980 to 1992 appeared to have significant effects on several drug mention characteristics.

Keywords: medication therapy • NAMCS • NHAMCS • drug mention

Introduction

This report describes overall medication therapy in all ambulatory medical care settings, including office-based physicians and hospital outpatient and emergency departments. This report also examines differences among the three ambulatory health care settings as well as differences over time in office-based settings. The term *medication therapy* (previous reports used the term *drug utilization*) is defined as the prescribing or providing of a new or continued drug by a doctor of medicine or osteopathy or other health care practitioner in the course of a visit to a physician's office, hospital outpatient department (OPD), or hospital emergency department (ED). It is not an indication of the patient's compliance with the provider's instructions. Medication therapy in this report will be described in terms of the frequency with which drugs are prescribed (drug mentions), the proportion of visits at which any medication was prescribed or provided (drug visits), and the average number of drugs mentioned per 100 patient visits (drug mention rate). The terms drug and medication are used interchangeably and are broadly defined to include any pharmaceutical agent the

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health-care practitioner prescribes or provides to the patient during a visit.

Previous reports have shown that medication therapy is the predominate form of therapy in ambulatory care settings. Medications play a vital part in maintaining and restoring health and preventing disease, but what is the extent of use of medication therapy in ambulatory care settings? In addition, are there differences in medication therapy or characteristics among ambulatory care settings?

Methods

The data presented in this report are from the 1992 National Ambulatory Medical Care Survey (NAMCS) and the 1992 National Hospital Ambulatory Medical Care Survey (NHAMCS). NAMCS and NHAMCS, year-long sample surveys of the Nation's health care providers, are part of the National Health Care Survey, which is conducted by the Centers for Disease Control and Prevention, National Center for Health Statistics, Division of Health Care Statistics. This report does not include visits for ambulatory surgery at hospital-based or freestanding surgery units, which are covered by a third survey, the National Survey of Ambulatory Surgery (NSAS). NAMCS samples patient visits to the Nation's non-Federal office-based physicians, and NHAMCS samples visits to emergency and outpatient departments of non-Federal, short-stay, or general hospitals. A descriptions of the surveys including statistical design, sampling errors, nonsampling errors, adjustments for nonresponse, test of significance, and definition of terms can be found in the Technical Notes section. A summary of general findings from the 1992 ambulatory care settings (1–3) and reports on medication therapy in office practice since 1980 have been published (4–7).

Medication data are based on entries in item 17 on the NAMCS and ED NHAMCS Patient Record Forms (figures 1 and 3, respectively) and item 16 on the OPD NHAMCS Patient Record Form (figure 2). These items ask the responding health care practitioner to report the names of up to five specific drugs prescribed or provided in the course of the office, ED, or OPD visit (drugs prescribed through telephone contact are excluded). Health-care practitioners were asked to report both nonprescription and prescription drugs and both new and continued medications.

The first survey year that health care providers reported the number and names of specific drugs prescribed to patients was 1980. The methodology used to collect, classify, and process drug information is reported elsewhere (8). Drug characteristics for medications mentioned in the NAMCS and NHAMCS include new or continued status (except for ED's), therapeutic class, generic or brand name, Federal control schedule, and composition status. These characteristics were obtained for each medication mentioned in the NAMCS and NHAMCS using several sources including the *American Drug Index* (9), *Drug Topics Red Book* (10), the *National Drug Code Directory* (11), and *Facts and Comparisons* (12).

Results

In 1992, 64 percent of the estimated 908.4 million visits made to the combined ambulatory medical care settings of physician offices, ED's, and OPD's in the United States were classified as drug visits, that is, visits during which one drug or more was prescribed or provided to the patient. Visits to physician offices represented 83.9 percent (762.0 million) of the total ambulatory care visits; visits to ED's accounted for 9.9 percent (89.8 million visits); and 56.6 million visits to OPD's represented the remaining 6.2 percent. Figure 4 shows that the distribution of drug mentions by type of setting was similar to the distribution of ambulatory visits by setting. Of the 1.1 billion medications mentioned in ambulatory settings the largest proportion of drug mentions was in physician offices (83.6 percent), followed by ED's (10.6 percent) and OPD's (5.7 percent). Because such a large percent of the drugs mentioned are from physician offices, analyses on the combined settings will be heavily influenced by the distribution within physician offices. The tables show the data for the combined settings. However, the analyses of patient, drug, provider, and visit characteristics focus on within and across setting comparisons.

The percent of visits with medication therapy varied according to ambulatory setting (χ^2=58.2, p<.001) (table 1). ED's had the highest percent of drug visits (69.1) followed by physician's offices (63.8) and OPD's (53.3). The rate of drug mentions per visit was also associated with setting, with ED's having a significantly higher average number of drug mentions per visit than OPD's.

Patient characteristics

Table 1 displays the number and percent distribution of drug mentions, percent of visits with drug mentions (drug visits), and the average number of drug mentions per 100 visits across ambulatory care settings by patient age, sex, and race. Generally within each ambulatory care setting the percent of visits with medication therapy increased with patient's age (χ^2=20.2, p<.01). Similarly, figure 5 shows that the drug mention rate increased from an average of 93 drug mentions per 100 visits in the 15–24 years old group to 165 drug mentions per 100 visits in the oldest age patient group.

Although females accounted for a greater proportion of drug mentions, as they do for ambulatory visits, compared to males, there were no overall gender differences in the percent of visits with medication therapy or drug mention rates. Percent of visits with medication therapy varied by ambulatory medical care setting and patient's race (χ^2=11.5, p<.01). The OPD setting had the lowest percent drug visits in all race groups. White patients had a higher percent of drug visits in ED's as opposed to physician offices; whereas the opposite was true for black patients and patients of ''other races'' (figure 6). In office-based settings the drug mention rate for black patients was 18.2 percent higher than for white patients. There were no significant differences in drug mention rates by race in the ED or OPD settings.

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.

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

A

1. DATE OF VISIT ___/___/___ Month Day Year

PATIENT RECORD
NATIONAL AMBULATORY MEDICAL CARE SURVEY

OMB No. 0920-0234
Expires 4-30-93
CDC 64.21A

2. DATE OF BIRTH ___/___/___ Month Day Year

3. SEX 1 ☐ Female 2 ☐ Male

4. COLOR OR RACE 1 ☐ White 2 ☐ Black 3 ☐ Asian / Pacific Islander 4 ☐ American Indian / Eskimo / Aleut

5. ETHNICITY 1 ☐ Hispanic origin 2 ☐ Not Hispanic

6. EXPECTED SOURCE(S) OF PAYMENT *[Check all that apply]* 1 ☐ HMO/other prepaid 2 ☐ Medicare 3 ☐ Medicaid 4 ☐ Other government 5 ☐ Private / commercial 6 ☐ Patient paid 7 ☐ No charge 8 ☐ Other

7. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN? 1 ☐ Yes 2 ☐ No

8. IS THIS VISIT INJURY RELATED? 1 ☐ Yes 2 ☐ No

9. DOES PATIENT SMOKE CIGARETTES? 1 ☐ Yes 2 ☐ No 3 ☐ Unknown

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:

12. HAVE YOU OR ANYONE IN YOUR PRACTICE SEEN PATIENT BEFORE? 1 ☐ Yes 2 ☐ No
If yes, for the condition in item 11a? 1 ☐ Yes 2 ☐ No

13. DOES PATIENT NOW HAVE: *[Check all that apply regardless of any entry in item 11]* 1 ☐ None of below 2 ☐ Depression 3 ☐ Hypertension 4 ☐ Hypercholesterolemia 5 ☐ Obesity

14. AMBULATORY SURGICAL PROCEDURE(S) *[Record any outpatient diagnostic or therapeutic procedure. For the first, check appropriate boxes.]*
a. 1 ☐ Scheduled 2 ☐ Performed 3 ☐ Local anesthesia 4 ☐ Regional anesthesia 5 ☐ General anesthesia
b.

15. DIAGNOSTIC / SCREENING SERVICES *[Check all ordered or provided]* 1 ☐ None 2 ☐ Blood pressure 3 ☐ Urinalysis 4 ☐ EKG - resting 5 ☐ EKG - exercise 6 ☐ Mammogram 7 ☐ Chest x-ray 8 ☐ Other radiology 9 ☐ Allergy testing 10 ☐ Spirometry 11 ☐ Pap test 12 ☐ Strep throat test 13 ☐ HIV serology 14 ☐ Cholesterol measure 15 ☐ Other lab test 16 ☐ Hearing test 17 ☐ Visual acuity 18 ☐ Mental status exam 19 ☐ Other *[Specify]*

16. THERAPEUTIC SERVICES *[Check all ordered or provided. Exclude medication]* 1 ☐ None
COUNSELING / EDUCATION: 2 ☐ Diet 3 ☐ Exercise 4 ☐ Cholesterol reduction 5 ☐ Weight reduction 6 ☐ Drug abuse 7 ☐ Alcohol abuse 8 ☐ Smoking cessation 9 ☐ Family / social 10 ☐ Growth / development 11 ☐ Family planning 12 ☐ Other counseling
OTHER THERAPY: 13 ☐ Psychotherapy 14 ☐ Corrective lenses 15 ☐ Hearing aid 16 ☐ Physiotherapy 17 ☐ 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 ☐
a. New medication? Yes No
1. ☐ ☐
2. ☐ ☐
3. ☐ ☐
4. ☐ ☐
5. ☐ ☐

18. DISPOSITION THIS VISIT *[Check all that apply]* 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]*

19. DURATION OF THIS VISIT *[Time actually spent with physician]* ___ Minutes

Figure 1. National Ambulatory Medical Care Survey patient record

Drug characteristics

Table 2 describes some key characteristics of the medications provided or prescribed for each of the three ambulatory settings.

- *New or continued status*—Almost half of the drug mentions were described as continued medications. A significantly higher percent of drug mentions at office visits were for new medications compared with OPD visits.
- *Composition status*—About three-quarters of the drugs were for single-ingredient medications. Hospital settings had a significantly higher percent of single-ingredient drug mentions than physician offices.
- *Control status*—Noncontrolled drugs represented 85.7 percent of the medications used in drug therapy. About 7 percent of the medications prescribed or provided by health-care practitioners were classified as controlled substances. Schedule II drugs are those with a high potential for abuse. Schedules III and IV are those with some or low potential for abuse. Of the controlled drugs, those that were Schedule IV had a significantly greater number of mentions. Schedules II, III, and IV drugs require prescriptions for dispensing. ED's had a significantly higher percent of Schedule II and III drug mentions and significantly lower percent of noncontrolled drug mentions than the other two settings.

In table 3, the estimated 1.1 billion drug mentions are classified by their primary therapeutic effects. Antimicrobial agents and cardiovascular-renal drugs accounted for 30.3 percent of all drug mentions. ED's had a significantly higher percent than physician offices and OPD's of drug

NATIONAL HOSPITAL AMBULATORY MEDICAL CARE SURVEY OUTPATIENT DEPARTMENT PATIENT RECORD

1. PATIENT NAME

2. PATIENT RECORD NO.

3. DATE OF VISIT
Month Day Year

4. DATE OF BIRTH
Month Day Year

5. SEX
1 ☐ Female
2 ☐ Male

6. RACE
1 ☐ White
2 ☐ Black
3 ☐ Asian/Pacific Islander
4 ☐ American Indian/ Eskimo/ Aleut

7. ETHNICITY
1 ☐ Hispanic
2 ☐ Not Hispanic

8. EXPECTED SOURCE(S) OF PAYMENT *(Check all that apply)*
1 ☐ Medicare
2 ☐ Medicaid
3 ☐ Other government
4 ☐ Private/ Commercial
5 ☐ HMO/other prepaid
6 ☐ Patient paid
7 ☐ No charge
8 ☐ Other

9. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN?
1 ☐ Yes
2 ☐ No

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 10a.
b. Other:
c. Other:

12. HAS PATIENT BEEN SEEN IN THIS CLINIC BEFORE?
1 ☐ Yes 2 ☐ No
If yes, for the condition in item 11a?
1 ☐ Yes 2 ☐ No

13. AMBULATORY SURGICAL PROCEDURE(S)
(Record any outpatient diagnostic or therapeutic procedure. For the first, check appropriate boxes.)
a.
1 ☐ Scheduled
2 ☐ Performed
3 ☐ Local anesthesia
4 ☐ Regional anesthesia
5 ☐ General anesthesia
b.

