

Illuminating the 'Black Box'

A Description of 4454 Patient Visits to 138 Family Physicians

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BACKGROUND. The content and context of family practice outpatient visits have never been fully described, leaving many aspects of family practice in a "black box," unseen by policymakers and understood only in isolation. This article describes community family practices, physicians, patients, and outpatient visits.

METHODS. Practicing family physicians in northeast Ohio were invited to participate in a multimethod study of the content of primary care practice. Research nurses directly observed consecutive patient visits, and collected additional data using medical record reviews, patient and physician questionnaires, billing data, practice environment checklists, and ethnographic fieldnotes.

RESULTS. Visits by 4454 patients seeing 138 physicians in 84 practices were observed. Outpatient visits to family physicians encompassed a wide variety of patients, problems, and levels of complexity. The average patient paid 4.3 visits to the practice within the past year. The mean visit duration was 10 minutes. Fifty-eight percent of visits were for acute illness, 24% for chronic illness, and 12% for well care. The most common uses of time were history-taking, planning treatment, physical examination, health education, feedback, family information, chatting, structuring the interaction, and patient questions.

CONCLUSIONS. Family practice and patient visits are complex, with competing demands and opportunities to address a wide range of problems of individuals and families over time and at various stages of health and illness. Multimethod research in practice settings can identify ways to enhance the competing opportunities of family practice to improve the health of their patients.

KEY WORDS. Physician's practice patterns; physicians, family; physicians' offices; preventive health services; family practice. (*J Fam Pract* 1998; 46:377-389)

Family practice is poorly understood, despite its recent resurgence as a cornerstone of the American health care system.^{1,4} Because of the lack of direct data on the patient-physician encounter and the limited number of research studies that assess community practice settings, policymakers view many aspects of family practice as obscured within a "black box." Existing studies of family practices and patient visits to family physicians typically rely on single sources of information, including physician report, medical record review, patient survey, or billing data. Each of these sources of information can provide a useful lens with which to view family practice. Yet, each has its own source of bias.^{5,7} A multimethod approach emphasizing

direct observation has never been used to describe a large number of patient visits to family physicians practicing in community settings.

International studies have examined the disease content of general practice.⁸⁻¹¹ These studies and registries established important methods for classifying diseases, morbidity, and episodes of care.

The first major description of the content of family practice patient visits in the United States was the 1976 Virginia Study.^{14,16} This landmark study involved physicians' reports of patient problems during 88,000 patient visits to 36 practicing family physicians and 82 family practice residents. By showing the variety of problems seen by family physicians, this study was critically impor-

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tant in defining the disease content of family practice,¹⁵ and in setting educational,¹⁷ research,¹⁸ and policy¹⁹ priorities early in the course of the discipline.

In a subsequent study using national data from multiple sources, samples of general practitioners and family physicians reported information about themselves, their practices, and a sample of patient office and hospital visits.²⁰ This study also had important implications for clinical care,²¹ education,²² research,²¹ and policy.^{24,25} In addition, it developed important new methods for clustering the wide variety of diagnoses that describe patient visits to family physicians.²⁶ Subsequent ongoing surveys by the American Academy of Family Physicians²⁷ and the National Center for Health Statistics National Ambulatory Medical Care Survey (NAMCS)^{28,29} have continued to use physician self-report information to describe various aspects of the care provided by family physicians.

Despite the importance of these landmark studies in describing family practice, a new multimethod study is needed for several reasons. First, previous research was limited to using nonobservational, physician-report sources of information. Second, the health system context of family practice has undergone significant changes in the past decade.^{30,31} These contextual changes are affecting the patient-physician relationship^{32,34} and other aspects of practice.³⁵ In addition, family physicians themselves are changing; increasing numbers are residency-trained, younger, and female.³⁷ Finally, family physicians are frequently confronted with efforts by others to change their approach to practice.³⁶ These attempts at change, although often motivated by laudable goals of improving the quality,³⁷ cost-effectiveness^{38,39} or scientific basis of patient care,^{34,41} often fail.^{42,43} They fail in part because of a lack of understanding of the core processes and competing demands of real world community family practice.⁴² Therefore, we used a multimethod approach^{45,47} to describe patient visits to family physicians in community practice. In addition, we sought to portray the context of these visits with brief descriptions of the practice settings, physicians, and patients. This article reports selected descriptive quantitative data on characteristics of the practices, physicians, patients, and patient visits from the Direct Observation of Primary Care (DOPC) study.

METHODS

SITES AND SUBJECTS

The DOPC methods have been described in detail elsewhere.⁷ In the summer of 1994, family physician members of the Ohio Academy of Family Physicians in northeast Ohio were invited to participate in a study of the content of family practice, and to become members of a practice-based network designed to serve as a laboratory for research on primary care practice. Physicians not working in family practice settings and full-time academic physicians were excluded, with the exception of 30 members of

the faculty of the Northeast Ohio Universities Colleges of Medicine (NEOUCOM), who practice in community sites that function as training practices for family practice residents. These 30 physicians participate in the North East Ohio Network (NEON)⁴⁸ of community teaching practices performing practice-based research. Based on calculations of the sample size needed to answer specific study questions, a sample of 120 physicians was targeted. Of the 531 physicians invited to participate, 138 volunteered. These physicians became inaugural members of the Research Association of Practicing Physicians (RAPP). This study and subsequent RAPP studies are guided by a board of directors of 14 participating physicians.

