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Practice Patterns of the Office-Based Ophthalmologist, National Ambulatory Medical Care Survey, 1985

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Introduction

In this report, the findings of the National Ambulatory Medical Care Survey (NAMCS) are used to describe the practice patterns of office-based ophthalmologists over the 12-month period from March 1985 through February 1986. The NAMCS limits itself to that portion of ambulatory care provided in the physician's office. The National Center for Health Statistics, which periodically conducts the survey, obtains the NAMCS data base from a sample of non-Federal physicians selected from the doctors of medicine and doctors of osteopathy who are primarily engaged in office-based, patient-care practice throughout the coterminous United States.

Because the estimates presented in this report are based on a sample rather than on the entire universe of office visits, the data are subject to sampling variability. The Technical notes at the end of this report provide guidelines for judging the precision of the estimates. They also supply a brief description of the sample design and a copy of the data collection instrument.

Most Americans requiring eye care seek it among the following professional providers:

- Ophthalmologists (or oculists)
- Other physicians (doctors of medicine or osteopathy)
- Optometrists
- Opticians

Figure 1 charts the scope of services each group is qualified to perform (Committee on Eye Care for the American People, 1987). Although a substantial degree of overlapping is evident among the four professional groups, ophthalmologists are the

Service	*Ophthalmologists*	*Physicians other than ophthalmologists*	*Optometrists*	*Opticians*
Diagnose systemic disease	X	X		
Screen for eye disease	X	X	X	
Diagnose eye disease	X	X	([1])	
Treat eye disease	X	X	([1])	
Perform eye surgery	X			
Perform refraction to determine need for eyeglasses and contact lenses	X		X	
Prescribe eyeglasses and contact lenses	X		X	
Dispense and fit eyeglasses and contact lenses	X		X	X

[1] Laws in certain States permit optometrists to use drugs in diagnosis and treatment of eye disease.

SOURCE: Committee on Eye Care for the American People. 1987. *Eye Care for the American People.* San Francisco: American Academy of Ophthalmology. (Copyright 1987: Used with the permission of the American Academy of Ophthalmology.)

Figure 1. Eye professionals and their scope of services

only eye-care providers professionally and legally qualified to diagnose and treat all eye problems.

The last comprehensive survey of eye care conducted by the National Center for Health Statistics took place in 1979 and 1980 (NCHS, 1984). A population-based survey, it found that about one of every three Americans made at least one eye-care visit during the 12 months prior to the interview. Forty-three percent of all visits for eye care were made to ophthalmologists, compared with 32 percent to optometrists and 16 percent to physicians other than ophthalmologists. Visits to opticians or optical establishments accounted for most of the remaining 9 percent of visits.

In 1985, office-based ophthalmologists constituted about 92 percent of all active, nonresident ophthalmologists (American Medical Association, 1986). The primary purpose of this report is to describe the practice characteristics of these office-based ophthalmologists, as derived from the estimated 40.1 million office visits made to them over the survey period. As a secondary aim the report explores the role played by other office-based physicians in the screening, diagnosis, and treatment of eye problems.

At appropriate points in the report, contrasts are made with earlier NAMCS findings. This is done chiefly to assess the possible impact on the ophthalmologist's office practice associated with the sometimes dramatic developments in eye-care requirements and delivery that have occurred in the recent past. Among these developments are the following:

- Population growth, especially the disproportionate increase in the elderly subpopulation
- Expanding technologies of ambulatory ophthalmologic care
- Reductions in episodes of hospitalization and in average length of stay
- Competition with other eye-care professionals and the growth of alternative systems of eye-care delivery

Data highlights

General

From March 1985 through February 1986, ophthalmologists within the scope of the National Ambulatory Medical Care Survey (NAMCS) accounted for an estimated 40,062,000 office visits, about 173 visits for every 1,000 members of the civilian noninstitutionalized population. In sheer number of office visits, ophthalmologists were second only to physicians in the primary care specialties (table 1).

Between 1980 and 1985, there was a 30-percent increase in the number of visits to ophthalmologists. In the same time span, there was a concomitant increase of about 20 percent in the number of office-based ophthalmologists, resulting in 1985 in roughly 5 ophthalmologists for every 100,000 Americans.

About 83 percent of these ophthalmologists practiced within the limits of standard metropolitan statistical areas (American Medical Association, 1986), accounting for 88 percent of the 40.1 million visits made to all ophthalmologists in 1985 (table 2). From the findings in table 2, it is clear that ophthalmologists were not unique in their strong preference for metropolitan practice; the preference was shared by most other office-based specialists. Visit distributions in table 2 also indicate an above-average tendency for ophthalmologists to favor solo practice over multiple-member practice forms. There is evidence, however, of a trend away from solo practice. In 1975, multiple-member practice accounted for about 35 percent of visits to ophthalmologists; in 1985 the proportion was 42 percent.

Table 1. Number and percent distribution of visits to office-based physicians by physician specialty: United States, 1985

Specialty of office-based physician	*Visits*	
	Number in thousands	Percent distribution
All office-based physicians	636,386	100.0
General or family practice	193,995	30.5
Internal medicine	73,727	11.6
Pediatrics	72,693	11.4
Obstetrics and gynecology	56,642	8.9
Ophthalmology	40,062	6.3
Orthopedic surgery	31,482	4.9
General surgery	29,858	4.7
Dermatology	24,124	3.8
Psychiatry	17,989	2.8
Otolaryngology	16,097	2.5
Urological surgery	11,699	1.8
Cardiovascular disease	10,617	1.7
Neurology	4,992	0.8
All other office-based physicians	52,408	8.2