14. DIAGNOSTIC/SCREENING SERVICES
(Check all ordered or provided.)
1 ☐ None
2 ☐ Blood pressure
3 ☐ Urinalysis
4 ☐ EKG - resting
5 ☐ EKG - exercise
6 ☐ Mammogram
7 ☐ Chest x-ray
8 ☐ Other radiology
9 ☐ Allergy testing
10 ☐ Spirometry
11 ☐ Pap test
12 ☐ Strep throat test
13 ☐ HIV serology
14 ☐ Cholesterol measure
15 ☐ Other lab test
16 ☐ Hearing test
17 ☐ Visual acuity
18 ☐ Mental status exam
19 ☐ Other *(Specify)*

15. THERAPEUTIC SERVICES
(Check all ordered or provided. Exclude medication)
1 ☐ None
COUNSELING/EDUCATION:
2 ☐ Diet
3 ☐ Exercise
4 ☐ Cholesterol reduction
5 ☐ Weight reduction
6 ☐ Drug abuse
7 ☐ Alcohol abuse
8 ☐ Smoking cessation
9 ☐ Family/social
10 ☐ Growth/development
11 ☐ Family planning
12 ☐ Other counseling
OTHER THERAPY:
13 ☐ Psychotherapy
14 ☐ Corrective lenses
15 ☐ Hearing aid
16 ☐ Physiotherapy
17 ☐ Other therapy *(Specify)*

16. MEDICATION
(Record all new or continued medications ordered, administered, or provided on this visit. Use the same brand name or generic name on any Rx or medical record. Include immunizations and desensitizing agents.)
☐ None
NEW MEDICATION?
1. ____ 1 ☐ Yes 2 ☐ No
2. ____ 1 ☐ Yes 2 ☐ No
3. ____ 1 ☐ Yes 2 ☐ No
4. ____ 1 ☐ Yes 2 ☐ No
5. ____ 1 ☐ Yes 2 ☐ No

17. DISPOSITION THIS VISIT
(Check all that apply)
1 ☐ Return to clinic PRN
2 ☐ Return to clinic - appointment
3 ☐ Telephone follow-up planned
4 ☐ Return to referring physician
5 ☐ Refer to other physician/clinic
6 ☐ Admit to hospital
7 ☐ No follow-up planned
8 ☐ Other *(Specify)*

18. PROVIDERS SEEN THIS VISIT
(Check all that apply)
1 ☐ Resident/Intern
2 ☐ Staff physician
3 ☐ Other physician
4 ☐ Physician assistant
5 ☐ Nurse practitioner
6 ☐ Registered nurse
7 ☐ Licensed practical nurse
8 ☐ Nurse's aide

Figure 2. National Hospital Ambulatory Medical Care Survey outpatient department patient record

NATIONAL HOSPITAL AMBULATORY MEDICAL CARE SURVEY EMERGENCY DEPARTMENT PATIENT RECORD

1. PATIENT NAME

2. PATIENT RECORD NO.

3. DATE OF VISIT
Month / Day / Year

4. DATE OF BIRTH
Month / Day / Year

5. SEX
1 ☐ Female
2 ☐ Male

6. RACE
1 ☐ White
2 ☐ Black
3 ☐ Asian/Pacific Islander
4 ☐ American Indian/ Eskimo/ Aleut

7. ETHNICITY
1 ☐ Hispanic
2 ☐ Not Hispanic

8. EXPECTED SOURCE(S) OF PAYMENT *(Check all that apply)*
1 ☐ Medicare
2 ☐ Medicaid
3 ☐ Other government
4 ☐ Private/ Commercial
5 ☐ HMO/Other prepaid
6 ☐ Patient paid
7 ☐ No charge
8 ☐ Other

9. MAJOR REASON FOR THIS VISIT *(Check one)*
1 ☐ Injury, first visit
2 ☐ Injury, follow-up
3 ☐ Illness, first visit
4 ☐ Illness, follow-up
5 ☐ Other reason

10. CAUSE OF INJURY *(Complete if injury is marked in 9. Describe cause and place of injury.)*

11. 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:

12. PHYSICIAN'S DIAGNOSES
a. Principal diagnosis/ problem associated with item 11a.
b. Other:
c. Other:

13. URGENCY OF THIS VISIT *(Check only one)*
1 ☐ Urgent/Emergent
2 ☐ Non-urgent

14. IS PROBLEM ALCOHOL- OR DRUG-RELATED?
1 ☐ Neither
2 ☐ Alcohol-related
3 ☐ Drug-related
4 ☐ Both

15. DIAGNOSTIC/SCREENING SERVICES *(Check all ordered or provided.)*
1 ☐ None
2 ☐ Blood pressure check
3 ☐ Urinalysis
4 ☐ HIV serology
5 ☐ Other blood test
6 ☐ EKG
7 ☐ Mental status exam
7 ☐ Chest x-ray
9 ☐ Extremity x-ray
10 ☐ CT scan/MRI
11 ☐ Other diagnostic imaging
12 ☐ Other *(Specify)*

16. PROCEDURES *(Check all provided on this visit)*
1 ☐ None
2 ☐ Endotracheal intubation
3 ☐ CPR
4 ☐ IV fluids
5 ☐ NG tube/ gastric lavage
6 ☐ Wound care
7 ☐ Eye/ENT care
8 ☐ Orthopedic care
9 ☐ Bladder catheter
10 ☐ Lumbar puncture
11 ☐ Other(s) *(Specify)*

17. MEDICATION
(Record all new or continued medication ordered, administered, or provided at this visit. Use the same brand name or generic name entered on any Rx or medical record. Include immunizations and desensitizing agents.)
☐ None
1.
2.
3.
4.
5.

18. DISPOSITION THIS VISIT *(Check all that apply)*
1 ☐ Return to ED PRN
2 ☐ Return to ED - appointment
3 ☐ Return to referring physician
4 ☐ Refer to other physician/clinic
5 ☐ Admit to hospital
6 ☐ Transfer to other facility
7 ☐ DOA/died in ED
8 ☐ Left AMA
9 ☐ No follow-up planned
10 ☐ Other *(Specify)*

19. PROVIDERS SEEN THIS VISIT *(Check all that apply)*
1 ☐ Resident/Intern
2 ☐ Staff physician
3 ☐ Other physician
4 ☐ Physician assistant
5 ☐ Nurse practitioner
6 ☐ Registered nurse
7 ☐ Licensed practical nurse
8 ☐ Nurse's aide

Figure 3. National Hospital Ambulatory Medical Care Survey emergency department patient record

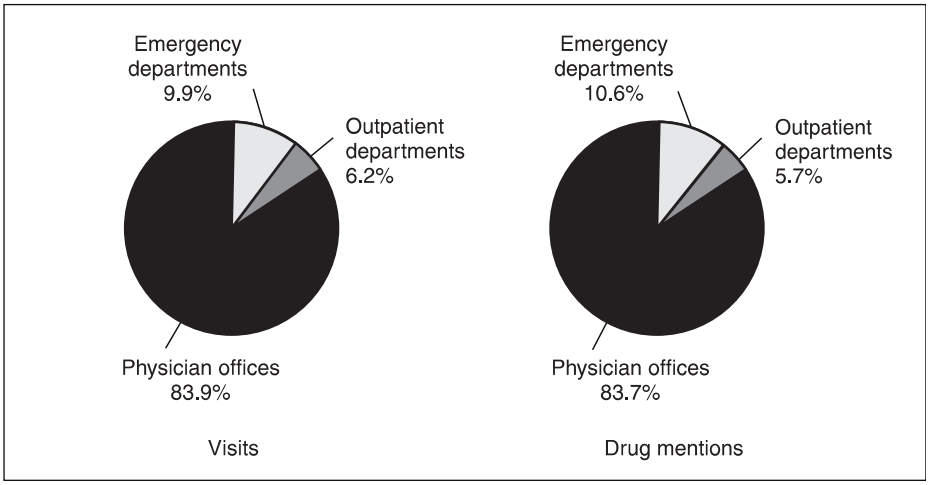

Figure 4. Percent of visits and drug mentions by ambulatory medical care setting: United States, 1992

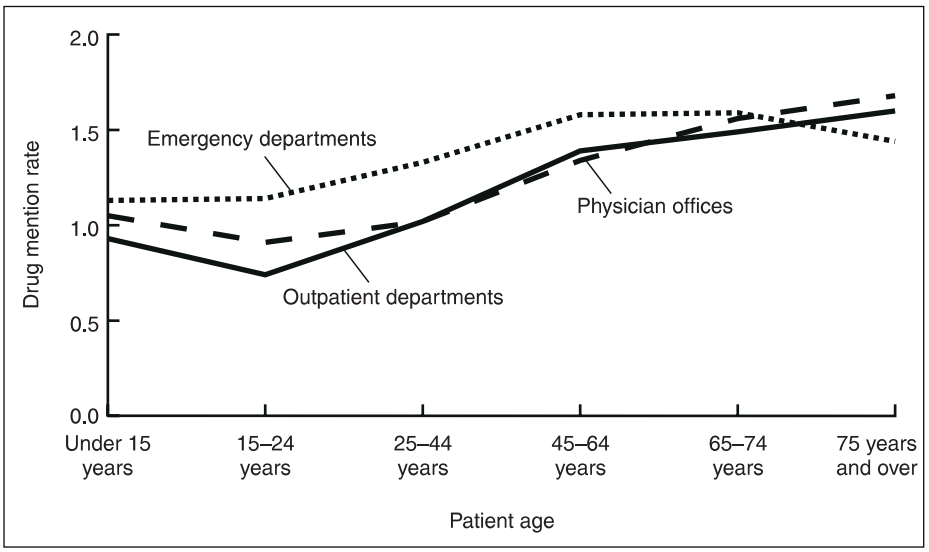

Figure 5. Average number of drug mentions for ambulatory medical care settings by patient age: United States, 1992

mentions for pain relief but a significantly lower percent for cardiovascular-renal drugs and hormones. Within hospital settings, ED's had a significantly higher percent of antimicrobial agent drug mentions than OPD's. Figure 7 presents the comparison of drug mention rates per 100 visits for selected therapeutic classes across ambulatory care settings illustrating the increased rate of drugs used for the relief of pain in the ED.

The data in tables 4 and 5 show ranked listings of the drugs most frequently prescribed or provided by ambulatory care setting. It should be noted that estimates that differ in ranked order may not be significantly different from each other. In table 4, the data are presented by generic ingredients and provide a more basic perspective of medication therapy in the ambulatory setting. The two most commonly utilized therapeutic categories in table 3 were antimicrobials and cardiovascular-renal agents; which is also reflected in table 4. The most frequently used generic substance was amoxicillin (4.6 percent), an antimicrobial. Eight other antimicrobials are in the top 50 list, including erythromycin and cefaclor. Other drugs frequently prescribed or provided by ambulatory care practitioners are decongestants (e.g., pseudoephedrine, phenylephrine, and phenylpropanolamine); bronchodilators (e.g., albuterol and theophylline), and drugs used in treating diseases of the cardiovascular system (e.g., hydrochlorothiazide, furosemide, digoxin, enalapril, and diltiazem).

