

Trends in Adult Visits to Primary Care Physicians in the United States

Randall S. Stafford, MD, PhD; Demet Saglam, MA; Nancyanne Causino, EdD; Barbara Starfield, MD; Larry Culpepper, MD, MPH; William D. Marder, PhD; David Blumenthal, MD, MPP

Background: Although numerous changes are apparent in the US health care system, little is known about how these changes have altered the work of primary care physicians.

Methods: We analyzed a nationally representative sample of 136 233 adult office visits to general internists, general practitioners, and family physicians contained in the 1978 through 1981, 1985, and 1989 through 1994 National Ambulatory Medical Care Surveys. Annual sample sizes varied between 5662 and 19 977 visits. Measures included the characteristics of patients presenting to primary care physicians, physician activities during these visits, and the disposition of the visits to primary care physicians.

Results: Visits to primary care physicians have diminished as a proportion of all adult visits from 52% in 1978

to 41% in 1994. Dramatic trends in adult primary care included the growing racial or ethnic diversity of patients, the doubling (since 1985) of health maintenance organization coverage, increased provision of prevention services, changes in the most common medications, and an 18% increase in the duration of adult visits to primary care physicians.

Conclusions: Trends in primary care practice reflect changes in society and in the US health care system, including demographic changes, an emphasis on prevention, and the growth of managed care. The increasing role of managed care, with its emphasis on increased productivity, appears at odds with primary care physicians' increasing responsibility for prevention and the associated increase in the duration of primary care visits.

Arch Fam Med. 1999;8:26-32

ALTHOUGH numerous changes are apparent in the US health care system, little is known about how the work of primary care physicians (PCPs) has been altered. As medical care that is first contact, longitudinal, and comprehensive,^{1,2} primary care has been affected by many planned and unplanned alterations in health care in the past 2 decades. Trends in the demographics of the US population,³ particularly the aging of the population, may have affected primary care practice more directly than other elements of the health care system. Likewise, changes in health care reimbursement, particularly the growth of managed care,⁴ have especially affected PCPs. The technology of medical care has continued to develop, providing PCPs with more choices for diagnostic testing and medical therapy. Several changes in medical education have occurred, including increasing primary care training in medical schools^{5,6} and the growth of family medicine and primary care internal medicine residency pro-

grams.^{7,8} Finally, an increasing emphasis on evidence-based clinical practice has included the development of clinical guidelines for many primary care tasks.^{9,10}

For editorial comment see page 33

Whereas many of these changes place primary care in an increasingly pivotal role in the health care system,¹¹ the effect of several trends may be divergent. For example, although an aging population implies increasing clinical complexity, managed care may exert pressures to make the work of PCPs more efficient. There is limited documentation of the specific effects of these multiple changes. Information on time trends in primary care practice can add to our understanding of the current role of primary care in our health care system and assist in the formulation of health policy related to primary care in the future.

To evaluate longitudinal patterns in the practice of primary care, we have analyzed the National Ambulatory Medi-

From the Institute for Health Policy, Massachusetts General Hospital and Harvard Medical School, Boston (Drs Stafford, Causino, Blumenthal, and Mr Saglam); the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md (Dr Starfield); the Department of Family Medicine, Boston University School of Medicine, Boston (Dr Culpepper); and The Medstat Group, Cambridge, Mass (Dr Marder).

METHODS

Data for this study come from the NAMCSs for 1978 through 1981, 1985, and 1989 through 1994.¹²⁻²² Conducted by the National Center for Health Statistics, these surveys describe the patients and practices of US office-based physicians. The sampling process uses American Medical Association and American Osteopathic Association master lists of all US patient care physicians. Physicians from these lists are selected through random stratified sampling by geographic area and specialty. Among eligible physicians, annual participation rates have varied from 70% (1994) to 78% (1981). For each participating physician, patient visits during a randomly selected week were sampled systematically. The survey has included between 33 598 (1994) and 71 594 (1985) annual outpatient visits to between 1074 (1994) and 2879 (1985) physicians. Our analysis of adult (≥ 18 years of age) visits to PCPs uses a total of 136 233 office visits.