Consecutive outpatients seen by each physician during 2 observation days between October 1994 and August 1995 were enrolled, if they gave verbal informed consent. Each physician's observation days were separated by an average of 4 months, to maximize seasonal variation in the reasons for patient visits.

DATA COLLECTION PROCEDURES

Before beginning the data collection, the research nurses were extensively trained in the use of all research instruments. During the course of the data collection, the research nurses met for 1 half day every other week to independently code videotaped patient visits and medical records from sites not participating in the larger study. The interrater reliability of these measures among the eight research nurses has been previously reported⁷ and found to be good to excellent.

The research nurses collected data on the content and context of the outpatient visit, using the following measures: (1) direct observation of the patient visit, using a modified version of the Davis Observation Code (DOC)⁴⁹; (2) a direct observation checklist of services delivered during the patient visit; (3) a patient exit questionnaire; (4) medical record review; (5) a practice environment checklist; (6) billing data on Current Procedural Terminology (CPT) codes⁵⁰ and ICD-9-CM diagnoses⁵¹; (7) a physician questionnaire; and (8) ethnographic fieldnotes.

Each physician was visited by a team of two research nurses during 2 patient care observation days and 2 additional days during which medical records of the previously observed patients were abstracted. During the 2 days of patient care observation, one research nurse accompanied the physician during all visits by consenting patients. This nurse recorded her direct observation of the content of the visit using the DOC and direct observation checklist. The other research nurse obtained verbal informed consent from patients in the waiting room, and gave participating patients a questionnaire at the end of their visit.

Multiple strategies were used to minimize the possibility of a Hawthorne effect; that is, the chance that the presence of a nurse-observer would alter the phenomena under study. Physicians and office staff members were told to follow their usual procedures. To avoid biasing

their behavior, physicians were informed that the study would use multiple methods to examine the content of the ambulatory patient visit, but no specific hypotheses were shared with the physicians, office staff, or patients. In addition, the observation of consecutive patients made it impossible for physicians to spend more time or provide more services than their usual routine, without severely compromising their ability to stay on schedule. The research nurses asked the physicians and patients to ignore them during the visit. They observed from the least obtrusive corner of the room, from a position that avoided eye contact with either the physician or the patient. Since the presence of a nurse is a normal occurrence during many outpatient visits to physicians, the vast majority of patients and physicians reported that the presence of the nurse observer did not change their behavior during the observed visits.

Specific patient data were collected using a patient exit questionnaire, which patients completed and returned to the research nurse in the waiting room or mailed to the study research office in a confidential pre-paid envelope. Parents or guardians of children younger than 13 years of age were asked to complete the questionnaire for their children. Patients aged 13 to 17 were given the option of completing the questionnaire themselves or with help from a parent or guardian. Patients were sent a reminder postcard within 1 week of their visit. Nonrespondents were sent a second questionnaire within 1 month of their visit.

The practice environment checklist assessing multiple aspects of the practice organization was completed by the research nurse teams on the basis of direct observation and interviews with key office informants, such as the office manager, during both the patient care observation and medical record review days. Billing data on the observed visits were obtained from the responsible office personnel after the observation day. Ethnographic fieldnotes were based on brief "field jottings,"¹³ and were dictated by the research nurses immediately after each visit to the practice. Two thousand pages of text were thus dictated to critique the study methods and to provide richer descriptions of the variables under study.

After the first round of data collection, in which each physician was visited once, the research instruments were slightly expanded based on the early ethnographic findings and input from the entire team. Physician questionnaires were distributed only after each physician had completed the second observation day to avoid biasing their behavior during the study.

MEASURES

Practice characteristics were determined primarily from the practice environment checklist. Data on the practice type, location, personnel, and office operations were obtained by the research nurses from direct observation and key informant interviews. Physician characteristics

were assessed by questionnaire. Patient characteristics were measured with the patient exit questionnaire. In addition, some patient characteristics were determined from medical record review and direct observation, thus allowing a comparison of questionnaire responders and nonresponders. Information on patients' insurance status was obtained from billing data, and confirmed by patient questionnaire when possible.

Patient visits were characterized by multiple methods. The direct observation checklist was used to measure the reason for visit, the delivery of services during the visit, and whether a referral was made. Detailed data on preventive services delivery were obtained, and will be reported elsewhere. The medical record provided data on whether a drug was prescribed and whether the patient was a new or established patient. Established patients were defined as those who had been seen in the practice at least once during the previous 3 years.¹⁴ The primary and secondary diagnoses were obtained from billing data. The primary billing diagnosis was grouped into diagnosis clusters¹⁵ to provide information on the most common medical problems seen.