The three settings had 5 of the top 10 generics in common (amoxicillin, acetaminophen, erythromycin, albuterol, and ibuprofen). Among the top 10 generics, consistent with table 3, the therapeutic class table, ED's had a significantly higher percentage of pain relief drugs than the other settings. OPD's had iron preparations specifically listed among their top 10 (hematologics class), whereas the other two settings did not.

Table 5 shows drugs by entry name, that is, the trade or generic name entered on the patient's prescription or medical record. Two of the top entry names are antimicrobials, amoxicillin and Amoxil (a brand of amoxicillin). As expected, emergency departments had a significantly higher percent of pain relief drugs than the other two settings; half of their top 10 drugs were pain relief agents. Outpatient departments had ferrous sulfate (an iron preparation) specifically listed among their top 10, whereas the other two settings did not.

Provider and visit characteristics

Table 6 describes the relationship between medication therapy and characteristics of office-based physicians and OPD clinic types. Ninety-four percent of the office visits were to physicians who identified themselves as medical doctors (1), and 94.0 percent of the drug mentions were reported at visits to doctors of medicine. Fifty-six percent of all office visits were to physicians specializing in general and family practice, internal medicine, pediatrics, or cardiovascular diseases (1); together they accounted for 69.5 percent of all drug mentions. These four physician specialties, led by cardiovascular diseases, were also the most likely to prescribe or provide medications to their patients. Drug mentions, drug visits, and drug mention rates were significantly higher in OPD clinics of general medicine compared with other types of clinics.

Table 7 compares selected visit characteristics across settings with percent of visits with medication therapy and the average rate of drug mentions per 100 visits. In all settings there were significantly higher percentages of drug visits and drug mention rates for care related to illness rather than injury or supplementary care. Supplementary care is defined as care not classified to injury or illness (e.g., general medical examination, routine prenatal examination). The relative distribution of these selected visit characteristics vary according to both ambulatory care setting and extent of medication therapy. Just as illness visits are more likely to have medication therapy in all settings, visits where the patient was seen previously were more likely to have medications prescribed.

Trend data for physician office visits

NAMCS began in 1973 but did not collect drug data until 1980 (6,7). The NHAMCS began in 1992, so comparable data are not available prior to that time. The following describes the trends in office-based physician medication therapy between 1980 and 1992.

The percent of visits with drug mentions and the average number of drug mentions have essentially remained static. The percent visits with drug mentions was 63.1 percent in 1980 and 63.8 percent in 1992. The average number of drug mentions per visit was 1.2 in both 1980 and 1992.

There was no significant change between 1980 and 1992 in percent of drug mentions for noncontrolled drug status. However, the percent of drug mentions for single-ingredient drugs significantly increased from 1980 to 1992.

As shown in table 8, 4 of the top 10 ranked generic substances were the same between 1980 and 1992. Those four generic substances were hydrochlorothiazide (cardiovascular-renal drug), aspirin (drug used for pain relief), erythromycin (antimicrobial agent), and acetaminophen (drug used for pain relief). However, 2 of the top 10 generic substances in 1992 increased since 1980. Amoxicillin and acetaminophen utilization increased from 1.9 and 2.1 drug mentions per 100 visits in 1980 to 5.7 and 4.0 drug mentions per 100 visits in 1992, respectively. The antimicrobial agent, penicillin, decreased from its 1980 rate of 3.0 drug mentions per 100 visits to 1.1 drug mentions per 100 visits in 1992. It is noteworthy that, with the exception of the metabolic-nutrient class in 1992, all of the top 10 ranked classes were the same for both years.

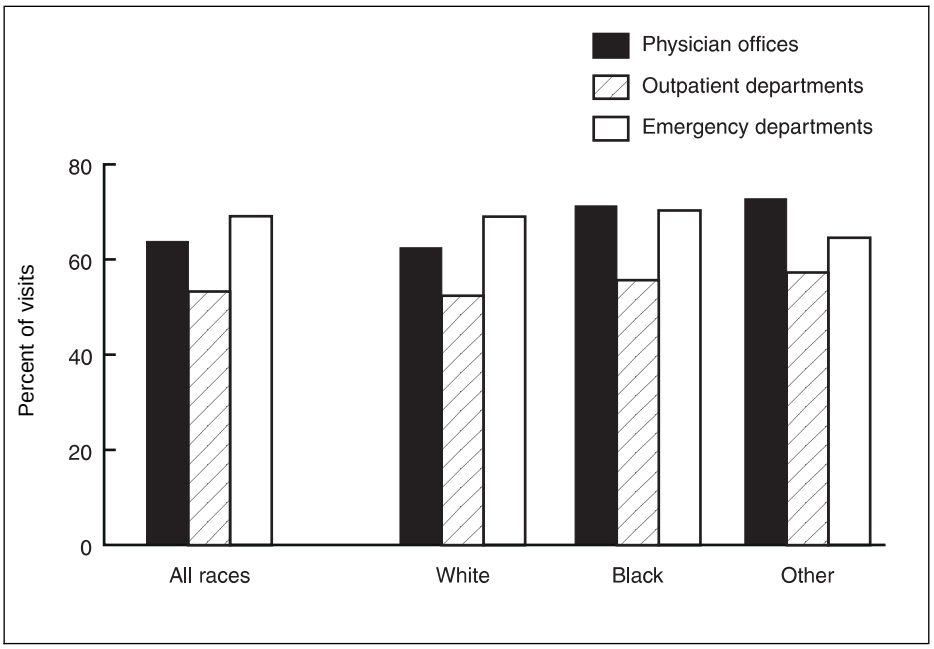

Figure 6. Percent of visits with medication therapy by ambulatory setting and race: United States, 1992

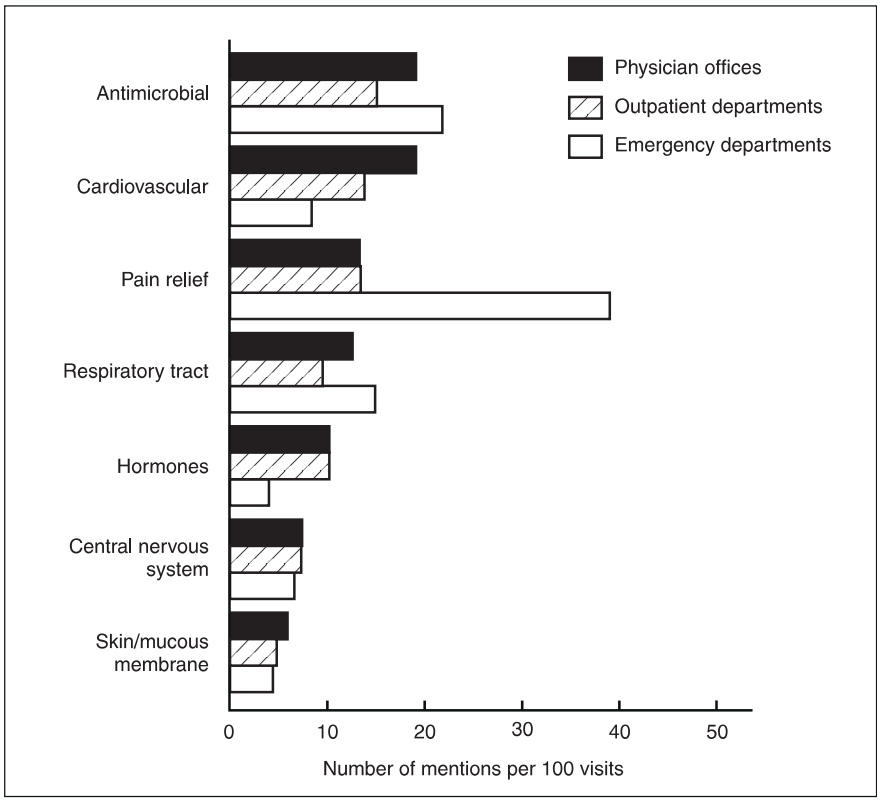

Figure 7. Annual rate of drug mentions per 100 visits by ambulatory care setting and selected therapeutic classes: United States, 1992

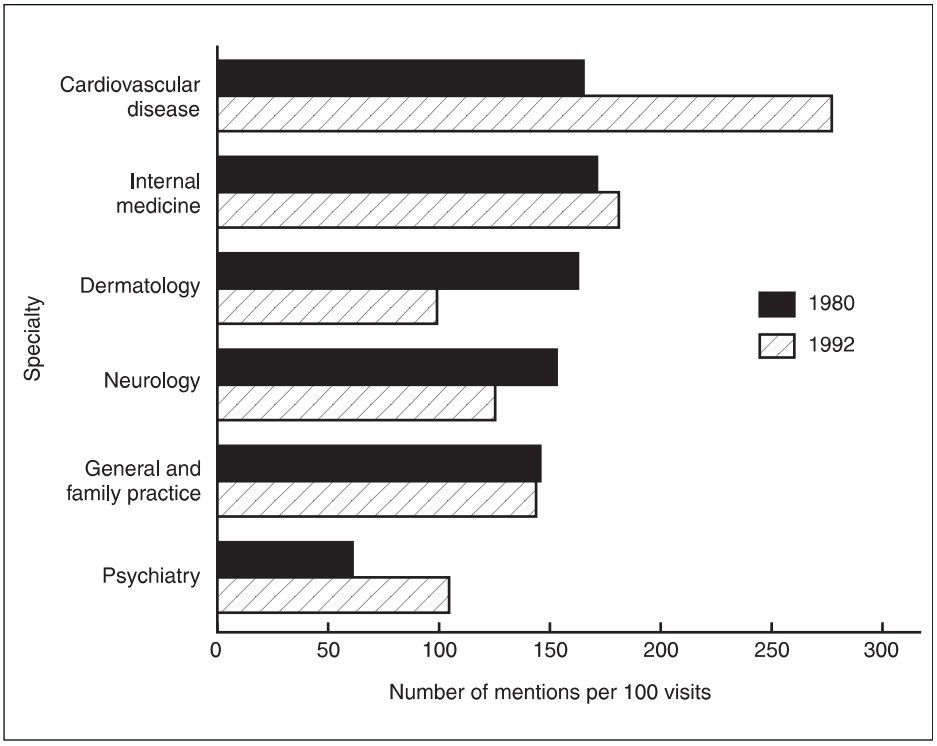

Figure 8. Rate of drug mentions per 100 visits by selected physician specialties: United States, 1980 and 1992

Two significant changes by type of office-based physician specialty occurred between 1980 and 1992. In 1980 (7), general and family practice physicians entered 41.1 percent of all of the drugs mentioned on the Patient Record forms, whereas in 1992, they entered 34.1 percent—a decrease of 17.0 percent. On the other hand, cardiovascular disease physicians entered 1.5 percent of all drug mentions in 1980 (7), but 4.4 percent of all drug mentions in 1992—an increase of 193.3 percent. Percents of drug mentions did not change significantly between 1980 and 1992 for the other specialties. In 1992 the highest drug mention rates in physician offices were in two therapeutic categories, cardiovascular-renal drugs and antimicrobial agents. It should be noted that the percent of general and family practice doctors of medicine who were engaged primarily in non-Federal, office-based patient care increased by 22.7 percent between 1980 and 1992 (14). The respective change for cardiovascular disease physicians was 70.2 percent.

Figure 8 shows the changes in average number of drug mentions per 100 visits by physician specialty. Drug mention rates for cardiovascular disease and psychiatry specialties significantly increased, whereas the rate for dermatology significantly decreased.