Reasons for making an eye-care visit

A useful approach to understanding the clinical scope and content of ophthalmologic office practice is first to examine the reasons that motivated a person to visit an ophthalmologist. These reasons are summarized as follows:

Principal reason for visit	*Percent of visits*
All visits to the ophthalmologist (40,062,000)	100.0
Visits due to abnormal appearance, sensation, or function of the eye (symptom-motivated visits)	41.6
Visits to obtain diagnostic or screening services	20.5
Visits for an eye problem already diagnosed	17.9
Visits for a specific form of treatment	14.9
Visits due to injury or adverse effect	2.6
Other (for example, visit to obtain test results)	2.5

SOURCE: National Center for Health Statistics, D. Schneider, L. Appleton, and T. McLemore. 1979. A reason for visit classification for ambulatory care. *Vital and Health Statistics*. Series 2, No. 78. DHEW Pub. No. (PHS) 79–1352. Public Health Service. Washington: U.S. Government Printing Office.

Table 3 offers a listing of the symptoms or signs of emerging eye problems that the ophthalmologist encountered in office practice. When visits for eye injuries (corneal abrasion, black eye, and so forth) are numbered with other symptom-motivated visits, the list accounts for an estimated 16.7 million symptom-motivated visits, or about 44 percent of all visits to office-based ophthalmologists.

The 10 symptoms or signs that appear in table 3 also motivated some 5.3 million visits to physicians other than ophthalmologists. Thus, of a total of 22.0 million symptom-motivated, eye-care visits, these practitioners—chiefly phy-

Table 2. Percent distribution of office visits by physician location and type of practice, according to physician specialty: United States, 1985

Specialty of office-based physician	All visits	Location of practice[1]		Type of practice	
		Metropolitan	Nonmetropolitan	Solo	Multiple member
	Percent distribution of visits				
All office-based physicians	100.0	79.6	20.4	50.9	49.1
General or family practice	100.0	64.9	35.1	54.8	45.1
Internal medicine	100.0	82.5	17.5	46.1	53.9
Pediatrics	100.0	87.3	12.7	35.4	64.6
Obstetrics and gynecology	100.0	86.6	13.4	49.8	50.2
Ophthalmology	100.0	88.3	11.7	58.0	42.0
Orthopedic surgery	100.0	87.4	12.6	35.6	64.4
General surgery	100.0	70.9	29.1	62.5	37.6
Dermatology	100.0	93.5	6.5	82.5	17.7
Psychiatry	100.0	96.6	3.4	72.5	27.4
Otolaryngology	100.0	89.2	10.8	54.8	45.1
Cardiovascular disease	100.0	88.4	11.6	39.1	61.0
Neurology	100.0	86.7	11.3	39.9	60.1
Urological surgery	100.0	84.8	15.2	38.7	61.3
All other office-based physicians	100.0	86.9	13.1	45.5	54.5

[1]The term "metropolitan" denotes a visit made within a standard metropolitan statistical area.

Table 3. Number and percent distribution of symptom-motivated visits to office-based ophthalmologists by the symptoms or signs of eye problems presented by patients: United States, 1985

Symptom or sign of eye problem[1]	Symptom-motivated visits	
	Number in thousands	Percent distribution
All eye symptoms or signs	16,734	100.0
Vision dysfunctions[2]	8,546	51.1
Abnormal sensations of the eye[3]	3,117	18.6
Symptoms not elsewhere classified[4]	1,265	7.6
Abnormal appearance of eyes	880	5.3
Symptoms of eyelids	863	5.2
Discharge from eye	626	3.7
Eye injury (corneal abrasion, black eye, and so forth)	451	2.7
Foreign body	409	2.4
Eye infection and inflammation	297	1.8
Abnormal eye movements	280	1.7

[1]Based on National Center for Health Statistics, D. Schneider, L. Appleton, and T. McLemore. 1979. A reason for visit classification for ambulatory care [RVC]. *Vital and Health Statistics.* Series 2, No. 78. DHEW Pub. No. (PHS) 79–1352. Public Health Service. Washington: U.S. Government Printing Office.
[2]Blindness, diminished vision, extraneous vision, and double vision. Excludes refractive errors.
[3]Pain, itching, burning, and strain.
[4]Contact lens problems, allergy, and swelling.

sicians in primary-care practice—accounted for about 24 percent, as the following tabulation shows:

Specialty of the office-based physician	Percent of visits
All symptom-motivated, eye-care visits (22,020,000)	100.0
Ophthalmologists	76.0
Primary-care physicians	19.2
General or family practitioners	12.6
Pediatricians	3.7
Internists	2.9
Other office-based physicians	4.8

Certain symptoms of eye problems were more likely than others to be presented to the nonophthalmologist, as the findings in table 4 show. These generally were indicators of acute conditions (for example, eye injury, infection, or inflammation) that did not require the ophthalmologist's expertise, lying within the therapeutic reach of other physicians. At the 9 percent of these 5.3 million visits where referral did occur, vision dysfunction was usually involved, requiring more specialized attention.

Diagnostic and screening activity

At 83 percent of their office visits, ophthalmologists ordered or provided at least one diagnostic or screening procedure. The intensity of their screening function is evident in the use of visual acuity testing at 31.2 million (76 percent) of their office visits. It is interesting to note the degree to which ophthalmologists shared overall screening for visual acuity with other office-based specialists:

Specialty of the office-based physician	Percent of visits
Visual acuity testing by all office-based physicians: (40,945,000 visits)	100.0
Ophthalmologists	76.1
Primary-care physicians	18.2
General or family practitioners	8.5
Pediatricians	6.1
Internists	2.1
Obstetricians/gynecologists	1.5
Other office-based physicians	5.7

Thus, physicians other than ophthalmologists were found to test for visual acuity at 9.7 million of their office visits, accounting for nearly 24 percent of this vital screening function.