For each selected patient visit, physicians completed patient-visit forms detailing the clinical services provided during the visit, patient demographics, clinical diagnoses,²³ the reason for the visit,²⁴ current over-the-counter and prescribed medications, and the visit duration and disposition. Starting in 1985, physicians were asked to check all of the applicable payment categories among health maintenance organization (HMO) or prepaid, Medicare, Medicaid, private or commercial, other government, self-pay, no charge, and other, with the result that multiple payment sources could be coded for each visit. We used mutually exclusive categories of expected source of payment by creating a hierarchy of payment sources so that governmental sources were coded even if patients had both governmental and nongovernmental sources of health insurance. In the NAMCSs, self-pay was defined as pertaining to visits where charges were fully paid by the patient, even if these included health insurance deductibles.

For each visit record, the National Center for Health Statistics provides a visit weight calculated from the physician and visit sampling rates, adjusted for nonresponse. Statistical aggregation using these visit weights allows an extrapolation to national patterns of practice. We used the National Center for Health Statistics relative-standard error figures to calculate 95% confidence intervals for these national estimates.^{12,22}

Changes over time in the NAMCS patient-visit forms impose some limits on longitudinal analyses of primary care practices. Many key elements, however, such as diagnoses, medications, and visit disposition, are common to all years. For some measures, we analyze data from shorter periods, based on availability.

This analysis focuses on adult visits to physicians who identified their specialty as general internal medicine, family medicine, or general practice. Visits to obstetrician-gynecologists (Ob-Gyns) are not included. Although Ob-Gyns are sometimes identified as PCPs,^{25,26} our preliminary analysis of the NAMCS data suggested that Ob-Gyns have practices dissimilar to those of other primary care specialists. A total of 136 233 adult office visits to PCPs were available for analysis, with annual sample sizes between 5662 and 19 977 visits.

We describe the presenting characteristics of patients and physician activities during visits by adults to PCPs from 1978 through 1994. Patient characteristics, including age, sex, insurance status, race or ethnicity, diagnoses, and referral source, are presented as time series of proportions or means. Physician activities during visits, including the frequency of tests and treatments, current medications, visit duration, and patient disposition, are likewise presented as time series. Although comparisons between the earliest and the most recent years are highlighted, we also evaluated the entire time series using ordinary least squares regression. To quantify changes over time, we used a series of linear models that included time (survey year) as the only predictor variable. For the frequency of tests and treatments, visit duration, and patient disposition, we also statistically evaluated the effect of year adjusted for patient age, race or ethnicity, region, and sex. Given the large sample sizes involved in our study and the multiple comparisons made, we have generally only reported findings with *P* values of .001 or less to avoid reporting results that, although significant, may not be of substantive importance.

To simplify the large number of diagnostic codes encountered in primary care, we used diagnosis clusters developed by Schneeweiss et al²⁷ to profile in broad terms the most common diagnoses in 1979 and 1994. Similarly, we profiled new or continuing medications by generic names for 1980 and 1994. In both cases, the statistical significance of differences between the earliest and most recent years was determined by the Student *t* test.

cal Care Surveys (NAMCSs) conducted from 1978 to 1994. This analysis of adult visits to PCPs provides a 17-year, nationally representative, visit-based perspective on adult primary care, with a focus on changes in the profile of patients seeking care and on the clinical activities of PCPs.

RESULTS

VOLUME OF VISITS TO PCPs

Data available from the NAMCSs suggest that during the past 17 years, the number of adult visits to PCPs has declined. In 1978, an estimated 236 million (95% confidence interval, 226-246 million) adult visits to PCPs com-

prised 52% of adult visits to all physicians. In 1994, PCPs provided 219 million (95% confidence interval, 206-232 million) adult visits (41% of visits). Despite this trend, visits to general internists have increased from 66 million (15% of all visits) in 1978 to 97 million (18% of all visits) in 1994 (**Figure 1**). Correspondingly, visits to family physicians and general practitioners have declined in aggregate.