Discussion

The demographic characteristics of patients seeking health care from office-based physicians versus hospital health care providers were quite different. In the office-based setting the patient is usually a privately insured, white female whose principal reason for the visit is a ''general medical examination'' (1). In the hospital setting, although the percent of visits by white persons is higher than other racial groups, the visit rate for black persons is higher than in the office-based setting. The most frequently mentioned expected source of payment is Medicaid in OPD's or private/commercial insurance in ED's (2,3). Like the office-based setting the principal reason for the visit in the OPD is a ''progress visit'' or ''general medical examination'' (2). In the ED the top principal reasons for visit are generally pain, such as stomach and abdominal pain, chest pain, or headache (3). Physician offices, OPD's, and ED's provide primary health care services for populations of different demographic characteristics and degrees of health, and accordingly, the characteristics of medications utilized may also differ. The use of medication therapy in ambulatory medical care in different settings is directly related to the case-mix of conditions found in those settings. In all settings (table 7) visits with illness or injury diagnoses were more likely to have medication therapy than were visits with supplemental diagnoses such as routine medical exams. Physician office and OPD visits for patients who had previously been seen at the provider setting were also more likely to have medication therapy, whereas the opposite was true for ED visits. Variation in provider characteristics such as OPD clinic type and office-based physician specialty (table 6) also appear to be related to the use of medication therapy. Percents of patient visits with drug mentions vary from a low of 34.5 percent for general surgery speciality to a high of 85.8 percent for cardiovascular disease specialty.

In addition to the use of medication therapy in ambulatory medical care, this report examines differences in the rate of the number of drug prescriptions per visit. The data indicate that ED's had a higher average number of drug mentions per visit than the other two settings. This finding may be due to the fact that office-based and OPD settings included visits in their top 20 principal diagnoses for circumstances other than disease or injury, for example, general medical examination. This was not true for the ED setting for the top 20 principal diagnoses (1–3). ED's also utilized more pain relief drugs and drugs with high abuse potential. Within hospital settings, ED's used more antimicrobial agents than OPD's. However, it appears there were no differences between the three settings with respect to half of their top 10 generic substances, that is, amoxicillin, acetaminophen, erythromycin, albuterol, and ibuprofen. The severity of conditions in emergency departments would naturally result in a greater use of

drugs to stabilize patients than in the other two settings.

The aging of the U.S. population between 1980 and 1992 has had a noticeable effect on office-based medication therapy characteristics. Between 1980 and 1992 the resident population 75 years and older increased 38.6 percent (15). Compatible with this increase, the percent of drug mentions accounted for by those 75 years and older increased significantly, by 44.3 percent from 1980 (7) to 1992. Because the rate of cardiovascular disease increases with age in adults (16), the aging of the population probably contributed to the significant increase in percent of drug mentions by cardiovascular disease specialists from 1980 (1.5 percent) (7) to 1992 (4.4 percent) and perhaps to the increase in cardiovascular disease specialists as well.

Between 1980 and 1992, there were several noteworthy occurrences for the top-two ranked therapeutic drug categories, antimicrobial agents and cardiovascular-renal drugs. In the antimicrobial class, a number of new, later generation cephalosporins were introduced. Also, a new therapeutically important subclass of antimicrobials was first marketed, the fluoroquinolones. These drugs are all single entity. Additionally, a number of single-entity drugs belonging to a new subclass of the cardiovascular-renal category were first marketed during this time span: calcium channel-blocking drugs. These drugs are indicated for a variety of cardiovascular problems (e.g., arrhythmias, hypertension, and angina). Relevant to the reduction of cardiovascular risks is a subclass of lipid-lowering drugs, the HMG-CoA (3-hydroxy-3-methylglutaryl-coenzyme A) reductase inhibitors; these single-ingredient drugs were first marketed during 1980 to 1992. All of these events would have contributed to the significant increase in percent of single-ingredient drug mentions from 1980 to 1992.

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Table 1. Number and percent distribution of drug mentions, percent of visits with drug mentions, and drug mention rate with corresponding standard errors for age, sex, and race of patient by ambulatory care setting: United States, 1992

Age, sex and race	Number of drug mentions in thousands				Percent distribution				Percent of visits with drug mentions				Average number of drug mentions per 100 visits			
	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments
All visits	1,103,302	922,584	63,299	117,420	100.0	100.0	100.0	100.0	63.7	63.8	53.3	69.1	121.4	121.1	111.8	130.8
Age																
Under 15 years	199,978	162,714	11,823	25,442	18.1	17.6	18.7	21.7	64.5	65.4	52.0	65.9	105.0	104.9	93.0	113.0
15–24 years	87,494	65,259	5,346	16,890	7.9	7.1	8.4	14.4	60.1	60.2	44.9	66.9	93.0	90.6	73.8	113.8
25–44 years	269,016	215,974	16,845	36,196	24.4	23.4	26.6	30.8	61.5	61.0	50.7	72.0	105.2	101.9	102.2	132.9
45–64 years	243,376	207,908	15,695	19,773	22.1	22.5	24.8	16.8	65.0	64.8	58.7	74.2	136.1	134.1	139.0	158.1
65–74 years	157,887	141,180	7,453	9,253	14.3	15.3	11.8	7.9	65.2	65.3	59.0	69.3	155.6	155.8	148.1	159.4
75 years and over	145,552	129,549	6,137	9,866	13.2	14.0	9.7	8.4	67.4	67.9	61.7	64.1	165.3	167.5	159.8	143.6
Sex and age																
Female	664,856	562,699	38,861	63,297	60.3	61.0	61.4	53.9	64.2	64.4	53.9	70.5	123.4	123.0	111.9	135.8
Under 15 years	95,252	77,555	5,763	11,934	8.6	8.4	9.1	10.2	65.3	66.1	53.1	67.1	104.9	104.2	93.7	117.0
15–24 years	56,370	43,013	4,127	9,230	5.1	4.7	6.5	7.9	60.8	61.3	47.9	66.8	94.1	92.2	79.0	114.6
25–44 years	176,000	146,331	10,114	19,554	16.0	15.9	16.0	16.7	61.4	61.0	50.3	74.3	104.7	102.0	94.7	139.2
45–64 years	147,194	126,698	9,850	10,646	13.3	13.7	15.6	9.1	65.5	65.4	58.4	75.3	137.4	135.7	138.1	160.6
65–74 years	93,708	83,253	4,933	5,522	8.5	9.0	7.8	4.7	66.3	66.4	60.0	71.0	160.9	160.8	157.3	164.8
75 years and over	96,332	85,848	4,074	6,409	8.7	9.3	6.4	5.5	69.9	70.6	63.6	64.7	176.6	179.6	168.1	147.6
Male	438,446	359,885	24,438	54,123	39.7	39.0	38.6	46.1	62.8	62.9	52.4	67.7	118.59	118.12	111.77	125.33
Under 15 years	104,726	85,159	6,060	13,507	9.5	9.2	9.6	11.5	63.8	64.7	51.0	64.8	105.1	105.5	92.3	109.6
15–24 years	31,124	22,246	1,219	7,660	2.8	2.4	1.9	6.5	58.8	58.3	37.4	67.0	91.0	87.6	60.3	112.7
25–44 years	93,016	69,643	6,731	16,642	8.4	7.5	10.6	14.2	61.5	60.9	51.3	69.5	106.3	101.7	116.0	126.1
45–64 years	96,181	81,210	5,845	9,126	8.7	8.8	9.2	7.8	64.3	63.8	59.3	72.9	134.2	131.7	140.3	155.2
65–74 years	64,178	57,928	2,520	3,731	5.8	6.3	4.0	3.2	63.6	63.7	57.3	67.1	148.5	149.1	133.0	151.9
75 years and over	49,220	43,700	2,063	3,457	4.5	4.7	3.3	2.9	63.3	63.6	58.4	63.0	146.9	147.9	145.6	136.7
Race																
White	914,184	775,340	46,046	92,797	82.9	84.0	72.7	79.0	62.5	62.5	52.4	69.0	119.3	118.6	109.5	131.7
Black	152,852	115,799	15,078	21,976	13.9	12.6	23.8	18.7	69.4	71.3	55.7	70.3	136.1	140.2	120.1	128.1
Other	36,267	31,445	2,175	2,647	3.3	3.4	3.4	2.3	71.1	72.8	57.3	64.6	123.0	124.3	108.0	122.0

Table 1. Number and percent distribution of drug mentions, percent of visits with drug mentions, and drug mention rate with corresponding standard errors for age, sex, and race of patient by ambulatory care setting: United States, 1992—Con.

Age, sex and race	Standard error in thousands				Standard error of percent distribution				Standard error of percent visits with drug mentions				Standard error of average drug mentions per 100 visits			
	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments
All visits	47,983	46,267	6,813	4,738	. . .	. . .	. . .	. . .	0.8	0.9	2.1	0.8	2.50	3.07	5.69	2.51
Age																
Under 15 years	13,049	12,778	1,651	1,837	1.1	1.3	1.7	1.3	1.5	1.8	2.7	1.0	3.49	4.32	5.73	2.68
15–24 years	474	4,577	543	900	0.4	0.4	0.7	0.4	1.4	1.8	2.6	1.3	2.49	3.29	4.64	3.12
25–44 years	13,384	13,054	1,918	1,687	0.7	0.9	1.9	0.7	1.1	1.3	2.4	0.9	2.59	3.18	7.19	2.63
45–64 years	13,618	13,538	1,641	1,021	0.6	0.8	1.2	0.6	1.1	1.3	2.5	1.1	4.42	5.18	6.74	4.50
65–74 years	8,776	8,624	1,021	549	0.5	0.6	0.7	0.4	1.5	1.6	2.9	1.8	5.32	6.02	10.38	5.99
75 years and over	9,519	9,427	1,704	526	0.6	0.8	1.9	0.4	1.6	1.7	5.1	1.5	6.49	7.47	18.70	6.16
Sex and age																
Female	31,154	30,350	4,156	2,725	0.7	0.9	1.2	0.6	0.9	1.0	2.1	0.8	2.89	3.53	6.05	2.80
Under 15 years	6,563	6,454	770	863	0.5	0.7	0.8	0.6	1.7	2.0	2.7	1.2	3.76	4.61	6.16	3.39
15–24 years	3,086	2,996	449	536	0.3	0.3	0.6	0.3	1.7	2.1	2.9	1.5	2.89	3.80	5.77	3.88
25–44 years	9,955	9,745	1,017	1,033	0.6	0.7	1.0	0.5	1.4	1.6	2.4	1.2	3.15	3.77	5.63	3.11
45–64 years	8,463	8,508	1,004	610	0.4	0.5	1.0	0.4	1.3	1.4	2.6	1.3	4.54	5.30	7.44	5.15
65–74 years	5,412	5,288	711	408	0.3	0.4	0.5	0.3	1.5	1.7	2.9	2.2	5.87	6.67	12.40	7.46
75 years and over	7,312	7,260	1,210	387	0.5	0.6	1.4	0.3	1.7	1.8	5.6	1.6	7.86	9.10	21.12	6.24
Male	18,884	18,091	2,842	2,179	0.7	0.9	1.2	0.6	0.9	1.1	2.3	0.9	2.53	3.09	5.89	2.40
Under 15 years	7,131	6,955	911	1,052	0.6	0.7	1.0	0.8	1.7	2.0	2.9	1.1	3.93	4.89	5.86	2.77
15–24 years	2,203	2,145	180	447	0.2	0.2	0.3	0.3	2.1	2.8	3.4	1.5	3.56	4.81	5.33	3.42
25–44 years	4,514	4,356	1,090	800	0.3	0.4	1.3	0.5	1.3	1.7	3.2	1.1	3.02	3.72	12.41	2.96
45–64 years	6,304	6,197	725	526	0.4	0.5	0.5	0.4	1.4	1.7	2.8	1.5	5.53	6.49	7.28	5.04
65–74 years	3,946	3,901	376	242	0.3	0.4	0.4	0.2	1.9	2.1	3.7	2.2	6.02	6.76	9.77	6.82
75 years and over	3,124	3,107	514	259	0.2	0.3	0.5	0.2	1.9	2.1	4.8	2.5	6.13	6.88	16.17	8.77
Race																
White	40,534	38,325	6,080	4,487	1.9	2.2	3.0	1.3	0.8	0.9	2.6	0.9	2.30	2.75	6.97	2.81
Black	16,340	16,045	1,866	1,436	1.4	1.7	2.8	1.3	2.0	2.6	1.8	1.0	7.20	9.96	5.23	3.16
Other	15,598	15,192	399	533	1.5	1.8	0.6	0.5	3.5	3.6	2.6	2.9	7.56	8.53	6.70	6.36

. . . Category not applicable.