Principal diagnoses and professional activities

The most precise and cogent description of the clinical content of the ophthalmologist's office practice lies in the formal diagnoses assigned by the physician. Table 5 offers a

Table 4. Number of visits to all office-based physicians chiefly motivated by an active symptom or sign of an eye problem and percent distribution of these visits by type of physician, according to specific eye symptom or sign: United States, 1985

Symptom or sign of eye problem[1]	Visits		
	All office-based physicians	Ophthalmologists	Other M.D. or D.O. physicians[2]
	Number in thousands	Percent distribution	
All symptom-motivated visits for eye care	22,020	76.0	24.0
Vision dysfunctions[3]	9,266	92.2	7.8
Abnormal sensations of the eye[4]	4,170	74.8	25.2
Symptoms not elsewhere classified[5]	1,980	63.9	36.1
Abnormal appearance of the eye	1,627	54.1	45.9
Symptoms of eyelids	1,238	69.7	30.3
Discharge from eye	1,175	53.2	46.8
Eye injury (black eye, corneal abrasion, and so forth)	855	49.7	50.3
Foreign body	704	58.1	*41.9
Eye infection and inflammation	701	42.4	57.6
Abnormal eye movements	*304	91.9	*8.1

[1]Based on National Center for Health Statistics, D. Schneider, L. Appleton, and T. McLemore. 1979. A reason for visit classification for ambulatory care [RVC]. *Vital and Health Statistics.* Series 2, No. 78. DHEW Pub. No. (PHS) 79–1350. Public Health Service. Washington: U.S. Government Printing Office.
[2]M.D. is doctor of medicine; D.O. is doctor of osteopathy.
[3]Blindness, diminished vision, extraneous vision, and double vision. Excludes refractive errors.
[4]Pain, itching, burning, and strain.
[5]Contact lens problems, allergy, and swelling.

Table 5. Number and percent distribution of the 23 principal diagnoses or professional activities most frequently rendered by office-based ophthalmologists in rank order of frequency of mention: United States, 1985

Rank	Principal diagnosis or other professional activity of ophthalmologist	ICD–9–CM code[1]	Visits		
			Number in thousands	Percent distribution	Cumulative percent
...	All principal diagnoses or other contacts	...	40,062	100.0	...
1	Cataract and cataract surgery	366; V43	8,085	20.2	20.2
2	Disorders of refraction and accommodation	367	8,058	20.1	40.3
3	Glaucoma	365	4,207	10.5	50.8
4	Other disorders of eye[2]	379	2,610	6.5	57.3
5	Disorders of conjunctiva	372	2,231	5.6	62.9
6	Other retinal disorders[3]	362	1,631	4.1	67.0
7	Inflammation of eyelids	373	1,227	3.1	70.1
8	Keratitis	370	783	2.0	72.1
9	Fitting and adjustment of spectacles and contact lenses	V53	773	1.9	74.0
10	Strabismus and other disorders of binocular eye movements	378	705	1.8	75.8
11	Diabetes with ophthalmic manifestations	250.5	661	1.6	77.4
12	Disorders of iris and ciliary body	364	546	1.4	78.8
13	Corneal opacity and other disorders of cornea	371	512	1.3	80.1
14	Disorders of lacrimal system	375	511	1.3	81.4
15	Visual disturbances[4]	368	444	1.1	82.5
16	Superficial injury of eye and adnexa	918	411	1.0	83.5
17	Observation and evaluation for suspected conditions	V71	368	0.9	84.4
18	Foreign body on external eye	930	355	0.9	85.3
19	Retinal detachments and defects	361	350	0.9	86.2
20	Other disorders of eyelids	374	321	0.8	87.0
21	Congenital anomalies of eye	743	200	0.5	87.5
22	Contusion of eye and adnexa	921	179	0.4	87.9
23	Disorders of optic nerve and visual pathways	377	171	0.4	88.3
...	Residual	...	4,723	11.7	100.0

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM). The V code subclassification is provided for occasions when circumstances other than a disease or injury classifiable to categories 001–999 (the main body of the ICD) are recorded as "diagnoses" or "problems."
[2]Scleritis and episcleritis, other disorders of sclera, disorders of vitreous body, aphakia and other disorders of lens, anomalies of pupillary function, nystagmus and other irregular eye movements, and other specified and unspecified disorders.
[3]Chiefly macular degeneration.
[4]Amblyopia, subjective visual disturbances, diplopia, other disorders of binocular vision, visual field objects, color vision deficiencies, night blindness, and other specified and unspecified disorders.

ranked listing of the 23 first-listed (principal) diagnoses or professional procedures rendered by office-based ophthalmologists. The list accounts for 88 percent of their office practice. Prominent are the vision problems and procedures associated with advancing age; for example, glaucoma, cataract, artificial lens replacement, and macular degeneration—a reminder that the largest single proportion (44 percent) of visits to ophthalmologists were made by patients 65 years old and over. The lists in table 6 further illustrate the substantial extent to which the patient's age affected the clinical content of ophthalmologic office practice. For example, diagnoses of disorders of refraction and of conjunctiva, the first-ranked diagnoses among patients under 65 years of age, are supplanted by cataract and glaucoma in the age group 65 years and over.

Of the diagnoses listed in tables 5 and 6, physicians other than ophthalmologists were chiefly involved with two—disorders of the conjunctiva and superficial injuries of the eye and adnexa. They treated about 50 percent of the conjunctival disorders and 55 percent of the injuries. General practitioners, family physicians, and pediatricians accounted for most of this effort.