Finally, time use during patient visits was characterized using a modified version of the DOC to classify visit time into 20 different behavioral categories. The detailed definitions of these behavioral categories have been previously published.¹⁶ The DOC has shown good interrater reliability.^{17,18} For this study, the DOC was modified by eliminating the least common category reported in the initial studies by Callahan and Bertakis.¹⁹ The category of "discussion of treatment effects" was replaced with "negotiation," defined as "physician comments or questions which facilitate or invite patient participation in diagnosis, treatment planning, or problem solving." This modification was made to allow additional insight into this particular quality of clinician-patient communication.

In recording DOC data, the research nurses noted as many of the 20 behaviors as were observed during a 15-second observation interval. A tape recorder with an earphone prompted the research nurse to record these behaviors during a 5-second recording interval, and then to observe for the next 15-second interval, and so on. For each behavior, the mean number of intervals per visit and the mean percentage of the total number of intervals per visit were calculated. This information allows interpretation of the percentage of visit time devoted to each behavior. The percentage of visits for which each behavior was observed during at least one interval was also calculated, and the DOC was used to measure the length of the direct physician-patient contact time for each patient visit.

For the direct observation checklist, the research nurse observing the office visit checked a box for each service that was performed or ordered during each physician-patient encounter. In addition, for some services, the research nurse indicated whether the service had been performed in response to a patient's symptoms or to a

chronic medical condition.

Similarly, for the medical record review, the research nurses indicated whether particular services were noted on the chart for the observed visit. Medical record data were also collected on delivery of services during the past year or other relevant time intervals. The medical record was also used to collect data on a number of other variables, including demographics, number of chronic illnesses and medications, number of years as a patient of the practice, and number of visits in the past year.

The patient exit questionnaire asked a wide variety of questions, including whether particular services were provided during the observed office visit. Demographic questions ascertained the patient's age, sex, race, educational level, and marital status. Health status was measured with 5 items ($\alpha=.81$)⁵⁴ from the Medical Outcomes Survey (MOS) 6-item General Health Survey.⁵¹ These items used a 5-point Likert-type scale to ask about global health status, health limitations in everyday physical activities, emotional problems, limitations in work because of physical or emotional problems, and bodily pain during the 4 weeks before the visit. Patient satisfaction was assessed with multiple measures. A single item asked patients to rate the degree to which their expectations for the visit were met, using a 5-point Likert-type scale. Global satisfaction with the visit was measured with the 9-item Visiting Rating Scale from the MOS⁵⁶ ($\alpha=.88$). Two subscales were also created for the four items assessing patient satisfaction with the physician ($\alpha=.90$) and the four items assessing satisfaction with practice operations ($\alpha=.72$).

The reason for the visit was measured with the typology from the NAMCS^{64,67} and was obtained by direct observation, medical record review, and patient exit questionnaire. CPT codes were assigned to each visit by the research nurses on the basis of direct observation and medical record review using established guidelines.⁶⁰

ANALYSES

The representativeness of the physician sample was calculated by comparing the demographics of participating physicians with those of members of the American Academy of Family Physicians.²⁷

Several methods were used to assess the representativeness of the patient sample. First, characteristics of participating patients and visits were compared with similar data obtained from the NAMCS.^{27,28} Second, the research nurses recorded observable characteristics of patients who declined to participate, including any reason that patients gave for declining. Third, a subsample of 12 of the participating physicians reviewed the medical records of their patients who declined participation. For each patient, the physician recorded the patient's demographics and number of years as a patient of the practice. The physicians also noted their belief about why the patient declined to participate, according to the physician's knowledge of the patient and the characteristics of

the patient's visit on the observation day. Finally, among patients who agreed to have their outpatient visits observed, the characteristics of patients who returned questionnaires were compared with nonreturners, using the observation and medical record data.

Analyses for this descriptive article involved calculation of frequencies, means, standard deviations, and ranges, depending on the type of variable. For comparisons of questionnaire responders and nonresponders, *t* tests were used for continuous variables, the Wilcoxon rank sum test for highly skewed ordinal variables, and χ^2 tests for categorical variables.

RESULTS

Table 1 depicts characteristics of the 84 participating practices. The majority were single-specialty group practices, with solo practices being the next most common type. Most were in suburban locations, with moderate representation of rural and urban settings. This compares with national data²⁷ showing that 47% of family physicians practice in single-specialty group or partnership settings, 35% in solo practice, and 24% in rural settings.

The most prevalent personnel in these practices, after physicians, were clerical personnel, nurses, and medical assistants. An average of 2.7 nonclinicians were present for every clinician, but the ratio of clinicians to nonclinician staff members varied widely. Twenty-one percent of practices had either a nurse practitioner or a physician assistant among their clinicians, and 3% of practices had both physician assistants and nurse practitioners. The roles filled by registered nurses, who worked in 60% of practices, included a variety of clinical and patient education and communication tasks.

Practices varied considerably in their office operations. Slightly more than half of the practices offered scheduled evening or weekend hours. Patient phone calls were primarily returned by nurses or medical assistants in most practices, with the physician being the primary person to return calls in only 11% of practices. Use of different types of reminder systems for patient recall and monitoring were modestly prevalent. All practices had some type of written patient educational material available. A variety of ancillary services were available in these practices, ranging from phlebotomy in 87%, to flexible sigmoidoscopy in 55%, to x-ray facilities in 18%. Most practices expected payment at the time of the patient visit, and the majority did their own billing.