Table 2. Number and percent distribution of drug mentions with corresponding standard errors for selected drug characteristics by ambulatory care setting: United States, 1992

Drug characteristic	Number of drug mentions in thousand				Percent distribution			
	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments
All drugs	1,103,302	922,584	63,299	117,420	100.0	100.0	100.0	100.0
New or continued status[1]								
New medication	378,328	357,199	21,129	. . .	34.3	38.7	33.4	. . .
Continued medication	497,981	461,096	36,885	. . .	45.1	50.0	58.3	. . .
Undetermined	226,993	104,288	5,285	. . .	20.6	11.3	8.3	. . .
Composition								
Single ingredient	840,136	698,564	49,701	91,870	76.1	75.7	78.5	78.2
Combination drug	169,804	141,541	8,965	19,298	15.4	15.3	14.2	16.4
Undetermined	93,362	82,478	4,633	6,252	8.5	8.9	7.3	5.3
Federal control status								
Schedule II drug	9,930	3,695	863	5,372	0.9	0.4	1.4	4.6
Schedule III drug	21,134	14,394	973	5,767	1.9	1.6	1.5	4.9
Schedule IV drug	34,761	29,408	1,711	3,642	3.2	3.2	2.7	3.1
Schedule V drug	8,595	7,605	260	730	0.8	0.8	0.4	0.6
Noncontrolled drug	945,102	793,439	55,401	96,262	85.7	86.0	87.5	82.0
Undetermined	83,780	74,041	4,092	5,647	7.6	8.0	6.5	4.8

Drug dimension	Standard error in thousands				Standard error of percent distribution			
	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments
All drugs	47,983	46,267	6,813	4,738	. . .	. . .	. . .	. . .
New or continued status[1]								
New medication	21,268	20,861	2,564	. . .	1.2	1.4	1.9	. . .
Continued medication	27,533	26,672	4,461	. . .	1.1	1.3	2.2	. . .
Undetermined	8,577	6,838	589	. . .	0.9	0.7	0.8	. . .
Composition								
Single ingredient	37,109	35,640	5,515	3,655	0.5	0.6	0.7	0.4
Combination drug	9,157	8,924	1,029	959	0.5	0.6	0.6	0.4
Undetermined	5,168	5,129	443	333	0.4	0.5	0.5	0.2
Federal control status								
Schedule II drug	566	418	140	324	0.1	0.1	0.2	0.2
Schedule III drug	1,389	1,307	126	391	0.1	0.1	0.2	0.2
Schedule IV drug	2,134	2,108	198	237	0.1	0.2	0.2	0.1
Schedule V drug	1,342	1,329	51	76	0.1	0.1	0.1	0.1
Noncontrolled drug	42,231	40,681	6,230	3,886	0.4	0.5	0.7	0.5
Undetermined	5,007	4,969	376	298	0.4	0.5	0.5	0.2

. . . Category not applicable.

[1]This variable was not included in the ED Patient Record.

NOTE: The estimated number of patient visits was 762,045,000 to physician offices, 56,605,000 to outpatient departments, and 89,796,000 visits to emergency room departments. There were a total of 908,446,000 patient visits to all ambulatory medical care settings in 1992.

Table 3. Number and percent distribution of drug mentions and drug mention rate with corresponding standard errors for therapeutic category by ambulatory care setting: United States, 1992

Therapeutic category[1]	Number of drug mentions in thousands				Percent distribution				Average number of drug mentions per 100 visits			
	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments
All drugs	1,103,302	922,584	63,299	117,420	100.0	100.0	100.0	100.0	121.4	121.1	111.8	130.8
Antimicrobial agents	173,650	145,656	8,539	19,576	15.7	15.79	13.49	16.67	19.1	19.1	15.1	21.8
Cardiovascular/renal drugs	160,966	145,658	7,808	7,585	14.6	15.79	12.34	6.46	17.7	19.1	13.8	8.4
Drugs used for relief of pain	143,941	101,433	7,583	34,993	13.0	10.99	11.98	29.80	15.8	13.3	13.4	39.0
Respiratory tract drugs	114,527	96,026	5,380	13,348	10.4	10.41	8.50	11.37	12.6	12.6	9.5	14.9
Hormones and agents affecting hormonal mechanisms	86,803	77,726	5,749	3,556	7.9	8.42	9.08	3.03	9.6	10.2	10.2	4.0
Central nervous system drugs	66,366	56,347	4,122	5,934	6.0	6.11	6.51	5.05	7.3	7.4	7.3	6.6
Skin/mucous membrane agents	51,632	44,963	2,727	3,988	4.7	4.87	4.31	3.40	5.7	5.9	4.8	4.4
Gastrointestinal agents	46,658	38,422	2,857	5,565	4.2	4.16	4.51	4.74	5.1	5.0	5.0	6.2
Metabolic and nutrient agents	45,086	39,644	3,243	2,336	4.1	4.30	5.12	1.99	5.0	5.2	5.7	2.6
Immunologic agents	36,774	29,744	3,304	3,726	3.3	3.22	5.22	3.17	4.0	3.9	5.8	4.1
Ophthalmic drugs	30,192	26,367	1,773	2,094	2.7	2.86	2.80	1.78	3.3	3.5	3.1	2.3
Neurologic drugs	21,233	17,135	1,460	2,774	1.9	1.86	2.31	2.36	2.3	2.2	2.6	3.1
Hematologic agents	15,062	11,972	1,903	1,192	1.4	1.30	3.01	1.02	1.7	1.6	3.4	1.3
Oncolytics	8,201	6,724	1,528	*46	0.7	0.73	2.41	0.04	0.9	0.9	2.7	0.1
Radiopharmaceutical/contrast media agents	8,087	7,619	416	*51	0.7	0.83	0.66	0.04	0.9	1.0	0.7	0.1
Otologic drugs	7,677	6,166	394	1,127	0.7	0.67	0.62	0.96	0.8	0.8	0.7	1.3
Anesthetic drugs	5,676	2,418	502	2,755	0.5	0.26	0.79	2.35	0.6	0.3	0.9	3.1
Antiparasitic drugs	2,820	2,548	134	138	0.3	0.28	0.21	0.12	0.3	0.3	0.2	0.2
Antidotes	*913	*456	111	345	0.1	0.05	0.18	0.29	0.1	0.1	0.2	0.4
Miscellaneous agents	77,040	65,557	3,766	6,289	7.0	7.11	5.95	5.36	8.5	8.6	6.7	7.0

Table 3. Number and percent distribution of drug mentions and drug mention rate with corresponding standard errors for therapeutic category by ambulatory care setting: United States, 1992—Con.

Therapeutic category[1]	Standard error in thousands				Standard error of percent distribution				Standard error of average drug mentions per 100 visits			
	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments	All settings	Physician offices	Outpatient departments	Emergency departments
All drugs	47,983	46,267	6,813	4,738	. . .	. . .	. . .	. . .	2.50	3.07	5.69	2.51
Antimicrobial agents	9,594	9,400	1,330	978	0.58	0.72	0.99	0.40	0.69	0.84	1.58	0.60
Cardiovascular/renal drugs	10,267	10,113	1,249	471	0.62	0.73	0.95	0.31	0.96	1.17	1.51	0.49
Drugs used for relief of pain	6,764	6,573	783	1,453	0.38	0.44	0.68	0.51	0.54	0.67	0.86	0.92
Respiratory tract drugs	7,783	7,658	879	769	0.47	0.57	0.71	0.39	0.67	0.81	1.06	0.60
Hormones and agents affecting hormonal mechanisms	4,524	4,353	663	226	0.28	0.33	0.48	0.15	0.37	0.45	0.71	0.23
Central nervous system drugs	3,603	3,423	486	337	0.24	0.28	0.60	0.18	0.32	0.38	0.63	0.26
Skin/mucous membrane agents	3,255	3,212	353	210	0.27	0.32	0.38	0.15	0.32	0.38	0.48	0.19
Gastrointestinal agents	2,663	2,588	372	326	0.17	0.21	0.24	0.18	0.24	0.30	0.42	0.27
Metabolic and nutrient agents	3,529	3,460	443	180	0.27	0.32	0.38	0.13	0.36	0.43	0.54	0.19
Immunologic agents	2,974	2,941	490	205	0.30	0.36	0.69	0.16	0.34	0.41	0.75	0.20
Ophthalmic drugs	2,899	2,888	458	187	0.26	0.32	0.65	0.16	0.32	0.39	0.73	0.21
Neurologic drugs	1,427	1,355	192	171	0.11	0.13	0.24	0.12	0.13	0.16	0.26	0.17
Hematologic agents	1,365	1,324	253	90	0.12	0.14	0.29	0.07	0.15	0.17	0.36	0.10
Oncolytics	1,249	1,209	293	16	0.12	0.14	0.42	0.01	0.14	0.17	0.46	0.02
Radiopharmaceutical/contrast media agents	2,077	2,073	93	16	0.21	0.26	0.14	0.01	0.25	0.30	0.15	0.02
Otologic drugs	667	650	71	94	0.06	0.07	0.08	0.06	0.07	0.09	0.10	0.09
Anesthetic drugs	493	2,418	143	172	0.05	0.05	0.22	0.15	0.06	0.06	0.25	0.19
Antiparasitic drugs	430	419	34	30	0.04	0.05	0.04	0.03	0.05	0.06	0.05	0.03
Antidotes	177	167	32	48	0.02	0.02	0.05	0.04	0.02	0.02	0.05	0.05
Miscellaneous agents	4,460	4,230	384	329	0.27	0.32	0.47	0.21	0.39	0.45	0.49	0.30

. . . Category not applicable.
0.0 Quantity more than zero but less than 0.05.
* Figure does not meet standard of reliability or precision (more than 30-percent relative standard error in numerator of percent or rate).
[1]Therapeutic categories are based on the standard drug classifications used in the National Drug Code Directory, 1985 edition (11).

NOTE: The estimated number of patient visits was 762,045,000 to physician offices, 56,605,000 to outpatient departments, and 89,796,000 visits to emergency room departments. There were a total of 908,446,000 patient visits to all ambulatory medical care settings in 1992.