Table 7 offers selected comparisons between the clinical content of ophthalmologists' office practices in 1985 and that of 1980. Over this period, the most noteworthy change in diagnostic mix resulted from the virtual doubling of the percent of visits for cataract and cataract surgery. These dramatic increases were chiefly the result of an expanding technology in ambulatory ophthalmologic care that, in this interval alone, produced an 84-percent increase in the number of visits at which ambulatory surgical procedures were provided or ordered in the course of the office visit. Of the total 1.5 million visits for ambulatory surgical procedures made in 1985 to office-based ophthalmologists, the largest single proportion (about 31 percent) involved cataract surgery.

The 1980–85 growth in ambulatory eye surgery was predictably accompanied by a concurrent decrease in the eye surgery performed in the inpatient setting. Findings from a survey of the nation's short-stay, non-Federal hospitals reveal that eye operations performed on inpatients declined in total number from 1,050,000 in 1980 to 718,000 in 1985. A significant part of this decrease was the reduction of lens extractions by more than one half, from 467,000 extractions in 1980 to 211,000 in 1985 (NCHS, 1980 and 1985).

In 1985, as in 1980, determining and correcting errors of refraction and accommodation (ICD–9–CM codes 367 and V53, table 7) continued in sheer volume to dominate the clinical content of office-based ophthalmology. Treated as the principal problem or procedure associated with a visit, this activity accounted for one-fifth of visits to ophthalmologists in both years. (In 1985, a checkbox for "corrective lenses" was added to the data collection form (item 13, figure I, Technical notes). Its intent was to probe for all activities associated with the prescription, provision, or fitting of corrective lenses, whether or not they were the principal activities of the visit.

Table 6. Number and percent distribution of the 10 principal diagnoses most frequently rendered by office-based ophthalmologists in rank order of frequency of mention, according to patient age groups under 65 years of age and 65 years of age or over: United States, 1985

Rank	*Principal diagnosis (ranked)*	*ICD–9–CM code*[1]	*Visits*		
			Number in thousands	Percent distribution	Cumulative percent
...	Visits by patients under 65 years of age	...	22,500	100.0	...
1	Disorders of refraction and accommodation	367	6,992	31.1	31.1
2	Disorders of conjuctiva	372	1,792	8.0	39.1
3	Cataract and cataract surgery	366; V43	1,492	6.6	45.7
4	Glaucoma	365	1,471	6.5	52.2
5	Inflammation of eyelids	373	895	4.0	56.0
6	Other disorders of eye[2]	379	890	4.0	60.0
7	Strabismus and other disorders of binocular vision	378	652	2.9	62.9
8	Keratitis	370	539	2.4	65.3
9	Other retinal disorders[3]	362	502	2.2	67.5
10	Diabetes with ophthalmic manifestations	250.5	435	1.9	68.4
...	Visits by patients 65 years of age and over	...	17,562	100.0	...
1	Cataract and cataract surgery	366; V43	6,593	37.5	37.5
2	Glaucoma	365	2,736	15.6	53.1
3	Other disorders of eye[2]	379	1,720	9.8	62.9
4	Other retinal disorders[3]	362	1,129	6.4	69.3
5	Disorders of refraction and accommodation	367	1,066	6.1	75.4
6	Disorders of conjunctiva	372	439	2.5	77.9
7	Inflammation of eyelids	373	331	1.9	79.8
8	Disorders of lacrimal system	375	250	1.4	81.2
9	Keratitis	370	244	1.4	82.6
10	Diabetes with ophthalmic manifestations	250.5	225	1.3	83.9

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM). The V code subclassification is provided for occasions when circumstances other than a disease or injury classifiable to categories 001–999 (the main part of the ICD) are recorded as "diagnoses" or "problems."
[2]Scleritis and episcleritis, other disorders of sclera, disorders of vitreous body, aphakia and other disorders of lens, anomalies of pupillary function, nystagmus and other irregular eye movements, and other specified and unspecified disorders.
[3]Chiefly macular degeneration.

Table 7. Number and percent distribution of selected diagnoses and other professional activities of the ophthalmologist: United States, 1985 and 1980

Principal diagnosis or other professional activity of ophthalmologist	ICD–9–CM code[1]	Visits			
		1985		1980	
		Number in thousands	Percent distribution	Number in thousands	Percent distribution
All visits	...	40,062	100.0	30,810	100.0
Disorders of refraction and accommodation	367	8,058	20.1	6,217	20.2
Fitting and adjustment of contact lenses and spectacles	V53	773	1.9	627	2.0
Cataract and cataract surgery	366; V43	8,085	20.2	3,384	10.9
Glaucoma	365	4,207	10.5	3,257	10.6
Disorders of conjunctiva	372	2,231	5.6	1,565	5.1
Other retinal disorders (chiefly macular degeneration)	362	1,631	4.1	779	2.5

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM). The V code subclassification is provided for occasions when circumstances other than a disease or injury classifiable to categories 001–999 (the main part of the ICD) are recorded as "diagnoses" or "problems."

Findings reveal that this professional function was exercised at 10.4 million visits or about 26 percent of all visits to ophthalmologists.)

To receive their share of the market in these basic, vision-care procedures, ophthalmologists had to contend with other eye-care professionals; for example, with optometric vision-care plans (VCP's). It is revealing to note that the rate per population of the basic, vision-care visits to the ophthalmologist (ICD–9–CM codes 367 and V53, table 7) did not diminish between 1980 and 1985, varying from roughly 32 visits per 1,000 members of the civilian noninstitutionalized population in 1980 to 38 visits per 1,000 in 1985. (On the other hand, this apparent growth is not statistically significant.)