PROFILE OF PRIMARY CARE PATIENTS

Demographics of Primary Care Patients

The mean age of adults visiting PCPs increased from 49.1 years in 1978 to 52.5 years in 1994 ($P < .001$)

(Table 1). More substantial changes occurred in the proportion of visits by patients aged 65 years and older (from 24% to 32%) and patients aged 85 years and older (from 1.6% to 3.4%). All primary care specialties had an aging clinical population. The proportion of visits by women remained constant: 60% in both 1978 and 1994 (Table 1).

Patients visiting PCPs have become more ethnically and racially diverse. A growth in visits by Hispanics (4.3%-6.8%) and Asians (0.7%-4.0%) accounted for this change. The proportion of non-Hispanic whites declined from 85.1% of all patient visits in 1979 to 79.4% in 1994. The proportion of visits by African Americans was relatively constant (9.9% to 9.6%). Among PCPs, general internists showed a decline in visits by non-Hispanic whites (90.2% in 1979 to 74.5% in 1994; $P < .001$ for trend), whereas the proportion of visits by non-Hispanic whites to general practitioners and family physicians remained the same (83% in 1979 and 1994). Visits to PCPs also shifted to metropolitan areas (66.9% in 1978 and 80.8% in 1994; $P < .001$ for trend).

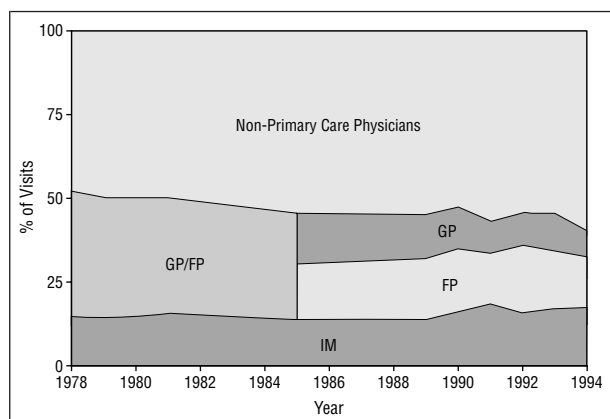


Figure 1. Percentage of adult visits to US primary care physicians, by physician specialty, 1978 to 1994. GP indicates general practice; FP, family practice; and IM, general internal medicine.

Payment Source in Visits to PCPs

Substantial changes occurred in the payment source of PCP visits between 1985 and 1994—the years for which payment source was available in the NAMCSs. The most dramatic growth was in HMO coverage: 10.3% of visits in 1985 to 21.4% in 1994 ($P < .001$ for trend) (**Figure 2**). Visits to general practitioners showed the greatest increase in HMO coverage: 5.3% in 1985 to 16.0% in 1994 ($P < .001$ for trend). Traditional private insurance also increased (20.9% in 1985 to 29.0% in 1994; $P < .001$ for trend), as did Medicare coverage (23.3% in 1985 to 29.3% in 1994; $P < .001$ for trend). The proportion of visits with Medicaid coverage was unchanged between 1985 (5.8%) and 1994 (5.0%).

Source of Visits to PCPs

The proportion of visits to PCPs by previously seen patients changed little: 88.4% in 1978 and 87.5% in 1994 ($P < .001$ for trend). The proportion of visits to PCPs by patients referred by another physician increased from 2.3% of visits in 1978 to 4.8% in 1994 ($P < .001$ for trend). Specialty differences in referrals as a source of visits persisted over time, with general internists seeing more visits from referrals (7.2% in 1994) than general practitioners and family physicians (2.8% for both; $P < .001$).

Clinical Characteristics of Patients Visiting PCPs

The diagnostic problems encountered by PCPs showed remarkably little change. Hypertension, acute upper respiratory tract infection, and general medical examination remained the 3 most frequent diagnosis clusters in both 1979 and 1994 (**Table 2**). The increasing frequency of visits for sinusitis (1.0% in 1979 to 3.8% in 1994) and the decreasing frequency of reported obesity (2.6% to 0.6%) constituted the only changes in the 10 most frequent diagnosis clusters. The top 10 diagnosis clusters accounted for 44% of all visits in both 1979 and 1994.