Table 4. The top 50 and top 10 generic substances most frequently utilized by rank, generic name, and number and percent of drug mentions with standard errors and therapeutic classifications by ambulatory care setting: United States, 1992

Rank	Generic substances and setting	Number of drug mentions in thousands[1]	Standard error in thousands	Percent[2]	Standard error of percent	Therapeutic classification[3]
	All settings					
	All drugs	1,103,302	47,983	100.0	. . .	. . .
1	Amoxicillin	50,201	4,155	4.6	0.3	Antimicrobial agent
2	Acetaminophen	50,129	2,915	4.5	0.2	Drug used for relief of pain
3	Erythromycin	22,252	1,942	2.0	0.2	Antimicrobial agent
4	Ibuprofen	21,794	1,418	2.0	0.1	Drug used for relief of pain
5	Albuterol	20,013	1,569	1.8	0.1	Respiratory tract drug
6	Hydrochlorothiazide	18,669	1,590	1.7	0.1	Cardiovascular-renal drug
7	Aspirin	16,665	1,159	1.5	0.1	Drug used for relief of pain
8	Furosemide	16,444	1,326	1.5	0.1	Cardiovascular-renal drug
9	Codeine	16,344	1,425	1.5	0.1	Drug used for relief of pain
10	Guaifenesin	15,653	1,850	1.4	0.2	Respiratory tract drug
11	Multivitamins, general	15,630	2,255	1.4	0.2	Metabolic-nutrient agent
12	Naproxen	13,793	1,527	1.3	0.1	Drug used for relief of pain
13	Phenylephrine	12,382	1,664	1.1	0.1	Respiratory tract drug
14	Digoxin	12,110	1,008	1.1	0.1	Cardiovascular-renal drug
15	Phenylpropanolamine	12,016	1,643	1.1	0.1	Respiratory tract drug
16	Pseudoephedrine	11,984	1,213	1.1	0.1	Respiratory tract drug
17	Cefaclor	11,152	1,620	1.0	0.1	Antimicrobial agent
18	Prednisone	10,864	1,044	1.0	0.1	Hormone-hormonal mechanism agent
19	Estrogens	10,855	1,044	1.0	0.1	Hormone-hormonal mechanism agent
20	Hydrocortisone	10,828	958	1.0	0.1	Hormone-hormonal mechanism agent
21	Ranitidine	10,645	837	1.0	0.1	Gastrointestinal agent
22	Enalapril	10,247	1,008	0.9	0.1	Cardiovascular-renal drug
23	Hydrocodone	9,945	1,204	0.9	0.1	Respiratory tract drug
24	Potassium replacement solutions	9,476	992	0.9	0.1	Metabolic-nutrient agent
25	Levothyroxine	9,396	792	0.9	0.1	Hormone-hormonal mechanism agent
26	Promethazine	9,264	923	0.8	0.1	Respiratory tract drug
27	Cephalexin	9,218	996	0.8	0.1	Antimicrobial agent
28	Insulin	9,096	926	0.8	0.1	Hormone-hormonal mechanism agent
29	Trimethoprim	8,872	913	0.8	0.1	Antimicrobial agent
30	Polymyxin B	8,832	825	0.8	0.1	Antimicrobial agent
31	Diltiazem	8,811	751	0.8	0.1	Cardiovascular-renal drug
32	Verapamil	8,770	866	0.8	0.1	Cardiovascular-renal drug
33	Triamterene	8,554	743	0.8	0.1	Cardiovascular-renal drug
34	Terfenadine	8,325	1,235	0.8	0.1	Respiratory tract drug
35	Penicillin	8,298	1,290	0.8	0.1	Antimicrobial agent
36	Propoxyphene	8,264	762	0.7	0.1	Drug used for relief of pain
37	Sulfamethoxazole	8,142	838	0.7	0.1	Antimicrobial agent
38	Chlorpheniramine	8,117	1,090	0.7	0.1	Respiratory tract drug
39	Neomycin	8,101	762	0.7	0.1	Antimicrobial agent
40	Theophylline	7,936	812	0.7	0.1	Respiratory tract drug
41	Lisinopril	7,929	940	0.7	0.1	Cardiovascular-renal drug
42	Glyburide	7,863	723	0.7	0.1	Hormone-hormonal mechanism agent
43	Nitroglycerin	7,672	634	0.7	0.1	Cardiovascular-renal drug
44	Beclomethasone	7,451	949	0.7	0.1	Hormone-hormonal mechanism agent
45	Atenolol	7,341	743	0.7	0.1	Cardiovascular-renal drug
46	Diphtheria, pertussis, tetanus vaccine	7,264	813	0.7	0.1	Immunologic agent
47	Triamcinolone	7,247	710	0.7	0.1	Hormone-hormonal mechanism agent
48	Nifedipine	6,984	661	0.6	0.1	Cardiovascular-renal drug
49	Diphenhydramine	6,888	837	0.6	0.1	Respiratory tract drug
50	Alprazolam	6,604	639	0.6	0.1	Central nervous system agent

Table 4. The top 50 and top 10 generic substances most frequently utilized by rank, generic name, and number and percent of drug mentions with standard errors and therapeutic classifications by ambulatory care setting: United States, 1992—Con.

Rank	Generic substances and setting	Number of drug mentions in thousands[1]	Standard error in thousands	Percent[2]	Standard error of percent	Therapeutic classification[3]
	Physician offices					
	All drugs	922,584	46,267	100.0	. . .	. . .
1	Amoxicillin	43,216	4,125	4.7	0.4	Antimicrobial agent
2	Acetaminophen	30,470	2,784	3.3	0.3	Drug used for relief of pain
3	Erythromycin	19,314	1,899	2.1	0.2	Antimicrobial agent
4	Hydrochlorothiazide	17,569	1,575	1.9	0.2	Cardiovascular-renal drug
5	Albuterol	15,476	1,506	1.7	0.2	Respiratory tract agent
6	Aspirin	14,810	1,145	1.6	0.1	Drug used for relief of pain
7	Furosemide	14,515	1,320	1.6	0.1	Cardiovascular-renal drug
8	Guaifenesin	14,012	1,845	1.5	0.2	Respiratory tract agent
9	Multivitamins, general	13,755	2,240	1.5	0.3	Metabolic-nutrient agent
10	Ibuprofen	13,575	1,375	1.5	0.1	Drug used for relief of pain
	Outpatient departments					
	All drugs	63,299	6,813	100.0	. . .	. . .
1	Acetaminophen	2,761	309	4.4	0.4	Drug used for relief of pain
2	Amoxicillin	1,840	436	2.9	0.5	Antimicrobial agent
3	Multivitamins, general	1,605	239	2.5	0.3	Metabolic-nutrient agent
4	Ibuprofen	1,490	180	2.4	0.2	Drug used for relief of pain
5	Albuterol	1,194	164	1.9	0.2	Respiratory tract agent
6	Iron preparations	1,087	162	1.7	0.3	Hematologic agent
7	Insulin	848	139	1.3	0.2	Hormone-hormonal mechanism agent
8	Erythromycin	845	161	1.3	0.1	Antimicrobial agent
9	Aspirin	835	129	1.3	0.1	Drug used for relief of pain
10	Codeine	822	107	1.3	0.2	Drug used for relief of pain
	Emergency departments					
	All drugs	117,420	4,738	100.0	. . .	. . .
1	Acetaminophen	16,898	835	14.4	0.4	Drug used for relief of pain
2	Ibuprofen	6,729	343	5.7	0.2	Drug used for relief of pain
3	Amoxicillin	5,146	422	4.4	0.3	Antimicrobial agent
4	Codeine	4,067	306	3.5	0.2	Drug used for relief of pain
5	Albuterol	3,342	269	2.8	0.2	Respiratory tract agent
6	Promethazine	3,236	236	2.8	0.2	Respiratory tract agent
7	Meperidine	3,040	202	2.6	0.2	Drug used for relief of pain
8	Ketorolac	2,961	173	2.5	0.2	Drug used for relief of pain
9	Hydrocodone	2,353	239	2.0	0.2	Respiratory tract agent
10	Erythromycin	2,093	158	1.8	0.1	Antimicrobial agent

. . . Category not applicable.

[1]Frequency combines mentions of single-ingredient agents with combination-ingredient agents.

[2]Percent is based on respective number of mentions for each setting.

[3]Therapeutic categories are based on the standard drug classifications used in the National Drug Code Directory, 1985 edition (11).

NOTE: The estimated number of patient visits was 762,045,000 to physician offices, 56,605,000 to outpatient departments, and 89,796,000 visits to emergency room departments. There were a total of 908,446,000 patient visits to all ambulatory medical care settings in 1992.

Table 5. The top 50 and top 10 drugs most frequently mentioned by rank, entry name, number and percent of mentions, with corresponding standard errors and therapeutic classifications by ambulatory care setting: United States, 1992

Rank	Entry name and setting[1]	Number of mentions in thousands	Standard error in thousands	Percent	Standard error of percent	Therapeutic classification[2]
	All settings					
	All drugs	1,103,302	47,983	100.0	. . .	. . .
1	Amoxicillin	24,754	2,566	2.2	0.2	Amtimicrobial agent
2	Amoxil	19,395	2,466	1.8	0.2	Amtimicrobial agent
3	Tylenol	17,801	1,945	1.6	0.2	Drug used for relief of pain
4	Lasix	15,339	1,280	1.4	0.1	Cardiovascular-renal drug
5	Motrin	11,272	1,136	1.0	0.1	Drug used for relief of pain
6	Ceclor	10,938	1,603	1.0	0.1	Amtimicrobial agent
7	Prednisone	10,448	1,058	0.9	0.1	Hormone-hormonal mechanism agent
8	Zantac	10,412	830	0.9	0.1	Gastrointestinal agent
9	ASA or aspirin	9,821	875	0.9	0.1	Drug used for relief of pain
10	Vasotec	9,744	981	0.9	0.1	Cardiovascular-renal drug
11	Naprosyn	9,684	1,146	0.9	0.1	Drug used for relief of pain
12	Premarin	9,634	915	0.9	0.1	Hormone-hormonal mechanism agent
13	Ventolin	8,984	995	0.8	0.1	Respiratory tract drug
14	Synthroid	8,895	749	0.8	0.1	Hormone-hormonal mechanism agent
15	Proventil	8,569	897	0.8	0.1	Respiratory tract drug
16	Seldane	8,325	1,235	0.8	0.1	Respiratory tract drug
17	Lanoxin	8,276	835	0.8	0.1	Cardiovascular-renal drug
18	Cardizem	8,226	704	0.7	0.1	Cardiovascular-renal drug
19	Darvocet-N	7,303	683	0.7	0.1	Drug used for relief of pain
20	Diphtheria, pertussis, tetanus vaccine	7,264	814	0.7	0.1	Immunologic agent
21	Keflex	6,924	773	0.6	0.1	Amtimicrobial agent
22	Erythromycin	6,782	802	0.6	0.1	Amtimicrobial agent
23	Benadryl	6,549	816	0.6	0.1	Respiratory tract drug
24	Xanax	6,543	638	0.6	0.1	Central nervous system drug
25	Procardia	6,494	657	0.6	0.1	Cardiovascular-renal drug
26	Prenatal vitamins	6,465	1,223	0.6	0.1	Metabolic-nutrient agent
27	Polio vaccine	6,402	799	0.6	0.1	Immunologic agent
28	Insulin	6,292	831	0.6	0.1	Hormone-hormonal mechanism agent
29	Phenergan	6,215	633	0.6	0.1	Respiratory tract drug
30	Entex	6,179	1,144	0.6	0.1	Respiratory tract drug
31	Tenormin	6,049	653	0.5	0.1	Cardiovascular-renal drug
32	Augmentin	5,968	689	0.5	0.1	Amtimicrobial agent
33	Tylenol #3	5,728	461	0.5	0.1	Drug used for relief of pain
34	Prozac	5,478	521	0.5	0.1	Central nervous system drug
35	HCTZ or hydrochlorothiazide	5,357	700	0.5	0.1	Cardiovascular-renal drug
36	Vicodin	5,221	574	0.5	0.1	Respiratory tract drug
37	Coumadin	4,929	524	0.4	0.1	Hematologic agent
38	Hib-Vax	4,871	709	0.4	0.1	Immunologic agent
39	Inderal	4,871	709	0.4	0.1	Cardiovascular-renal drug
40	Dyazide	4,856	505	0.4	0.1	Cardiovascular-renal drug
41	Mevacor	4,851	625	0.4	0.1	Metabolic-nutrient agent
42	Capoten	4,686	589	0.4	0.1	Cardiovascular-renal drug
43	Micronase	4,569	551	0.4	0.1	Hormone-hormonal mechanism agent
44	Advil	4,565	461	0.4	0.0	Drug used for relief of pain
45	Theo-dur	4,554	562	0.4	0.1	Respiratory tract drug
46	Lodine	4,531	671	0.4	0.1	Drug used for relief of pain
47	Voltaren	4,511	538	0.4	0.1	Drug used for relief of pain
48	Ibuprofen	4,498	568	0.4	0.1	Drug used for relief of pain
49	Flexeril	4,435	552	0.4	0.1	Neurologic agent
50	Calan	4,354	613	0.4	0.1	Cardiovascular-renal drug

Table 5. The top 50 and top 10 drugs most frequently mentioned by rank, entry name, number and percent of mentions, with corresponding standard errors and therapeutic classifications by ambulatory care setting: United States, 1992—Con.