Patient characteristics

The preceding findings have demonstrated that problems associated with the aging process (for example, cataracts, glaucoma, and macular degeneration) accounted for a very substantial part of the ophthalmologist's office practice. It is not surprising, then, to find that 44 percent—the largest single proportion of visits to ophthalmologists—were made by patients over 64 years of age (table 8). Indeed, few specialties rivaled ophthalmology in their involvement with this expanding subpopulation. (Between 1980 and 1985, the total civilian population grew by 7 percent, the 65-plus population by a disproportionate 13 percent.)

Visits by females outnumbered visits by males in about the same 6 to 4 ratio that characterized all office practice (table 8). However, the overall visit rate per 1,000 population (203 for females versus 140 for males) was significantly higher for female patients. The apparently higher rate for females over 64 years of age in contrast with males in this age group is not statistically significant.

Table 9 presents visit distributions by race and ethnic origin of patients, contrasting ophthalmologists with all office-based physicians.

Referral and prior visit status

Findings in table 10 reveal the following:

- An above-average proportion of visits to ophthalmologists (23 percent) were made by new patients.
- Also above average, at 7 percent, was the proportion of visits referred by other physicians (doctors of medicine or osteopathy).
- Approximately 16 percent of visits to ophthalmologists, therefore, were either self-directed walk-ins or referrals from sources other than doctors of medicine or osteopathy. Among the most-visited specialties, only dermatologists matched this proportion.
- For every new problem presented to the office-based ophthalmologist (that is, any problem presented by a new patient along with any new problem presented by an old one), there were an average of two return visits (visits by old patients for old problems).

Table 8. Percent distribution of visits to all office-based physicians and ophthalmologists and number of visits to ophthalmologists per 1,000 population by sex and age of patient: United States, 1985

Sex and age of patient	Visits to all office-based physicians	Visits to ophthalmologists	
Both sexes	Percent distribution		Number per 1,000 population[1]
All ages	100.0	100.0	176
Under 15 years	18.7	7.6	59
15–44 years	39.2	24.5	89
45–64 years	21.6	24.2	219
65 years and over	20.5	43.8	652
65–74 years	11.9	21.0	507
75 years and over	8.7	22.8	885
Female	60.9	60.7	203
Under 15 years	9.1	3.8	61
15–44 years	26.3	13.7	98
45–64 years	12.9	14.3	248
65 years and over	12.5	28.9	728
Male	39.1	39.3	140
Under 15 years	9.5	3.7	57
15–44 years	12.9	10.7	112
45–64 years	8.7	9.8	187
65 years and over	8.0	15.0	543

[1]Rates are based on estimates of the civilian noninstitutionalized population of the United States, excluding Alaska and Hawaii, as of July 1, 1985.

Table 9. Number of office visits to all physicians and to ophthalmologists and percent distribution by race and Hispanic origin of patient: United States, 1985

Race and Hispanic origin of patient	Visits	
	All physicians	Ophthalmologists
	Number in thousands	
All visits	636,386	40,062
	Percent distribution	
All visits	100.0	100.0
Race		
White	90.0	91.6
Black	8.2	6.1
Other[1]	1.8	2.3
Hispanic origin		
Hispanic	6.4	7.0
Non-Hispanic	93.6	93.0

[1]Asian, Pacific Islander, American Indian, or Alaskan Native.

Drug utilization

Tables 11 and 12 explore the utilization of drugs by office-based ophthalmologists (see item 4, Technical notes, figure I). Table 11 lists the agents most frequently prescribed or provided. The 25 listed in table 11 accounted for two-thirds of drug mentions by ophthalmologists. Table 12 gathers the 25.8 million mentions into therapeutic classes. Among the 20.5 million drugs classified as eye preparations, three subclasses were dominant. These were miotics, anti-infective agents, and anti-inflammatory agents. The use of products combining the latter two classes is common; for example, Maxitrol, Blephamide, Vasocidin, Poly-Pred, and Neodecadron.

Physicians other than ophthalmologists also made use of the eye preparations, accounting for about 7 million mentions, or 25 percent of all the utilization of this class in office practice. Most of this nonophthalmologist utilization was the effort of the general or family practitioner (10 percent) and the pediatrician (5 percent). With few exceptions, these practitioners confined drug utilization to anti-infective and anti-inflammatory agents.

Selected sources of payment

The ophthalmologists' sources of payment are examined in table 13. In their reimbursement by Medicaid, Blue Cross/Blue Shield, and other commercial insurance, or in their arrangements with prepayment plans, ophthalmologists were below the averages found for all office practice. Among the sources tabulated in table 13, their major single source of expected payment—at 32 percent of their visits—was through the Medicare program, a predictable finding in view of the fact that such a large proportion of their patients were over 64 years of age. Only internists and specialists in cardiovascular disease could rival this proportion. In 1983, it is noteworthy that ophthalmologists accounted for the second largest share—10.4 percent—of the 15.9 billion dollars in Medicare-approved charges for physicians' services (Committee on Eye Care for the American People, 1987).

Ophthalmologists exceeded the other most-visited specialties in services rendered free of charge (at 5 percent of office visits). This creditable, pro bono action appeared to occur chiefly at visits for routine measurement and correction of refractive errors, services not normally reimbursed by third-party programs, including Medicare.

Disposition and duration

At 70 percent of office visits, ophthalmologists instructed patients to return at a specified time, well exceeding the average use of this instruction in overall office practice (table 14). Ophthalmologists were below average in their tendency to rely on the more tentative forms of followup, such as return if needed and telephone contact.