Table 1. Characteristics of Adult Visits to US Primary Care Physicians, 1978 to 1994*

Year	Mean Patient Age, y	Visits by Patients Aged ≥ 65 y	Visits by Hispanics and Nonwhites†	Visits by Women	Visits by Payment Source‡		
					Medicare	HMO	Private
1978	49.1	24.4	...	60.2	...	...	...
1979	49.2	25.7	14.9	61.7	...	...	...
1980	49.8	26.6	14.3	61.7	...	...	...
1981	50.7	27.3	15.9	60.8	...	...	...
1985	50.6	29.4	15.7	62.5	23.3	10.3	20.9
1989	51.4	30.4	18.9	61.6	24.9	16.5	20.5
1990	51.2	30.2	21.0	62.0	27.3	12.6	24.6
1991	51.8	31.2	17.9	61.7	28.5	14.4	24.0
1992	50.5	28.6	20.5	61.8	24.9	20.9	25.5
1993	52.6	32.2	18.6	60.4	29.8	19.0	27.3
1994	52.5	31.8	20.6	60.9	29.3	21.4	29.0
Change per decade (95% CI)	1.7 (1.5 to 1.9)	4.1 (3.7 to 4.5)	4.3 (3.9 to 4.8)	0.3 (-0.1 to 0.8)	6.7 (5.7 to 7.8)	11.2 (10.4 to 12.0)	8.1 (7.1 to 9.1)

*Except where noted, all data are given as percentage. CI indicates confidence interval.

†Hispanics may be of any race. Data are not available for 1978 (indicated by ellipses).

‡Payment source data are not available before 1985 (indicated by ellipses). HMO indicates health maintenance organization.

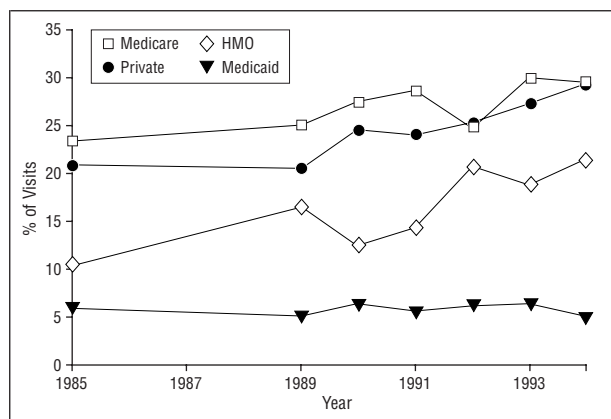


Figure 2. Percentage of adult visits to US primary care physicians, by payment source, 1985 to 1994. HMO indicates health maintenance organization.

PHYSICIAN ACTIVITIES DURING PCP VISITS

Services Provided During Visits to PCPs

The provision of dietary counseling increased from 10.7% of all adult PCP visits in 1978 to 18.0% in 1992 (**Table 3**), becoming the most common form of counseling. Dietary counseling represented general counseling regarding diet and was not necessarily related to specific medical conditions. Whereas primary care specialties differed little in the provision of dietary counseling in 1978, general internists showed greater increases (12.0% in 1978 to 23.1% in 1992) compared with general practitioners and family physicians (10.1% in 1978 to 15.2% in 1992).

Among visits to PCPs by women between 18 and 64 years of age, the proportion that included Papanicolaou smears decreased from 7.9% in 1978 to 5.7% in 1992 ($P = .11$ for trend). A separate analysis of visits to Ob-Gyns involving Papanicolaou smears indicated that the absolute increase in Papanicolaou smears performed by Ob-Gyns between 1978 and 1992 more than offset the decline seen for PCPs.

During adult visits to PCPs, blood pressure measurement became 50% more common, increasing from 53.5% of visits in 1978 to 81.9% in 1994. Specialty differences remained relatively unchanged, with general internists consistently more likely to check blood pressure (89.4% of 1994 visits) than general practitioners (80.3%) and family physicians (73.7%) ($P < .001$).

Duration of Visits to PCPs

The mean duration of PCP visits increased from 15.3 minutes in 1978 to 18.1 minutes in 1994 ($P < .001$). In contrast to this overall pattern, the duration of general internists' visits failed to increase (19.8 minutes in 1978 to 19.3 minutes in 1994). The visit duration for other PCPs grew substantially from 1978 (13.5 minutes) to 1994 (17.1 minutes).