Rank	Entry name and setting[1]	Number of mentions in thousands	Standard error in thousands	Percent	Standard error of percent	Therapeutic classification[2]
	Physician offices					
	All drugs	922,584	46,267	100.0	. . .	. . .
1	Amoxicillin	20,554	2,535	2.2	0.3	Amtimicrobial agent
2	Amoxil	17,492	2,433	1.9	0.3	Amtimicrobial agent
3	Lasix	13,543	1,278	1.5	0.1	Cardiovascular-renal drug
4	Ceclor	9,607	1,597	1.0	0.2	Amtimicrobial agent
5	Zantac	9,037	825	1.0	0.1	Gastrointestinal agent
6	Vasotec	9,022	966	1.0	0.1	Cardiovascular-renal drug
7	Premarin	8,814	911	1.0	0.1	Hormone-hormonal mechanism agent
8	Prednisone	8,808	1,038	1.0	0.1	Hormone-hormonal mechanism agent
9	ASA or aspirin	8,633	874	0.9	0.1	Drug used for relief of pain
10	Naprosyn	8,541	1,142	0.9	0.1	Drug used for relief of pain
	Outpatient departments					
	All drugs	63,299	6,813	100.0	. . .	. . .
1	Tylenol	1,241	193	2.0	0.3	Drug used for relief of pain
2	Amoxicillin	990	134	1.6	0.2	Amtimicrobial agent
3	Prenatal vitamins	836	172	1.3	0.3	Metabolic-nutrient agent
4	Prednisone	784	151	1.2	0.2	Hormone-hormonal mechanism agent
5	Motrin	780	97	1.2	0.1	Drug used for relief of pain
6	Diphtheria, pertussis, tetanus vaccine	697	112	1.1	0.2	Immunologic agent
7	Amoxil	649	356	1.0	0.5	Amtimicrobial agent
8	Premarin	646	106	1.0	0.1	Hormone-hormonal mechanism agent
9	Polio vaccine	637	111	1.0	0.2	Immunologic agent
10	Ferrous sulfate	615	123	1.0	0.2	Hematologic agent
	Emergency departments					
	All drugs	117,420	4,738	100.0	. . .	. . .
1	Tylenol	8,334	508	7.1	0.3	Drug used for relief of pain
2	Motrin	3,574	227	3.0	0.2	Drug used for relief of pain
3	Amoxicillin	3,210	283	2.7	0.2	Amtimicrobial agent
4	Toradol	2,961	173	2.5	0.2	Drug used for relief of pain
5	Phenergan	2,873	218	2.4	0.2	Respiratory tract drug
6	Demerol	2,825	192	2.4	0.1	Drug used for relief of pain
7	Tylenol #3	2,476	199	2.1	0.2	Drug used for relief of pain
8	Benadryl	1,819	110	1.5	0.1	Respiratory tract drug
9	Oxygen	1,639	138	1.4	0.1	Anesthetic or adjunct drug
10	Vistaril	1,619	163	1.4	0.1	Central nervous system drug

. . . Category not applicable.

[1] The trade or generic name used by the health care provider on the prescription or other medical records The use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services Because of its nonspecific nature, the entry ''allergy relief or shots'' is omitted.

[2]Therapeutic categories are based on the standard drug classifications used in the National Drug Code Directory, 1985 edition (11).

NOTE: The estimated number of patient visits to physician offices was 762,045,000, 56,605,000 patient visits to outpatient departments, and 89,796,000 visits to emergency room departments There was a total of 908,446,000 patient visits to all ambulatory medical care settings in 1992.

Table 6. Number and percent distribution of drug mentions, percent of visits with drug mentions, and drug mention rate with corresponding standard errors for provider characteristics by ambulatory care setting: United States, 1992

Provider characteristic	Number of drug mentions in thousands	Standard error of drug mentions in thousands	Percent distribution of drug mentions	Standard error of percent distribution	Percent of visits with drug mentions	Standard error of percent visits with drug mentions	Average number of drug mentions per 100 visits	Standard error of average number of drug mentions per 100 visits
Physician offices	922,584	46,267	100.0	. . .	63.8	1.0	121.1	3.1
Physician identity:								
Doctor of medicine	867,422	46,562	94.0	0.8	63.7	1.0	121.0	3.2
Doctor of osteopathy	55,162	6,494	6.0	0.8	65.3	2.3	122.6	7.7
Physician specialty:								
General and family practice	315,046	29,439	34.1	2.4	75.5	1.6	143.7	5.7
Internal medicine	181,604	18,288	19.7	1.4	79.3	2.1	181.1	10.6
Pediatrics	104,258	10,687	11.3	1.4	68.9	2.3	108.5	6.0
Cardiovascular diseases	40,630	5,005	4.4	0.4	85.8	2.7	277.1	18.8
Obstetrics and gynecology	40,563	4,939	4.4	0.9	47.4	3.3	59.3	4.7
Ophthalmology	35,531	6,414	3.9	0.7	41.0	3.2	76.3	9.2
Dermatology	28,429	3,524	3.1	0.5	59.0	4.4	99.1	8.8
Psychiatry	20,715	2,136	2.2	0.3	57.7	3.6	104.5	8.2
Otolaryngology	16,634	2,368	1.8	0.4	50.1	3.2	72.6	4.7
Orthopedic surgery	15,714	2,188	1.7	0.4	31.6	2.5	41.4	4.2
General surgery	14,594	2,334	1.6	0.3	34.5	3.2	60.0	6.1
Neurology	9,662	1,187	1.0	0.1	65.4	2.5	125.3	8.8
Urological surgery	9,024	1,424	1.0	0.2	40.5	3.0	60.3	7.0
All other specialties	90,179	9,128	9.8	0.8	65.2	3.3	149.2	9.2
Outpatient departments	63,299	6,813	100.0	. . .	53.3	2.1	118.3	5.7
Clinic type:								
General Medicine	39,064	6,116	61.7	4.2	62.3	3.1	138.3	8.6
Pediatrics	8,089	1,342	12.8	2.3	55.3	2.5	106.2	7.4
Substance abuse	6,018	1,557	9.5	2.5	45.0	4.8	86.1	10.1
Surgery	5,978	1,349	9.4	1.8	37.1	3.7	83.2	13.0
Obstetrics and gynecology	3,993	652	6.3	1.3	42.7	3.8	69.6	7.4
Other	158	130	0.2	0.3	15.0	7.8	19.3	10.3
Emergency departments	117,420	4,738	100.0	. . .	69.1	0.8	130.8	2.5
Facility type:								
Voluntary/nonprofit	75,673	4,372	64.4	2.6	69.4	1.0	128.1	2.7
Proprietary	26,098	3,031	22.2	2.3	69.2	1.9	137.5	6.4
Non-Federal government	15,649	2,297	13.3	1.8	67.9	1.6	133.0	8.7

. . . Category not applicable.

Table 7. Percent distribution of ambulatory care visits by selected visit characteristics and corresponding percent of visits with medication therapy and drug mention rate, for each ambulatory setting: United States, 1992

Selected visit characteristics	Percent distribution of all visits			Percent of visits with medication therapy			Average number of drug mentions per 100 visits		
	Physician offices	Outpatient departments	Emergency departments	Physician offices	Outpatient departments	Emergency departments	Physician offices	Outpatient departments	Emergency departments
All visits	100.0	100.0	100.0	63.8	53.3	69.1	121.1	111.8	130.8
Source of payment:[1]									
Medicaid	11.0	31.2	22.7	69.6	54.9	70.5	134.2	115.2	134.2
Medicare	18.3	13.8	13.2	66.3	60.0	67.4	162.9	156.9	153.4
HMO/other prepaid	18.6	7.1	6.9	64.5	52.9	66.3	107.2	108.8	122.4
Private/commercial	28.5	19.6	31.1	60.7	52.1	70.6	105.6	100.3	128.9
Self-pay	14.5	12.0	13.4	64.9	52.1	70.8	116.6	92.0	126.7
Other	9.0	16.4	12.7	58.0	47.4	64.9	104.8	97.1	114.8
Major diagnosis category:[2]									
Illness	75.7	67.7	61.4	70.0	60.3	75.4	137.3	131.6	151.7
Injury	7.5	7.4	32.7	50.2	39.4	64.2	76.5	60.9	105.4
Supplementary	16.8	24.9	5.9	42.1	38.5	31.9	67.8	73.3	53.7
Patient status:[3]									
Old patient	85.3	78.0	6.7	65.8	55.5	55.4	127.2	118.2	103.0
New patient	14.7	22.0	93.3	52.1	45.6	70.1	85.9	89.1	132.8
Providers seen:[4]									
Physician	98.9	89.7	88.7	63.7	52.9	69.9	121.1	111.8	132.7
Nonphysician	1.1	10.3	11.3	70.7	57.5	63.3	121.5	112.3	115.3

Selected visit characteristics	Standard error of percent distribution of visits			Standard error of percent of visits with medication therapy			Standard error of average number of drugs mentioned per 100 visits		
	Physician settings	Outpatient departments	Emergency departments	Physician settings	Outpatient departments	Emergency departments	Physician settings	Outpatient departments	Emergency departments
All visits	. . .	. . .	. . .	0.9	2.1	0.8	3.1	5.7	2.5
Source of payment:[1]									
Medicaid	1.0	2.1	1.0	2.4	2.2	1.3	5.6	7.1	3.6
Medicare	0.8	1.3	0.5	1.6	3.8	1.3	6.7	14.6	5.7
HMO/other prepaid	1.3	1.0	0.8	1.6	4.3	2.4	4.2	11.2	7.2
Private/commercial	1.1	1.9	1.0	1.5	4.1	1.0	3.8	7.2	2.6
Self-pay	1.0	1.2	0.6	1.7	2.6	1.1	4.7	5.5	2.9
Other	0.7	1.6	0.7	2.7	2.7	1.2	7.7	7.1	3.9
Major diagnosis category:[2]									
Illness	0.8	1.3	0.7	0.9	2.4	0.8	3.4	6.8	3.0
Injury	0.5	0.7	0.7	2.4	4.5	1.1	3.9	7.2	2.3
Supplementary	0.8	1.4	0.3	2.3	2.0	1.5	3.6	4.4	2.8
Patient status:[3]									
Old patient	0.5	1.7	0.4	1.0	2.1	2.0	3.4	6.1	5.9
New patient	0.5	1.7	0.4	1.4	3.7	0.8	2.9	8.5	2.5
Providers seen:[4]									
Physician	0.3	1.0	1.3	1.0	2.1	0.8	3.1	5.7	2.5
Non-physician	0.3	1.0	1.3	8.9	3.6	2.3	8.8	8.7	5.7

. . . Category not applicable.

[1]Source of payment categories reclassified to allow only one source per visit according to the following hierarchy: Medicaid, Medicare, HMO, private/commercial, self-pay, and other (no charge, other government, or unspecified source).

[2]Major diagnosis for visit determined using the ICD–9–CM principal diagnosis codes as follows; Illness=codes 001–799, Injury=codes 800–999, and Supplementary classification=codes V01–V99. Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (13).

[3]Old patient status for emergency departments based on an injury or illness follow-up.

[4]Physician seen based on ''provider seen'' item for hospital settings and the ''duration'' item in physician offices. Office-based visits where the patient did not see a physician were coded as having a duration of 0 minutes.