Ophthalmologists in 1985 resorted to hospitalization at only 280,000 (0.7 percent) of their office visits, down 60 per-

Table 10. Percent of office visits resulting from referral by another physician and percent distribution of office visits by prior visit status of patients, according to specialty of physician: United States, 1985

Specialty of office-based physician	Patient referred by another physician	Prior visit status			
		All visits	New patient	Old patient, new problem	Old patient, old problem
	Percent of visits	Percent distribution			
All office-based physicians	5.6	100.0	16.9	22.7	60.4
General or family practice	1.6	100.0	14.1	32.6	53.3
Internal medicine	4.1	100.0	15.3	22.9	61.8
Pediatrics	2.0	100.0	12.8	40.3	47.0
Obstetrics and gynecology	4.2	100.0	14.2	21.3	64.5
Ophthalmology	7.2	100.0	23.3	10.5	66.2
Orthopedic surgery	13.8	100.0	25.4	6.5	68.2
General surgery	13.7	100.0	21.4	17.9	60.7
Dermatology	9.9	100.0	26.0	11.9	62.1
Psychiatry	3.4	100.0	7.8	*0.9	91.2
Otolaryngology	16.3	100.0	31.0	10.6	58.4
Cardiovascular disease	7.3	100.0	11.7	10.2	78.2
Neurology	25.5	100.0	31.7	5.2	63.1
Urological surgery	15.5	100.0	21.9	4.6	73.5
All other office-based physicians	9.5	100.0	18.8	9.6	71.6

Table 11. The 25 drugs (and their generic components) most frequently utilized by ophthalmologists in office practice by rank, number of mentions, and therapeutic use: United States, 1985

Rank	Entry name of drug[1]	Number in thousands	Therapeutic use
...	All drugs	25,820	...
1	Timoptic (timolol)	3,588	Glaucoma therapy
2	Maxitrol (dexamethasone, neomycin, polymixin B)	1,627	Anti-infective, anti-inflammatory
3	Pred-Forte (prednisolone, sodium bisulfite)	1,557	Anti-inflammatory
4	Pilocarpine	1,107	Miotic, cholinergic
5	FML Liquifilm (fluorometholone)	948	Anti-inflammatory
6	Tobrex Ophthalmic (tobramycin)	930	Anti-infective
7	Propine (dipivefrin)	812	Glaucoma therapy
8	Blephamide (sulfacetamide, prednisolone)	740	Anti-infective, anti-inflammatory
9	Mydriacyl (hydracrylamide, tropicamide, bistropamide)	672	Mydriatic
10	Tears Naturale (benzalkonium chloride, sodium edetate)	520	Artificial tears and lubricant
11	Garamycin (gentamycin)	468	Anti-infective
12	Neo-Synephrine (phenylephrine)	441	Vasoconstrictor and mydriatic
13	Inflamase (prednisolone)	403	Anti-inflammatory
14	Neosporin (polymixin B, bacitracin zinc, neomycin)	401	Anti-infective
15	Decadron (dexamethasone)	396	Anti-inflammatory
16	Diamox (acetazolamide)	364	Carbonic anhydrase inhibitor
17	Vasocidin (prednisolone, sulfacetamide)	312	Anti-inflammatory, anti-infective
18	Poly-Pred (prednisolone, neomycin, polymixin B)	300	Anti-inflammatory, anti-infective
19	Neptazane (methazolamide)	267	Carbonic anhydrase inhibitor
20	Cyclogyl (cyclopentolate)	258	Cycloplegic and mydriatic
21	Atropine	252	Cycloplegic and mydriatic
22	Naphcon-A (naphazoline, pheniramine maleate)	248	Ocular decongestant, antihistamine
23	Pilo (pilocarpine)	245	Miotic
24	Homatropine	209	Cycloplegic and mydriatic
25	Neodecadron (dexamethasone, neomycin)	205	Anti-inflammatory, anti-infective

[1]The trade or generic name used by the physician 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.

Table 12. Number and percent distribution of drug mentions of ophthalmologists in office practice by drug class: United States, 1985

Drug class[1]	Number in thousands	Percent distribution
Total	25,820	100.0
Systemic anti-infective agents	1,078	4.2
Antibiotics	1,026	4.0
Autonomic drugs	117	0.5
Cardiovascular drugs	243	0.9
Systemic analgesics	367	1.4
Nonsteroidal anti-inflammatory agents	212	0.8
Electrolytic and water balance agents	169	0.7
Eye preparations	20,516	79.5
Anti-infectives	5,970	23.1
Antibiotics	3,938	15.3
Antivirals	199	0.8
Sulfonamides	1,653	6.4
Anti-inflammatory agents	3,185	12.3
Carbonic anhydrase inhibitors	657	2.5
Miotics	5,663	21.9
Mydriatics	2,388	9.3
Vasoconstrictors	1,113	4.3
All other eye preparations[2]	1,540	6.0
Hormones and synthetic substances	763	3.0
Systemic corticosteroids	689	2.7
Skin and mucous membrane agents	612	2.4
Anti-infectives	533	2.1
Other or undetermined	1,955	7.6

[1]Based on American Hospital Formulary Service. 1985. *Drug Product Information File.* San Bruno, Calif.: The American Blue Book Data Center.
[2]Chiefly lubricants and artificial tears.

cent from the 711,000 admissions (at 2.3 percent of visits) ordered in 1980, confirming a trend toward reduced hospitalization that occurred during this period.

About 36 percent of all office contacts with the ophthalmologist lasted longer than 15 minutes as opposed to the 29 percent found for overall office practice (table 14). The median duration of a visit to an ophthalmologist was about 14.5 minutes, exceeding the overall median duration by about 1 minute.

Summary

In 1985, ophthalmologists within the scope of NAMCS accounted for 40.1 million office visits, about 173 visits per 1,000 members of the civilian noninstitutionalized population.