Longer visit duration was partly explained by the increasing frequency of visits by elderly patients. In 1994, as in previous years, elderly persons had longer visits (19.0 minutes) than nonelderly persons (17.6 minutes) ($P < .001$). Another contributor to longer visits

Table 2. Most Frequent Diagnosis Clusters for Adult Visits to US Primary Care Physicians (Based on Primary Diagnosis), 1979 and 1994

Diagnosis Clusters	1979		1994	
	Rank	% of Visits	Rank	% of Visits
Hypertension	1	10.1	1	10.9
Acute upper respiratory tract infection	2	6.5	2	5.5
General medical examination	3	5.9	3	5.2
Diabetes mellitus	4	3.5	6	3.8
Ischemic heart disease	5	3.4	10	2.1
Acute sprains and strains	6	3.1	7	3.4
Degenerative joint disease	7	3.1	9	2.2
Acute lower respiratory tract infection	8	2.7	4	3.9
Obesity	9	2.6	36	0.6
Depression, anxiety, or neuroses	10	2.4	8	2.6
Sinusitis, acute and chronic	22	1.0	5	3.8

was the increased provision of counseling services and hypertension screening. As in previous years, the mean visit duration in 1992 was longer for visits where dietary counseling was provided (18.9 minutes) than for those where no dietary counseling occurred (16.5 minutes) ($P < .001$). The visit duration also was longer for those visits where blood pressure was measured (18.4 vs 16.3 minutes without blood pressure measurement for 1994; $P < .001$).

Health maintenance organization coverage was associated with shorter visits. In 1994, HMO visits (17.5 minutes) were shorter than non-HMO visits (18.5 minutes) ($P < .005$). In 1985, HMO (16.2 minutes) and non-HMO (16.3 minutes) visits were of similar length, indicating a slower growth in HMO visit duration. Controlling for the characteristics of patients visiting PCPs, including patient age, the increase in visit duration between 1978 and 1994 was statistically significant ($P < .001$). In addition, the duration increased for both HMO and non-HMO visits after adjustment for patient characteristics.

Medications in Primary Care Practice

The proportion of patients reported to be taking 1 or more prescribed or over-the-counter medications at the time of a primary care visit changed little. In 1980, at least 1 medication was reported in 76.4% of visits, whereas in 1994, this figure was 78.6%. In contrast, the most frequent medications in primary care practice have changed substantially (**Table 4**). Only 4 medications were among the 10 most frequent medications in both 1980 and 1994: digoxin, furosemide, aspirin, and levothyroxine sodium. Consistent with the persistence of hypertension as the most frequent diagnosis, antihypertensive medications represented 4 of the 10 most frequent medications in 1980 and 1994. In 1994, however, 3 of these antihypertensive drugs—diltiazem hydrochloride, verapamil hydrochloride, and nifedipine—were not available in 1980.

Table 3. Duration, Services Provided, and Disposition of Adult Visits to US Primary Care Physicians, 1978 to 1994*

Year	Mean Visit Duration, min	Service Provided		Visit Disposition	
		Dietary Counseling†	Blood Pressure Measurement	Admitted	Referred
1978	15.3	10.7	53.5	1.8	3.2
1979	15.2	8.5	58.8	1.6	3.0
1980	15.9	12.9	53.9	1.3	3.3
1981	15.9	11.0	54.7	1.6	3.4
1985	16.3	10.4	64.1	1.1	4.8
1989	16.2	...	57.7	0.7	4.1
1990	16.5	...	62.8	0.8	4.9
1991	16.0	17.1	72.9	0.9	5.4
1992	17.0	18.0	69.3	0.5	4.2
1993	18.0	...	81.0	0.8	5.3
1994	18.1	...	81.9	0.5	7.4
Unadjusted change per decade (95% CI)	10.9 (10.3 to 11.5)	4.7 (4.2 to 5.1)	12.9 (12.4 to 13.3)	-0.7 (-0.8 to -0.6)	1.7 (1.5 to 1.9)
Adjusted‡ change per decade (95% CI)	10.0 (9.3 to 10.6)	5.1 (4.6 to 5.6)	13.0 (12.5 to 13.5)	-0.7 (-0.8 to -0.6)	1.8 (1.6 to 2.0)

*Except where noted, data are given as percentage. CI indicates confidence interval.