Table 2 shows the characteristics of the 138 participating physicians. Physicians were demographically similar to active practicing members of the American Academy of Family Physicians (AAFP)²⁷ in age (AAFP mean=45 years) and number of patients seen per week (AAFP mean=103). Our study sample represents recent demographic trends in family physicians; participating physicians were more likely to be female (AAFP=21%) and residency-trained

TABLE 1

Characteristics of 84 Study Practices

Characteristic	Mean or %	Range
Practice type (%)		
Single-specialty group	53.6	
Solo	29.8	
Multispecialty group	8.3	
Residency training practice	6.0	
Closed panel health maintenance organization	2.4	
Practice location		
Suburban	60.2	
Rural	21.7	
Urban	17.9	
Personnel		
Number of personnel		
Physicians in the group	3.6	(1, 27)
Clerical	3.6	(0, 15)
Medical Assistants	2.0	(0, 7)
RNs	1.4	(0, 9)
LPNs	1.1	(0, 12)
Nurse practitioners	0.2	(0, 6)
Physician Assistants	0.2	(0, 2)
Other	0.5	(0, 4)
Ratio of nonclinicians to clinicians	2.7	(.45, 9)
Practice employs nurse practitioners (% yes)	11.9	
Practice employs physician assistant (% yes)	11.9	
Practice employs registered nurses (% yes)	60.5	
Role of registered nurses (%)		
Returning patient phone calls	65.3	
Triage	63.3	
Patient health education	53.1	
Giving shots	49.0	
History-taking	34.7	
Diet counseling	30.6	
Prenatal teaching	14.3	
Office Operations (%)		
Weekend hours	57.1	
Evening hours	53.6	
Primary person to return patient phone calls*		
RN	39.3	
Medical Assistant	31.0	
Other	16.7	
Physician	10.7	
LPN	10.7	
Reminder systems		
Telephone recall system	61.9	
Checklists/flow charts	27.4	
Patient reminder cards	22.6	
Prevention on problem list	21.4	
Other	8.3	
Periodic chart audit within practice	7.1	
Risk factor chart stickers	6.0	
Computerized recall systems	6.0	
Computerized provider reminders	3.6	
Educational material available		
In waiting room, front desk	76.2	
In examination rooms	60.7	
In hallways	40.5	
Types of educational material available		
Pamphlets	81.0	
Posters	51.2	
Videos	15.5	
None	0.0	
Ancillary services in office		
Phlebotomy	86.9	
Procedure room	70.2	
Flexible sigmoidoscopy	54.8	
Laboratory	23.8	
Colposcopy	20.2	
Radiography	17.9	
Consultants	13.1	
Ancillary services in building		
Radiography	36.9	
Laboratory	35.7	
Phlebotomy	28.6	
Consultants	27.4	
Billing		
Payment expected at time of visit	77.4	
Billing done outside of office	7.1	

* Total >100% because primary responsibility to return phone calls is shared between categories of personnel in some offices.

(AAFP=73%). The majority of physicians provided inpatient care (AAFP=87% have hospital privileges). Nearly all physicians cared for children (AAFP=92%). Family physicians in our sample were less likely to provide prenatal care (34%) or deliver babies (21%) than a national sample of family physicians, but were slightly more likely to perform obstetrics than all family physicians in Ohio. Of all AAFP members, 31% include obstetrics in some form in their practice, whereas only 17% of family physicians in Ohio practice obstetrics.²⁷

Physicians described their primary focus as taking care of patient needs, with managing chronic illness and providing preventive services as secondary focuses of their practice energies. Most reported being satisfied with their provision of outpatient care, with somewhat lower levels of satisfaction reported for other aspects of practice. The vast majority of physicians did not smoke, although 18% were former smokers.

Of the 4994 patients presenting for care by their family physicians during the 2 observation days for each physician, 4454 (89%) agreed to have their visits observed. Eleven patients (2% of nonparticipants) were not enrolled because they were minors who did not have a parent or guardian present to give verbal informed consent, and 4 patients (1% of nonparticipants) were not enrolled because language barriers inhibited informed consent.

Twelve participating physicians provided information on their patients who declined to participate. This subsample of 54 patients was older than participating patients ($P<.001$), but similar in sex, race, and number of years as a patient. The physician attribution of the patients' reasons for nonparticipation revealed patient concerns about privacy as the most common reason (39%), followed by anxiety (11%), embarrassment (7%), gynecologic reason for visit (7%), and shyness (6%).⁷

Patient characteristics were similar to characteristics of patients coming to see family physicians participating in the 1994 NAMCS,²⁷ in age (NAMCS=38 years), sex (NAMCS=58% female), and race (NAMCS=88% white). Patients in our study were slightly more likely to be established patients (NAMCS=88%) and to have a managed care type of insurance