Between 1980 and 1985 there was a 30-percent increase in the number of visits to office-based ophthalmologists and a pronounced shift in patient age and diagnostic mix toward the group 65 years old and over. Factors contributing directly or indirectly to these developments were as follows:

- A 7-percent increase in the overall population.
- A 13-percent increase in the population 65 years old and over.
- A reduction in hospitalization for eye problems. (Admissions to hospitals by ophthalmologists fell by 60 percent and inpatient eye surgery declined by at least one-third.)
- Shorter lengths of stay for hospital inpatients, from 7.3 days in 1980 to 6.4 days in 1985 (NCHS, 1987a).

Table 13. Percent distribution of office visits by selected sources of payment, according to physician specialty: United States, 1985

Specialty of office-based physician	All visits	Selected sources of payment[1]					
		Medicare	Medicaid	Blue Cross/ Blue Shield	Other commercial insurance	HMO prepaid plan[2]	No charge
	Percent distribution of visits						
All office-based physicians	100.0	16.6	7.6	12.6	20.5	9.1	1.8
General or family practice	100.0	14.7	10.5	9.4	14.9	10.1	1.0
Internal medicine	100.0	33.6	5.0	15.5	16.8	13.3	0.9
Pediatrics	100.0	-	9.1	6.1	15.3	14.0	1.0
Obstetrics and gynecology	100.0	2.7	6.4	15.4	30.4	6.9	2.8
Ophthalmology	100.0	32.0	5.8	11.0	12.6	5.0	4.9
Orthopedic surgery	100.0	13.0	4.1	16.3	36.4	7.1	1.7
General surgery	100.0	24.1	10.7	17.0	24.5	8.4	3.7
Dermatology	100.0	13.5	3.0	16.7	25.6	7.0	2.4
Psychiatry	100.0	5.6	6.1	16.1	29.0	4.7	1.3
Otolaryngology	100.0	12.1	5.5	13.1	21.7	4.3	2.5
Cardiovascular disease	100.0	41.5	3.2	21.5	25.5	2.4	1.4
Neurology	100.0	20.3	6.8	11.6	31.1	6.1	0.7
Urological surgery	100.0	30.8	4.5	20.4	25.6	6.0	2.8
All other office-based physicians	100.0	21.0	5.6	16.4	28.2	5.7	2.9

[1]Will not sum to 100.0 because not all payment sources are identified and more than 1 source of payment may be applied at a given visit.
[2]HMO is health maintenance organization.

Table 14. Number of office visits to all physicians and to ophthalmologists and percent distribution by disposition and duration of the visit: United States, 1985

Disposition and duration of visit	All physicians	Ophthalmologists
	Number of visits in thousands	
All visits	636,386	40,062
	Percent distribution	
All visits	100.0	100.0
Disposition[1]		
No followup planned	9.8	8.1
Return at specified time	61.5	69.9
Return if needed	22.9	18.9
Telephone followup planned	4.0	1.2
Referred to other physician	3.2	1.5
Returned to referring physician	0.8	1.0
Admit to hospital	1.6	0.7
Other	0.5	0.7
Duration		
0 minute[2]	2.3	0.3
1–5 minutes	10.3	10.1
6–10 minutes	28.5	25.6
11–15 minutes	30.0	27.7
16–30 minutes	22.7	29.7
31 minutes and over	6.3	6.7

[1]Because more than 1 disposition is possible for a visit, percents will not total 100.
[2]Denotes visits at which there was no face-to-face contact between physician and patient.

- Expanding technologies in ambulatory ophthalmic surgery, causing an 84-percent increase in those visits to office-based ophthalmologists which involved eye surgery.

Physicians in specialties other than ophthalmology—chiefly general practitioners, family practitioners, or pediatricians—made substantial contributions to the Nation's eye care:

- They accounted for 24 percent of all symptom-motivated eye-care visits, treating without referral about 50 percent of the conjunctival disorders and 55 percent of superficial injuries to the eye or adnexa.
- They performed 24 percent of all screening tests for visual acuity and ordered or provided 25 percent of all ophthalmic drugs that were utilized.

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
#	Figure suppressed to comply with confidentiality requirements

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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 March 1985 through February 1986. The target universe of NAMCS includes office visits made within the coterminous United States by ambulatory patients to nonfederally employed physicians principally engaged in office practice. The specialties of anesthesiology, pathology, and radiology are excluded, as are any telephone contacts and nonoffice visits.

The NAMCS utilizes a multistage probability sample design that involves a sample of primary sampling units, physicians' practices within primary sampling units, and patient visits within physicians' practices. Physician specialty was used as a stratification variable. For 1985, a sample of 5,032 non-Federal, office-based physicians was selected from master files maintained by the American Medical Association and the American Osteopathic Association. Of the 4,104 in-scope physicians, 70 percent responded to the 1985 NAMCS.

For the 1985 study, ophthalmologists were included as a separate sampling stratum. From this stratum, 522 ophthalmologists were selected; of these, 469 were in scope and 346 responded to the study, a response rate of 74 percent. The 1985 NAMCS sample was different from that used in earlier NAMCS surveys, which had included ophthalmology in the same sampling stratum as "other surgical specialties." The increase in physician sample size and the modification of the sampling design in 1985 had the effect of improving reliability of survey estimates for ophthalmologists relative to earlier data years.

Sample physicians were asked to complete Patient Records (figure I) for a systematic random sample of office visits taking place during a randomly assigned 1-week reporting period. Responding physicians completed a total of 71,594 Patient Records. Of these Patient Records, 9,428 were completed by responding ophthalmologists. Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained during an induction interview. The National Opinion Research Center, under contract to the National Center for Health Statistics, was responsible for the data collection and processing operations during the survey.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance because only a sample, rather than an entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. For approximate relative standard errors of aggregate estimates based on all specialties, see McLemore and DeLozier (NCHS, 1987b). Approximate relative standard errors for aggregate estimates of visits to ophthalmologists are shown in table I. Approximate relative standard errors for aggregate estimates of drug mentions made by ophthalmologists are shown in table II.