†Dietary counseling data are not available for 1989 to 1990 and 1993 to 1994 (indicated by ellipses).

‡Adjusted for changes in age, race or ethnicity, region, and sex over time (1979 to 1994).

Table 4. Most Frequent Medications for Adult Visits to US Primary Care Physicians, 1980 and 1994

Generic Name	1980		1994	
	Rank*	% of Visits	Rank	% of Visits
Digoxin	1	4.2	6	2.7
Hydrochlorothiazide	2	4.0	24	1.4
Furosemide	3	3.6	2	3.5
Propranolol	4	3.6	38	1.0
Hydrochlorothiazide plus triamterene	5	2.8	27	1.4
Aspirin	6	2.7	4	3.0
Oral penicillins	7	2.5	76	0.5
Erythromycin	8	2.4	17	1.9
Tetracycline	9	2.2	170	0.2
Levothyroxine	10	2.1	7	2.6
Amoxicillin	34	0.8	1	4.2
Ibuprofen	17	1.8	3	3.0
Diltiazem	...	...	5	3.0
Verapamil	...	...	8	2.6
Nifedipine	...	...	9	2.5
Potassium chloride	12	1.6	10	2.4

*Diltiazem, verapamil, and nifedipine were not reported in 1980 (indicated by ellipses).

Visit Disposition

Patients in 1994 were only a third as likely to be admitted to a hospital following a visit (0.5%) as patients in 1978 (1.8%; $P < .001$) (Table 3). There was a decline in the proportion of visits for which no specific follow-up visit was planned, from 11.7% in 1978 to 9.3% in 1994 ($P < .001$ for trend). Referrals to other physicians increased from 3.2% in 1978 to 7.4% in 1994 ($P < .001$ for trend). In contrast to these changes, patients were asked to return for visits at specific times in 57.8% of visits in 1978 and 56.8% in 1994.

COMMENT

These data demonstrate dramatic changes in primary care between 1978 and 1994, including the demographic composition of patients, the growth of managed care, more preventive services, changes in the most common medications, and longer visits to PCPs.

Despite their close connection, the demographics of adult primary care do not directly correlate to changes in the US population. The proportion of PCP visits by Hispanics and nonwhites increased by 44% compared with the 30% increase in these groups in the US population,^{28,29} suggesting their improved access to care. The growing share of visits by elderly persons (24% in 1978 to 32% in 1994) was greater than their increase in the population (11% in 1978 to 13% in 1994),^{28,29} possibly indicating increasing illness or more intensive services in this group.

The dramatic growth of visits by HMO patients (10% in 1985 to 21% in 1994) is but 1 indicator of the rise of managed care and corresponds to the doubling of national HMO membership between 1985 and 1994.³ Rather than suggesting a decrease in the number of uninsured patients, the decline in self-pay visits is likely to represent another element of managed care³⁰: the shift of private insurance to managed care plans that seldom require complete out-of-pocket payment for services (coded as self-pay in NAMCSs). The continued growth of managed care is likely to be a major future influence on primary care practice.

A rising use of blood pressure measurement and dietary counseling suggest that physicians are providing more preventive health services. This finding is consistent with PCPs increasingly gathering information about health-related risk factors.³¹ The decline we note for Papanicolaou test use among PCPs is not incongruent but, rather, corresponds to the increasing role of Ob-Gyns and nonphysicians in providing this service.

The expansion of prevention may be due to the translation of clinical prevention guidelines^{9,10} into practice but also may reflect changing patient expectations, requirements by insurers, quality assurance efforts, and medical education.

The 18% increase in the duration of PCP visits between 1978 and 1994 was explained, in part, by increasing prevention services, even after accounting for the characteristics of primary care visits. The visit duration for HMOs has increased, although at a slower pace than for visits not covered by HMOs. Other data sources suggest that longer visits have not led to fewer visits per person. Visits per person per year increased from 4.7 to 6.1 between 1980 and 1994.²⁹

We noted several consistencies in adult primary care over time. Most prominently, there were few changes in the variety of short- and long-term clinical problems encountered and the reliance on previous patients as a source of visits. Visits to PCPs continue to conform to the definition of primary care as first contact, comprehensive, and longitudinal.¹ One surprising finding was the absolute and relative decline in adult PCP visits, a trend likely driven by the increasing supply of specialist physicians and their ability to provide some tasks performed by PCPs.