TABLE 2

Characteristic	% or Mean (SD)
Age (years)	43.1 (7.6)
Sex (% male)*	73.2
Marital status	
Married	88.1
Unmarried	4.0
Divorced	7.9
Completed residency training in family practice	89.1
No. of years in current practice	10.5 (7.8)
No. of patients seen per week in office setting†	109.4 (45.5)
Total no. of patient care hours per week‡	42.2 (10.9)
Perform prenatal care (%)	33.6
Deliver babies (%)	21.1
Provide inpatient care (%)	80.4
Provide care for children under 13 years of age (%)	98.4
Self-attribution of focus (1=very little, 5=very much)	
Taking care of patient needs	4.7 (0.6)
Doing prevention	4.2 (0.7)
Managing chronic illness	4.2 (0.7)
Family as the unit of care	3.7 (0.9)
Handling urgencies, emergencies	3.6 (0.9)
Keeping on schedule	3.5 (0.9)
Business and financial aspects of practice	2.8 (1.2)
Community / public health	2.7 (1.1)
Satisfaction (1=very unsatisfied, 5=very satisfied)	
Outpatient care	4.1 (0.9)
Inpatient care	3.4 (1.0)
Managing practice	3.1 (1.0)
Malpractice risks and claims	3.1 (1.2)
Leisure and family time	3.1 (1.1)
Feelings of control over practice environment	2.8 (1.1)
Physician smoking status	
Never smoked	78.0
Quit smoking	18.1
Current smoker	3.9

*Physician sex is the only variable based on total population of 138 physicians; all other data are from the 128 physicians who returned the questionnaires.

†This number excludes the 30 physicians at residency training sites. When these sites were included, the mean number of patients seen per week was 91.2, SD=52.7.

‡This number excludes the 30 physicians practicing at residency training sites. When these sites were included, the mean number of patient care hours was 36.8, SD=14.7.

(NAMCS=21%).

Medical records were available for review for 4432 of the 4454 observed visits (99.5%). Patient exit questionnaires were returned by 3283 patients, for a 74% response rate. As shown in Table 3, patients who returned questionnaires were more likely than nonreturners to be older, female, white, married, to have a greater number of chronic illnesses and a longer relationship with the practice, and to have Medicare or fee-for-service insurance. However,

the magnitude of these differences is small. In addition, smokers and patients presenting for an acute illness were slightly less likely to return exit questionnaires.

The majority of patient visits in this sample were by women (62%). Established patients accounted for 91% of visits. The average patient had been with the practice for more than 5 years and had visited the practice 4.3 times in the past year, with an average of 2.3 additional visits to other physicians outside the practice during the past year. Patients had an average of 2.3 problems on their problem list.

Visit characteristics are shown in Table 4. The average visit duration was 10 minutes of direct physician-patient contact time. Most visits were for acute illness or follow-up of an acute illness, with visits for chronic illness and well care being the next most common. Drugs were prescribed during nearly two thirds of visits. This is compared with physician report of prescribing a drug during 75% of visits in the NAMCS.²⁷ Referrals to another physician were made during 7.6% of patient visits (NAMCS=4.6%).²⁷ Patient satisfaction with their physician and with the practice was high, as was the degree to which patient expectations for the visit were met.

Table 5 shows the most common diagnosis clusters for the observed patient visits, and compares these with the rank frequency of these clusters among a national sample of family physicians from 1989-1990.²⁸ The most common diagnoses were hypertension, upper respiratory infection, and general medical examination. Sixty-one percent of visits were classified in these top 25 diagnosis clusters.

Table 6 shows how time is spent during patient visits, as classified into the 20 behavioral categories of the modified DOC. During an average 15-second interval, 1.9 behaviors were observed. The most common use of time involved history-taking, followed by planning treatment, physical examination, and health education, in that order. The third column of Table 6 shows the percentage of visits at which each of the 20 behaviors was observed during at least one 15-second observation interval. History-taking, planning treatment, physical examination, provision of feedback on findings, and health education occurred during at least 90% of patient visits. Structuring the interaction, gathering family information, patient questions, and chatting occurred during more than two thirds of visits. Other behaviors, including the next most common, preventive services delivery, occurred during less than one third of patient visits.

DISCUSSION

The DOPC study demonstrates the feasibility of carrying out a large multimethod observational study in busy community practice sites. The concurrent use of both quantitative and qualitative methods^{46-47,58} holds the promise of testing a priori hypotheses while generating new hypotheses from the study of actual practices.^{4,59} The study con-