NOTES: Based on the 1992 estimates of the number of patient visits to physician offices (762,045,000), outpatient departments (56,605,000), and emergency departments (89,796,000). HMO is health maintenance organization.

Table 8. The top 10 generic substances most frequently utilized by rank, generic name, percent of mentions, and drug mention rate for office-based physician visits: United States, 1980, 1992

Rank	Generic name	Percent		Average of drug mention rate per 100 visits		Therapeutic classification[6]
		1980[1,2]	1992[2,3]	1980[4]	1992[5]	
	1980					
	All drugs	100.0	100.0	118.0	121.1	. . .
1	Hydrochlorothiazide[7]	3.9	3.9	4.6	4.7	Cardiovascular-renal drug
2	Aspirin[7]	2.8	2.8	3.3	3.4	Drugs used for relief of pain
3	Penicillin	2.5	0.9	3.0	1.1	Antimicrobial agent
4	Phenylpropanolamine	2.4	1.3	2.8	1.6	Respiratory tract drug
5	Erythromycin[7]	2.3	2.3	2.7	2.8	Antimicrobial agent
6	Phenylephrine	2.3	1.3	2.7	1.6	Respiratory tract drug
7	Tetracycline	1.9	0.5	2.2	0.5	Antimicrobial agent
8	Pseudoephedrine	1.8	1.3	2.1	1.6	Respiratory tract drug
9	Acetaminophen[7]	1.8	3.3	2.1	4.0	Drugs used for relief of pain
10	Digoxin	1.8	1.3	2.1	1.6	Cardiovascular-renal drug
	1992					
	All drugs	100.0	100.0	118.0	121.1	. . .
1	Amoxicillin	1.6	4.7	1.9	5.7	Antimicrobial agent
2	Acetaminophen[7]	1.8	3.3	2.1	4.0	Drugs used for relief of pain
3	Erythromycin[7]	2.3	2.3	2.7	2.8	Antimicrobial agent
4	Hydrochlorothiazide[7]	3.9	3.9	4.6	4.7	Cardiovascular-renal drug
5	Aspirin[7]	2.8	2.8	3.3	3.4	Drugs used for relief of pain
6	Albuterol	–	1.7	–	2.1	Respiratory tract drug
7	Furosemide	1.5	1.6	1.7	1.9	Cardiovascular-renal drug
8	Guaifensin	1.3	1.5	1.5	1.8	Respiratory tract drug
9	Multivitamins, general	1.0	1.5	1.2	1.8	Metabolic-nutrient agent
10	Ibuprofen	0.9	1.5	1.0	1.8	Drug used for relief of pain

. . . Category not applicable.
– Quantity zero.
[1]Based on 679,593,000 drug mentions for 1980.
[2]Total drug mentions for 1980 and 1992 combine mentions of single-ingredient agents with combination-ingredient agents.
[3]Based on 922,584,000 drug mentions for 1992.
[4]Based on 575,745,000 visits for 1980.
[5]Based on 762,045,000 visits for 1992.
[6]Therapeutic categories are based on the standard drug classifications used in the National Drug Code Directory, 1985 edition (11).
[7]Common to top 10 for both years.

Technical notes

This report is based on data collected during the period January 1992 through December 1992 in the National Ambulatory Medical Care Survey (NAMCS) and December 1991 through December 1992 in the National Hospital Ambulatory Medical Care Survey (NHAMCS). The NAMCS is a national probability sample survey of ambulatory care visits to private office-based physicians. The NHAMCS is a national probability sample survey of non-Federal, general, and short-stay hospitals. Both surveys are conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention. The NAMCS and NHAMCS survey designs and procedures are presented briefly below. Detailed descriptions of the plan and operations of the NAMCS and NHAMCS have been published (17,18). Summary reports and reports on special topics using NAMCS and NHAMCS data are presented in Series 13 of the NCHS Vital and Health Statistics series as well as in Advance Data from Vital and Health Statistics reports. NAMCS and NHAMCS microdata are also available on public-use tape and CD-ROM.

Statistical design

Scope of the survey

The target universe of the 1992 NAMCS included office visits made in the United States by ambulatory patients to nonfederally employed physicians who were principally engaged in office practice, but not in the specialties of anesthesiology, pathology, or radiology. Physicians who are principally engaged in teaching, research, or administration were also excluded. The sampling frame included physicians who were classified by the American Medical Association (AMA) or the American Osteopathic Association (AOA) as ''office-based, patient care.'' Visits to private nonhospital-based clinics and health maintenance organizations were within the scope of the survey, but those that took place in government-operated facilities and hospital-based outpatient departments were not.

The target population of the NHAMCS includes visits in the United States to emergency departments (ED's) and outpatient departments (OPD's) of noninstitutional general and short-stay hospitals, exclusive of Federal, military, and Veterans Administration hospitals. Only OPD clinics under the supervision of physicians were included within the scope of the survey. Clinics specializing in radiology, laboratory services, physical rehabilitation, or other ancillary services were excluded from the survey. Telephone contacts were excluded in both NAMCS and NHAMCS.

Characteristics of the physician's practice (such as primary specialty and type of practice) and the hospital (such as ownership and expected number of OPD and/or ED visits) were obtained from the physician or hospital administrator during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for data collection for both surveys. Data-processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Surveys Section, Research Triangle Park, North Carolina.

Sample design

NAMCS uses a multistage probability sample design involving samples of primary sampling units (PSU's), physician practices within PSU's, and patient visits within physician practices. The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England). For 1992, a sample of 3,000 nonfederal office-based physicians was selected from master files maintained by the AMA and AOA. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation. Of those screened, 858 physicians were ruled ineligible (out of scope) due to being retired; being employed primarily in teaching, research, or administration; or other reasons. The remaining 2,142 physicians were in scope or eligible to participate in the survey. The physician response rate for the 1992 NAMCS was 71.4 percent.

Sample physicians were asked to complete Patient Record forms (figure 1) for a systematic random sample of office visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 34,606 Patient Record forms, on which they recorded 36,647 drug mentions.

NHAMCS utilizes a 4-stage survey probability sample design involving samples of PSU's, hospitals within PSU's, outpatient clinics and emergency service areas (ESA's) within hospitals, and patient visits within outpatient clinics and ESA's. For 1992, a sample of 524 non-Federal, short-stay, or general hospitals was selected from the SMG Hospital Market Database. Of this group, 474 hospitals were in scope, or eligible to participate in the survey. The hospital response rate for the NHAMCS during this period was 93 percent. Based on the induction interview, 314 of the sample hospitals had OPD's and 437 of the sample hospitals had ED's. Hospital staff were asked to complete Patient Record forms (figures 2 and 3) for a systematic random sample of patient visits occurring during a randomly assigned 4-week reporting period. The number of Patient Record forms completed for OPD's was 35,114, on which they recorded 38,507 drug mentions. The number of Patient Record forms completed for ED's was 36,271, on which they recorded 45,844 drug mentions.

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 presented in tables of this report and used in tests of significance were approximated using SUDAAN software. 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 (19). Standard errors for all estimates are presented in each table. The relative standard error of an estimate can be calculated by dividing the standard error by the estimate itself. The result is then expressed as a percent of the estimate.

Nonsampling errors—Estimates based on the 1992 NAMCS and NHAMCS are subject to nonsampling as well as sampling errors. Nonsampling errors include reporting and processing errors, as well as biases due to nonresponse or incomplete response. Although the magnitude of the nonsampling errors cannot be computed, these errors are kept to a minimum by procedures built into the operation of the survey. To eliminate ambiguities and encourage uniform reporting, careful attention was given to the phrasing of questions, terms, and definitions. Also, extensive pretesting of most data items and survey procedures was also performed. Quality control procedures and consistency and edit checks reduced errors in data coding and processing. Because survey results are subject to sampling and nonsampling errors, the total error will be larger than the error from sampling variability alone.

Adjustments for nonresponse

Office-based 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.

Hospital nonresponse—Estimates from NHAMCS data were adjusted to account for sample hospitals that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of nonresponse on final estimates by imputing to nonresponding hospitals data from visits to similar hospitals. For this purpose, hospitals were judged similar if they were in the same region, ownership control group, and metropolitan statistical area control group.

ED and/or clinic nonresponse—Estimates from NHAMCS data were adjusted to account for ED's and sample clinics that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of nonresponse on final estimates by imputing to nonresponding ED's or clinics data from visits to similar ED's or clinics. For this purpose, emergency departments or clinics were judged similar if they were in the same ED or clinic group.

Test of significance and rounding

In this report, the determination of statistical inference was based on the two-tailed *t*-test. The Bonferroni inequality was used to establish the critical value for statistical significance and differences (0.05 level of significance over all analyses performed on estimates in a table). Terms relating to differences such as ''greater than'' or ''less than'' indicate that the differences are statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant. Chi-square tests were performed using SUDAAN routines that take into account the complex sampling design.

Estimates in this report are rounded to the nearest thousand. For this reason, detailed figures within tables do not always add to totals. Rates and percents are calculated based on the original, unrounded figures and may not agree precisely with rates and 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. Patients are defined as in scope or out of scope as follows:

- *In scope*—In NAMCS, patients seen by physicians or staff members in their private offices. In NHAMCS, patients seen by hospital staff in an in-scope emergency service area or clinic.
- *Out of scope*—Patients seen in a nursing home or other extended care institution or at home. Patients who contact and receive advice from health care providers via telephone. Patients who come to the hospital or office only to leave a specimen, to pick up insurance forms, to pick up medication, or to pay a bill.

Clinic—A clinic is an administrative unit within an organized outpatient department of a hospital that provides ambulatory medical care under the supervision of a physician. This excludes the ''hospital as landlord'' arrangement in which the hospital only rents space to a physician group and is not otherwise involved in the delivery of services. Clinics are grouped into the following six specialty groups for purposes of systematic sampling and nonresponse adjustment: general medicine, surgery, pediatrics, obstetrics/gynecology, substance abuse, and other. The following are examples of the types of clinics excluded: ambulatory surgery centers, chemotherapy, employee health service, renal dialysis, methadone maintenance, and radiology.

Control status—Controlled medications, because of their significant potential for dependence or abuse and their possible diversion into illicit channels are regulated under Federal law by the Department of Justice, Drug Enforcement Agency. The Controlled Substances Act of 1970 characterizes each controlled drug into one of five schedules. Schedule I drugs, like heroin and LSD, have a high potential for abuse and no current accepted medical usefulness for treatment in the United States. Schedule I drugs are outside the scope of this report. Each successive schedule, II through V, reflects a decreasing degree of dependence and potential for abuse.

Drug mention—A drug mention is the physician's or other health care provider's entry on the Patient Record form of a pharmaceutical agent—by any route of administration—for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are

nonprescription and prescription drugs. Along with all new drugs, the physician or other health care provider also records continued medications if the patient was specifically instructed during the visit to continue the medication. Up to five medications may be reported per visit.

Emergency department—An emergency department (ED) is a hospital facility staffed 24 hours a day for the provision of unscheduled outpatient services to patients whose conditions require immediate care. If an ED provided emergency services in different areas of the hospital, then all of these areas were selected with certainty into the sample. Off-site ED's open less than 24 hours a day are included if staffed by the hospital's emergency department.

Emergency service area—The area within the emergency department where emergency services are provided. This includes services provided under the ''hospital as landlord'' arrangement in which the hospital rents space to a physician group.

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

Office-based 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 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.

Outpatient department—An outpatient department is a hospital facility where nonurgent ambulatory medical care is provided under the supervision of a physician.

Ownership—Hospitals are designated according to the primary owner of the hospital based on the SMG Hospital Market Database.

- *Government, non-Federal*—Hospitals operated by a State or local government.
- *Proprietary*—Hospitals operated by individuals, partnerships, or corporations for profit.
- Voluntary nonprofit—Hospitals operated by a religious or other nonprofit organization.

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

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