This study has several limitations. Although our visit-based approach allows a description of the work life of PCPs, we cannot assess the content of care received by individual patients during this time. Due to changes in the design of the survey, we were unable to follow all variables for the entire 1978 to 1994 period. The NAMCS excludes several sources of primary care, including emergency and hospital outpatient departments, so we cannot assess how visits in these settings may have changed.

Despite these caveats, this study has important implications for anticipating the future environment and requirements of primary care practice in the United States. Demographic changes in the North American population will continue to modify the profile of patients visiting PCPs. Medical education must evolve to address these trends. The continued aging of the population demands an adequate number of PCPs competent in geriatric medicine. The increasing racial and ethnic diversity of primary care patients emphasizes that minority populations are under-represented among physicians themselves.^{32,33} The adequacy of primary care training for the demands of managed care and increasing preventive tasks also needs to be examined.³⁴

Although PCPs have consistently encountered many of the same clinical conditions over time, the treatment of these conditions has changed rapidly, as illustrated by the prevalent use of newly available medications. These changes underscore the need to provide PCPs with timely, unbiased information regarding diagnostic and therapeutic developments³⁵ and to incorporate technology evaluation as part of medical education.

The changes we document suggest that multiple factors are affecting primary care. These multiple factors may have different implications for the future. Several trends

suggest that primary care represents an increasingly complex set of tasks. This growing complexity is suggested by the aging of the US population, the increasing diversity of the population, the expanding choices and recent changes in drug therapy, and the increasing need for PCPs to balance acute care and preventive tasks. The lengthening duration of adult PCP visits appears to reflect these factors.

In contradistinction, an enlarged role for managed care, representing both the spread of HMOs and other new arrangements in private insurance, suggests a growing emphasis on physician productivity, including shorter office visits. Thus, the demands of managed care for increased physician productivity appear to conflict with the longer time PCPs spend at each visit. Our finding of shorter HMO visits compared with non-HMO visits is consistent with these growing productivity demands. Despite the desire to increase productivity, the trend is toward longer visits, even for HMOs. It may be shortsighted for managed care organizations and physician groups to hope for major increases in physician productivity without compromising the provision of valued preventive services.

Accepted for publication January 8, 1998.

This study was supported by grant R01HS07892 from the Agency for Health Care Policy and Research, Rockville, Md, and by a Mentored Clinical Scientist Development Award from the National Heart, Lung and Blood Institute, Bethesda, Md (Dr Stafford).

Timothy Ferris, MD, provided invaluable insight and assistance on this project.

Reprints: Randall S. Stafford, MD, Division of General Medicine, Massachusetts General Hospital, 50 Staniford St, Ninth Floor, Boston, MA 02114 (e-mail: stafford@sol.mgh.harvard.edu).

REFERENCES

1. Starfield B. *Primary Care: Concept, Evaluation, and Policy*. New York, NY: Oxford University Press; 1992:chap 1.
2. Franks P, Clancy MC, Nutting PA. Defining primary care: empirical analysis of the National Ambulatory Medical Care Survey. *Med Care*. 1997;35:655-668.
3. *Health United States 1995*. Hyattsville, Md: National Center for Health Statistics, Centers for Disease Control and Prevention, US Dept of Health and Human Services; 1996. DHHS publication (PHS) 96-1232.
4. Eisenberg JM. The internist as gatekeeper: preparing the general internist for a new role. *Ann Intern Med*. 1985;102:537-543.
5. Burke W, Baron RB, Lemon M, Losh D, Novack A. Training generalist physicians: structural elements of the curriculum. *J Gen Intern Med*. 1994;9(suppl 1):S23-S30.
6. Cohen JJ, Whitcomb ME. Are the recommendations of the AAMC's Task Force on the generalist physician still valid? *Acad Med*. 1997;72:13-16.
7. Lee PR. Health system reform and the generalist physician. *Acad Med*. 1995;70(suppl):S10-S13.
8. Swing SR, Vasilias J. Internal medicine residency education in ambulatory settings. *Acad Med*. 1997;72:988-996.
9. US Preventive Services Task Force. *Guide to Clinical Preventive Services: Report of the US Preventive Services Task Force*. 2nd ed. Baltimore, Md: Williams & Wilkins; 1996.
10. Joint National Committee. *The Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure*. Bethesda, Md: National High Blood Pressure Education Program; 1994.
11. Franks P, Nutting PA, Clancy CM. Health care reform, primary care and the need for research. *JAMA*. 1993;270:1449-1453.
12. *Public Use Data Tape Documentation: 1978 National Ambulatory Medical Care*