TABLE 3

Characteristics of Patient Population

Characteristic	Entire Sample (N=4454) % or Mean (SD)	Patients Who Returned a Questionnaire (n=3283) % or Mean (SD)
Age (years)	41.4 (24.2)	43.9 (23.7)*
Sex (% female)	61.6	62.7*
Race (% nonwhite)	11.9	8.7*
Marital status (% married)		54.4
Educational level attained (% >high school)		42.0
New vs established patient (% new)	8.6	7.1*
Self-reported health status		
Overall health (1=poor, 5=excellent)		3.4 (1.0)
Everyday activities limited by health (1=extremely, 5=none)		4.0 (1.2)
Bothered by emotional problems (1=extremely, 5=none)		3.9 (1.1)
Amount of bodily pain (1=severe, 5=none)		3.6 (1.0)
Difficulty doing daily work because of ailments (1=severe, 5=none)		3.9 (1.1)
Summary		3.8 (0.8)
Body mass index** (kg/m ²)	26.2 (7.5)	26.4 (7.3)
No. of problems on problem list	2.3 (2.5)	2.5 (2.6)*
No. of medications on medication list	1.7 (2.2)	1.8 (2.2)*
No. of years with practice	5.4 (5.5)	5.6 (5.5)*
No. of visits in past year to practice	4.3 (2.7)	4.4 (2.6)
No. of visits in past year to observed physician**	3.9 (2.6)	4.0 (2.6)*
No. of visits with a nurse in past year	0.4 (1.1)	0.4 (1.1)*
No. of visits to physicians outside practice this year		2.3 (2.9)
No. of physicians seen in past year		2.5 (1.5)
Insurance		
Medicare	22.7	25.1*
Medicaid	6.7	5.1
Managed care	36.0	37.0
Fee for service	19.9	22.8
Other, undeterminable	7.3	3.1
None	7.3	6.8

* Patients who returned questionnaire differ from those that did not at $P < .05$.

** Round 2 only.

firms, updates, and expands findings of previous reports of the content of family practice.¹⁴⁴ In addition, the direct observation data provide new insights on time use during the patient visit. For example, the directly observed length of visit was shorter than the 16-minute average length of visit reported by physicians in the NAMCS.²⁷ The discrepancy most likely represents physicians in the NAMCS sample estimating total visit-related time, including time not spent in face-to-face contact with the patient. In contrast, our direct observation procedure measured the time the physician spent in direct patient contact.

Because of the intensive data collection methods involved, a regional sample of physicians was the focus of this study. The participating RAPP members are demographically similar to family physicians nationally, but represent recent trends toward increasing numbers of female and residency-trained physicians practicing in group practice settings.^{21,61} At the time of the study, capitation was rare in our area; most managed care plans paid discounted fee-for-service, and managed care Medicare and Medicaid were

not prevalent.⁶² The percentage of physicians performing obstetric care is representative of local and regional rates, and slightly lower than national rates. These rates show that local community need and attitudes,⁶³ as well as personal and other factors,⁶³ determine the scope of local practices. The findings also show a substantial minority of family physicians performing prenatal care, a service that has been recently recommended as a strategy for maintaining continuous, comprehensive care of women and infants by family physicians who do not perform deliveries.⁶² In addition, despite recent concerns about the rise of hospitalists,^{64,65} the majority of physicians in our sample continue to provide continuity of care for their patients when they are hospitalized. This is similar to findings from

a recent national survey that showed a high level of involvement of family physicians in hospital care.⁶⁶

The patient sample appears representative of patient populations visiting family physicians. In addition, a previous study of patient visits to members of the NEON practices who participated in this study showed patient and visit characteristics similar to the NAMCS data.⁶⁷ The reasons for patient nonparticipation suggest that the sample may slightly underrepresent counseling and gynecologic visits. However, because of the high patient participation rate, the magnitude of this effect is likely to be small. Our sampling of patients who came in for care does not allow us to assess the frequency with which all patients in a practice's panel seek care. Other research,

TABLE 4

Visit Characteristics (N=4454)	
Characteristic	% or Mean (SD)
Length of visit (min)	10.0 (5.8)
Reason for visit (assessed by nurse observer)	
Acute, problem	40.3
Acute, follow-up	17.7
Chronic, routine	16.9
Chronic, flare-up	6.4
Well adult/child examination	12.0
Prenatal care	1.1
Postnatal care (n=2)	0.0
Counseling/advice	1.4
Immunization	0.4
Administrative purpose	1.0
Other	2.2
Drug prescribed	62.2
Referrals	
To another physician	7.6
To a nonphysician in office	1.6
To a nonphysician out of office	2.4
Patient satisfaction (1=poor, 5=excellent)	
Global measure of satisfaction*	4.3 (0.7)
Expectations for visit met	4.4 (0.8)
Satisfaction with physician†	4.4 (0.7)
Satisfaction with practice operations†	4.1 (0.8)

* Global satisfaction was measured with MOS 9-item Visit Rating Scale.²⁴

† Four item subscale of MOS 9-item Visit Rating Scale.

however, indicates that the average American sees a physician 2.8 times per year, with 0.8 of those visits being to family physicians.²⁷

This article's brief descriptions of practice characteristics show a variety of office structures, personnel, and operations. This diversity of approaches indicates individual creativity and adaptation to the unique configurations of each setting.⁶⁴ Recent trends toward larger practices⁶⁵ and centralized management of practices⁷⁰ are likely to enhance the use of uniform operational systems, such as flowsheets, self-audits, and computerized reminder systems, that were used at low rates by practices in our study. However, centralization of management has the potential to diminish the diverse approaches that practices have developed to meet the needs of the particular clinicians, staff members, and patient populations that they serve. Ongoing research is beginning to provide important new information on the core processes of family practices that are offered by these varied approaches.^{24,63,71,72}