Tests of significance and rounding

In this report the determination of statistical significance is based on a two-sided *t*-test with a critical value of 1.96 (0.05 level of confidence). Terms relating to differences, such as "greater than" or "less than," indicate that the differences are statistically significant. In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals.

NOTE: A list of references follows the text.

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
Public Health Service
National Center for Health Statistics

B 467356

PATIENT RECORD
NATIONAL AMBULATORY MEDICAL CARE SURVEY

OMB No. 0937-0141
Expires 9/30/86
(PHS) 6105-B
456-232

1. DATE OF VISIT — Month / Day / Year

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/ ALASKAN NATIVE

5. ETHNICITY
1 ☐ [illegible]
2 ☐ NOT HISPANIC

6. EXPECTED SOURCE(S) OF PAYMENT *[Check all that apply]*
1 ☐ SELF-PAY
2 ☐ MEDICARE
3 ☐ MEDICAID
4 ☐ BLUE CROSS/ BLUE SHIELD
5 ☐ OTHER COMMERCIAL INSURANCE
6 ☐ HMO/PRE-PAID PLAN
7 ☐ NO CHARGE
8 ☐ OTHER *[Specify]*

7. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN?
1 ☐ YES 2 ☐ NO

8. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT *[In patient's own words]*
a MOST IMPORTANT
b OTHER

9. GLUCOSE TESTS THIS VISIT *[Check all ordered or provided]*
1 ☐ NONE
2 ☐ BLOOD
3 ☐ URINE
4 ☐ ORAL

10. OTHER DIAGNOSTIC SERVICES THIS VISIT *[Check all ordered or provided]*
1 ☐ NONE
2 ☐ BREAST EXAM
3 ☐ PELVIC EXAM
4 ☐ RECTAL EXAM
5 ☐ VISUAL ACUITY
6 ☐ URINALYSIS
7 ☐ HEMATOLOGY
8 ☐ BLOOD CHEMISTRY
9 ☐ PAP TEST
10 ☐ OTHER LAB TEST
11 ☐ BLOOD PRESSURE CHECK
12 ☐ EKG
13 ☐ CHEST X-RAY
14 ☐ OTHER RADIOLOGY
15 ☐ ULTRASOUND
16 ☐ OTHER SERVICE *[Specify]*

11. PHYSICIAN'S DIAGNOSES
a PRINCIPAL DIAGNOSIS/PROBLEM ASSOCIATED WITH ITEM 8A
b OTHER SIGNIFICANT CURRENT DIAGNOSES

12. HAVE YOU SEEN PATIENT BEFORE?
1 ☐ YES 2 ☐ NO
IF YES, FOR THE CONDITION IN ITEM 11a?
1 ☐ YES 2 ☐ NO

13. NON-MEDICATION THERAPY *[Check all services ordered or provided this visit]*
1 ☐ NONE
2 ☐ PHYSIOTHERAPY
3 ☐ AMBULATORY SURGERY
4 ☐ RADIATION THERAPY
5 ☐ PSYCHOTHERAPY
6 ☐ FAMILY PLANNING
7 ☐ DIET COUNSELING
8 ☐ OTHER COUNSELING
9 ☐ CORRECTIVE LENSES
10 ☐ OTHER *[Specify]*

14. MEDICATION THERAPY *[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.]*
IF NONE, CHECK HERE ☐

	a NEW MEDICATION? YES	a NEW MEDICATION? NO	b FOR DX IN ITEM 11a? YES	b FOR DX IN ITEM 11a? NO
1	☐	☐	☐	☐
2	☐	☐	☐	☐
3	☐	☐	☐	☐
4	☐	☐	☐	☐
5	☐	☐	☐	☐

15. DISPOSITION THIS VISIT *[Check all that apply]*
1 ☐ NO FOLLOW-UP PLANNED
2 ☐ RETURN AT SPECIFIED TIME
3 ☐ RETURN IF NEEDED, PRN
4 ☐ TELEPHONE FOLLOW-UP PLANNED
5 ☐ REFERRED TO OTHER PHYSICIAN
6 ☐ RETURNED TO REFERRING PHYSICIAN
7 ☐ ADMIT TO HOSPITAL
8 ☐ OTHER *[Specify]*

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

Figure I. 1985 National Ambulatory Medical Care Survey Patient Record (chief data collection form)

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Table I. Approximate relative standard errors of estimated numbers of office visits to ophthalmologists: National Ambulatory Medical Care Survey, 1985

Estimated number of office visits in thousands	*Relative standard error in percent*
100	33.3
200	23.9
400	17.4
800	13.0
1,000	11.9
2,000	9.3
5,000	7.4
10,000	6.6
40,000	6.0

EXAMPLE OF USE OF TABLE: An aggregate estimate of 1,500,000 visits to ophthalmologists has a relative standard error of 10.6 percent, or a standard error of 159,000 visits (10.6 percent of 1,500,000).

Table II. Approximate relative standard errors of estimated numbers of drug mentions during visits to ophthalmologists: National Ambulatory Medical Care Survey, 1985

Estimated number of drug mentions in thousands	*Relative standard error in percent*
100	31.6
200	23.1
400	17.3
800	13.4
1,000	12.5
2,000	10.5
5,000	9.0
10,000	8.5
25,000	8.2

EXAMPLE OF USE OF TABLE: An aggregate estimate of 1,500,000 drug mentions during visits to ophthalmologists has a relative standard error of 11.5 percent, or a standard error of 172,500 drug mentions (11.5 percent of 1,500,000).

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