- Survey. Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1980.
13. *Public Use Data Tape Documentation: 1979 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1981.
 14. *Public Use Data Tape Documentation: 1980 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1982.
 15. *Public Use Data Tape Documentation: 1981 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1984.
 16. *Public Use Data Tape Documentation: 1985 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1987.
 17. *Public Use Data Tape Documentation: 1989 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1991.
 18. *Public Use Data Tape Documentation: 1990 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1992.
 19. *Public Use Data Tape Documentation: 1991 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1993.
 20. *Public Use Data Tape Documentation: 1992 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1994.
 21. *Public Use Data Tape Documentation: 1993 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1995.
 22. *Public Use Data Tape Documentation: 1994 National Ambulatory Medical Care Survey.* Hyattsville, Md: National Center for Health Statistics, Public Health Service; 1996.
 23. *International Classification of Diseases, Ninth Revision, Clinical Modification.* 3rd ed. Vol 1. Washington, DC: Public Health Service, US Dept of Health and Human Services; 1989. DHHS publication (PHS) 89-1260.
 24. Schneider D, Appleton L, McLemore T. A reason for visit classification for ambulatory care. *Vital Health Stat 2.* 1979;No. 78:i-vi, 1-63.
 25. Hale RW. The obstetrician and gynecologist: primary care physician or specialist? *Am J Obstet Gynecol.* 1995;172:1181-1183.
 26. Higgins RV, Hall JB, Laurent S. Primary care by obstetrics and gynecologists: attitudes of the members of the South Atlantic Association of Obstetricians and Gynecologists. *Am J Obstet Gynecol.* 1997;177:311-317.
 27. Schneeweiss R, Cherkin DC, Hart LG, et al. Diagnosis clusters adopted for ICD-9-CM and ICHPPC-2. *J Fam Pract.* 1986;22:69-72.
 28. US Bureau of the Census. *Statistical Abstract of the United States: 1979.* 99th ed. Washington, DC: US Bureau of the Census; 1979.
 29. US Bureau of the Census. *Statistical Abstract of the United States: 1995.* 115th ed. Washington, DC: US Bureau of the Census; 1995.
 30. Jensen GA, Morrisey MA, Gaffney S, Liston D. The new dominance of managed care: insurance trends in the 1990s. *Health Aff (Millwood).* 1997;16:125-136.
 31. Wechsler H, Levine S, Idelson RK, Schor EL, Coakley E. The physician's role in health promotion revisited: a survey of primary care practitioners. *N Engl J Med.* 1996;334:996-998.
 32. Komaromy M, Grumbach K, Drake M, et al. The role of black and Hispanic physicians in providing health care for underserved populations. *N Engl J Med.* 1996; 334:1305-1310.
 33. Cantor JC, Miles EL, Baker LC, Barker DC. Physician service to the underserved: implications for affirmative action in medical education. *Inquiry.* 1996;33:167-180.
 34. Cantor JC, Baker LC, Hughes RG. Preparing for practice: young physicians' views of their professional education. *JAMA.* 1993;270:1035-1040.
 35. Soumerai SB, Avorn J. Principles of educational outreach ("academic detailing") to improve clinical decision making. *JAMA.* 1990;263:549-556.

Clinical Pearl

Psyllium With Bile Acid Sequestrant

Psyllium with half-usual dose colestipol was better tolerated and as effective as full-dose colestipol. (*Ann Intern Med.* 1995;123:493-499.)