Despite the relatively small number of personnel in the majority of family practices in the study, most provided a wide range of ancillary services in the office or the build-

ing. The availability of flexible sigmoidoscopy in more than half the offices shows the potential of family practices to use this tool for colorectal cancer screening. These data also show a ceiling for efforts to increase its use. Practices that do not have the equipment or personnel trained in its use will require extensive training or will have to make plans to refer patients, if this procedure is to be widely used.⁷³

Physicians reported that their major focus is caring for patient needs. The direct observation data show that for 58% of these visits, these patient needs were for acute illnesses. The low priority given to community and public health shows the difficulty of developing a larger population or community-oriented primary care focus,⁷⁴ and emphasizes the focus of current medical practice on managing the immediate demands of acutely ill patients who come through the door.⁷⁵

The delivery of preventive services, recognition and treatment of mental health problems, and management of chronic diseases present particular challenges, since most practices and their operational systems are primarily set up to care for acute illnesses. Trends toward increasing capitation may theoretically increase the relative value of prevention and chronic illness care in primary care practice. However, managed care financial carve-outs for mental health and chronic disease may have the opposite effect of devaluing provision of these services within the context of an ongoing relationship with a family physician. The fact that patients in our study saw their physician an average of 4 times a year shows the potential of a longitudinal relationship between the patient and family physician to deliver a wide range of services over time.

Some changes in approach will be required if family practices are to achieve their true potential for addressing the entire range of needs that patients bring to them. The Institute of Medicine has recognized that despite evidence about the ability of primary care to provide high-quality care at low cost, an expanded vision of the scope of primary care practice could result in an even greater impact on the health of Americans.⁷⁶ Scherger⁷⁷ has suggested that the optimal role for a family physician may not be as a workhorse who sees large numbers of patients per day, but as a personal physician⁷⁸ who uses ongoing relationships with patients, families, and communities to serve as a health care manager, providing direct care for a smaller number of patients each day during critical events, and orchestrating acute care by nonphysician clinicians and specialist care of certain problems.

The discrepancy between the percentage of visits for well care as measured by direct observation and billing data shows the additional insights that can be gained from viewing the same phenomena using multiple methods. Our direct observation that well care was the major reason for visit in 12% of patient visits corresponds to rates reported by Luckmann and Melville⁷⁹ in a national survey of family physicians. Yet, the 6% of visits in our sample that were

TABLE 5

The 25 Most Frequent Diagnosis Clusters Among 4454 Patient Visits

Rank	Diagnosis Cluster	Frequency of Visits	% of Total Visits	1989-90 NAMCS* Cluster Rank
1	Hypertension	353	7.9	3
2	Acute upper respiratory infection	302	6.8	2
3	General medical examination	261	5.9	1
4	Sinusitis (acute and chronic)	192	4.3	13
5	Acute lower respiratory infection	168	3.8	6
6	Otitis media (acute and chronic)	165	3.7	5
7	Depression, anxiety	163	3.7	8
8	Diabetes mellitus	158	3.5	9
9	Acute sprains and strains	113	2.5	7
10	Degenerative joint disease	82	1.8	12
11	Ischemic heart disease	66	1.5	16
12	Asthma	65	1.5	
13	Low back pain diseases and syndromes	64	1.4	18
14	Lacerations, contusions	62	1.4	10
15	Fibrositis, myalgia, arthralgia	61	1.4	
16	Nonfungal infections of skin	60	1.3	
17	Headaches	60	1.3	
18	Abdominal pain (excluding pelvic pain)	59	1.3	
19	Bursitis, synovitis, tenosynovitis	55	1.2	
20	Chronic rhinitis	54	1.2	15
21	Pregnancy care	50	1.1	4
22	Emphysema, chronic bronchitis	44	1.0	
23	Thyroid diseases	42	0.9	
24	Urinary tract infection	40	0.9	20
25	Peptic diseases	37	0.8	

* NAMCS (National Ambulatory Medical Care Survey) data clustered by: Rosenblatt RA, Hart GL, Gamble S, Goldstein B, McClendon BJ. Identifying primary care disciplines by analyzing the diagnostic content of ambulatory care. *J Am Board Fam Pract* 1995; 203:1-20.

classified as "general medical examinations" on the basis of billing data are also similar to other national data.²¹ This disparity between reason for visit assessed by direct observation and billing data may be a remnant of the lack of reimbursement for well care in traditional indemnity health insurance policies. Since at least one potentially billable diagnosis was uncovered during a large percentage of patient visits initiated for well care, many physicians have developed the habit of using these diagnoses in billing for approximately half of those visits. Recent increases in reimbursement for preventive care²² and the development of specific CPT codes for such care²¹ may begin to alter physician billing behavior over time. Nonetheless, it is important to realize that studies that report the percentage of visits for well care on the basis of billing data may seriously underreport the prevalence of well care visits.

Patient problems were handled without referral during the large majority of patient visits. Only 7.6% of visits resulted in a referral to another physician, which is similar to the findings of other studies.^{23,24} The slightly higher rate of referral in this study compared with NAMCS may represent the renewal of previous referrals captured by our direct observation methods and may not have been reported in NAMCS. In 2.4% of patient visits, a referral was made to an outside nonphysician. This shows that family physicians exhibit both the comprehensiveness and coordination of care attributes of primary care²⁵ by managing the vast majority of patient problems themselves and selectively referring to other health care professionals when indicated by the patient's problem and other factors.

Consistent with other studies,^{26,27} patients in our sample reported a high degree of satisfaction with their physician, and reported that their expectations were met to a high degree during the vast majority of visits. Satisfaction with office operations was also high, but less so than with the clinical care. Moderate rates of physician satisfaction are similar to findings of a recent study of a transitional health care market.^{28,27}

That nearly 40% of patient visits were not classified into the top 25 diagnosis clusters shows the wide variety of problems addressed by family physicians. Differences in the rank order of other diagnosis clusters in the national sample and our sample may represent temporal trends between 1989-1990 and 1994-1995 or differences in disease frequency or diagnosis billing practices between the two samples.

It is tempting to speculate about the reasons for higher rates of respiratory illnesses, musculoskeletal disease, skin infections, abdominal pain, headaches, thyroid disease, and peptic disease seen in our sample of visits, as compared with a national sample 5 years earlier. These differences may represent temporal trends in disease frequency, environmental influences, differences in patient populations, regional variation in diagnostic practices, and chance variations.

The time use data represent the first broad-scale picture of the content of the physician-patient interaction during a large number of visits to physicians in community practices. The DOC data show that the patient history, including the assessment of family information, represents

TABLE 6

How Time Was Spent During Patient Visits (N=4401)			
Davis Observation Code Category	Mean No. of 15-Second Intervals	Mean % of Total Time Intervals*	% Visits with One or More Intervals†
History-taking	16.8	55.9	100
Planning treatment	9.1	32.0	99
Physical examination	6.4	22.9	94
Health education	5.9	19.4	90
Feedback on evaluation results	3.8	13.9	92
Family information	3.2	10.1	73
Chatting	2.2	7.8	69
Structuring the interaction	2.2	7.8	80
Patient questions	2.0	6.8	71
Preventive services	1.0	3.0	33
Procedures	1.1	2.7	8
Nutrition advice	0.7	2.1	26
Counseling	0.6	1.7	16
Exercise advice	0.5	1.5	21
Compliance assessment	0.4	1.3	23
Smoking behavior assessment or advice	0.4	1.3	18
Assessing patient's health knowledge	0.4	1.2	24
Health promotion	0.4	1.2	18
Negotiation	0.3	1.1	21
Substance use assessment or advice	0.2	0.5	9

* Total > 100% because more than one behavior could be coded in each interval.
† Davis Observation Code data were not obtained on 53 visits.

included in only selected patient encounters. That 21% of patient visits involved some degree of negotiation shows evidence of a participatory style in some interactions between patient and family physicians. This participatory style has been found to be more common among physicians with primary care training,⁶¹ and is associated with the duration of the patient-physician relationship and with patient satisfaction.⁶²

Family physicians have multiple brief contacts with patients, with a great deal of demand placed on diagnosing and treating acute complaints and managing chronic illness. In the current health care environment, this requires clinicians to be very selective in their allotment of time to other domains of care, such as counseling, preventive services, and health promotion. A fundamental change in the operational structure of most practices may be needed if family physicians are to focus less effort on acute care and more effort on chronic disease management, prevention, mental health, and population medicine.⁶³ Because of its generalist focus and

the major tool of the practicing clinician. The value of the medical history has been espoused by clinician-teachers for years.^{64,65} Physical examination is the next most common information gathering technique used by family physicians. It has been shown that in 56% of outpatient medical visits a diagnosis is established after history-taking, and in 73% after history-taking and physical examination.⁶⁶ The percentages are likely to be even higher for family physicians who know their patients over time.

The nine most common behaviors occur during more than two thirds of patient visits, and may be considered core activities. These behaviors involve a mixture of information gathering and information sharing by the physician, as well as treatment of illness. Other behaviors assessed by the DOC occurred during a minority of patient visits, and appear to represent discretionary behaviors

patient-centered approach,⁶⁶ family practice is likely to be extremely robust in its ability to respond to changing opportunities to meet the needs of patients and the health care system.⁶⁸ The challenge is to remain true to the discipline's core values,^{64,66} while adapting to a changing environment.

CONCLUSIONS

Many aspects of family practice remain in a black box. Our research used a multimethod approach including direct observation, patient and physician report, medical record review, and billing data to light several corners of that box. The findings demonstrate the complexity of family practice on multiple levels, and illustrate the competing demands of meeting a large potential agenda of patient

needs during visits that last an average of 10 minutes.⁴⁴

The diversity of patient needs and practice approaches represented in family practice shows the need for a broad perspective on efforts to change practices, since a narrow focus could have unintended effects on other aspects of patient care.⁴⁵ Additional analyses of data from this study and others will be needed to further understand the core processes and structures of family practice, to assess their effect on important patient outcomes, and to uncover opportunities for enhancing the effectiveness of family practice.

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