

Entry Into Primary Care and Continuity: The Effects of Access

ABSTRACT

Objectives. This study examined the relationship between access and use of primary care physicians as sources of first contact and continuity with the medical system.

Methods. Data from the 1987 National Medical Expenditure Survey were used to examine the effects of access on use of primary care physicians as sources of first contact for new episodes of care (by logistic regression) and as sources of continuity for all ambulatory visits (by multivariate linear regression).

Results. No after-hours care, longer office waits, and longer travel times reduced the chances of a first-contact visit with a primary care physician for acute health problems. Longer appointment waits, no insurance, and no after-hours care were associated with lower levels of continuity. Generalists provided more first-contact care than specialists acting as primary care physicians, largely because of their more accessible practices.

Conclusions. These data provide support for the linkage between access and care seeking with primary care physicians. (*Am J Public Health*. 1998;88:1330-1336)

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Better access increases use of ambulatory care,¹ enhances the chances of receiving needed health care,^{2,3} prevents unnecessary hospitalizations,⁴ and improves health status.^{5,6} These observations implicitly assume that increased use of primary care services, which hold the potential for promoting the health and effectively managing the disease of a population, mediates the effects of access. However, there is little empirical evidence linking access directly with care seeking from primary care physicians.

Two patterns of utilization are characteristic of primary care: first-contact use and continuity. For new or newly recurring health problems, individuals use their primary source of care as an entry site into the medical system. Physicians serving as a source of first-contact care help individuals clarify the nature of their health problems and serve as advocates for appropriate medical services delivered either in the primary care setting or through referral. First-contact care is one of the unique attributes of primary care.⁷ Previous studies have found that the first-contact pattern of primary care utilization reduces use of specialists^{8,9} and emergency rooms⁹ and, as a consequence, health care expenditures.¹⁰

The concept of continuity between patients and health care providers is an integral part of the Institute of Medicine's 1996 definition of primary care. The definition emphasized that primary care involves a "sustained partnership" between patients and providers that addresses the "majority of a population's health needs."¹¹ Continuity implies that individuals use their primary source of care over time for most of their health care needs. The benefits of continuity with a source of primary care are well documented and include improved satisfaction, better medication and appointment compliance, enhanced physician recognition of the patient's health needs, reduced likelihood of hospitalization, lower use of emergency

rooms, and less resource intensive medical care.^{7,11,12}

The purpose of this study was to examine the linkages between access and care seeking with primary care physicians. The main hypothesis was that better access to a primary care physician would have the dual effect of promoting both first-contact care and continuity.

Methods

Data Source and Study Population

A data source that includes information on individuals' access to their primary care physicians and their use of all sources of ambulatory care was needed to examine the study's research questions. The 1987 National Medical Expenditure Survey (NMES) met these criteria. The NMES provides information on utilization, financing, expenditures, and access to primary care for persons in the United States.¹³

The methodology of the NMES household and medical provider surveys is extensively documented.¹³⁻¹⁵ Recall periods were 3 to 4 months. Information on utilization and expenditures was obtained from both the household and medical provider surveys. Sampling weights—the number of individuals in the US population that sampled individuals represent—were based on the 30 038 individuals who responded to all 4 waves of inter-

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views and the access-to-care supplement. The inclusion criterion was presence of a self-identified, community-based primary care physician (n = 19 835 persons). There were 5519 persons (18.4% of the total) who reported that they did not have a source of primary care; 622 persons (2.5% of those with a source of care) reported that their site of care was an emergency department or hospital outpatient department; and an additional 4062 persons (17.0% of those with a community-based source of care) did not have a specific physician within their primary care site.

Analyses of first-contact care were based on the 11 024 individuals (55.6%) with at least 1 acute episode of care, whereas continuity-of-care analyses were based on 16 145 individuals (81.4%) with at least 1 ambulatory encounter.

Concept and Measurement of Access

Access measures were based on indicators derived from questions about health system factors that may influence initiation and maintenance of a relationship with a primary source of care. Three dimensions of access were assessed in this study: geographic—ability to travel to the primary source of care; financial—costs associated with health care—seeking; and organizational—factors related to arranging encounters between patients and physicians. Organizational access was broken down into 3 categories as described below, resulting in a total of 5 possible access barriers.

Access variables were dichotomized to indicate a specific barrier to care seeking. A geographic barrier was considered to exist if travel to an individual's primary care site took 30 minutes or more. A financial access barrier was present if the respondent reported having no insurance for part or all of the year. Organizational barriers were examined with 3 measures: availability of after-hours care at the primary care site; a wait of 5 or more days between making an appointment and being seen by a physician (appointment wait); and more than a 30-minute wait in the primary care physician's office (office wait). The after-hours care variable itself was composed of 5 variables—emergency hours, house calls, evening hours, Saturday morning hours, and other weekend hours. Absence of all 5 types of after-hours care was categorized as an access barrier. Individuals who responded "don't know" to any of these 5 availability measures were recoded as answering no, because it was assumed that not knowing about a service was equivalent to not having the service available. Lastly, the number of access barriers was summed to calculate a count of barriers; the range was 0 to 5. Because of sample size considerations, we grouped this variable into 4 categories: 0, 1, 2, and 3 to 5 access barriers.

Measurement of First-Contact Care and Continuity

For the purposes of this study, respondents' self-identified source of routine and sick care was considered their primary source of care. The practice site variable was derived from responses indicating the type of "particular clinic, health center, doctor's office, or other place that (person) usually goes to if (person) is sick or needs advice about (his/her) health." The primary care physician was defined as the "particular doctor (person) usually sees at [the primary care site]."

Episodes of ambulatory care were constructed to examine entry into primary care. An "episode of care" depended on 2 factors: identification of a cluster of health care services delivered for a specific condition and the interval without services for that condition required to separate one episode from other potential episodes. For each patient, *International Classification of Diseases (ICD)* codes from the NMES ambulatory encounter data file were aggregated into more broadly defined clinically homogeneous categories according to the method developed by Schneeweiss and colleagues.¹⁶ Twenty-four acute conditions were selected for analysis on the basis of the following criteria: (1) the condition represented a prevalent health problem; (2) use of services was reasonably indicated for no longer than 3 months (this excluded chronic illnesses and pregnancy); and (3) likelihood of hospital care was minimal.

The 16 145 users of ambulatory care made 129 255 visits, 5.3% of which were missing *ICD* information and were excluded from further analysis. Some preventive care was not assigned an *ICD* code in the NMES. However, respondents were queried about their reason for each visit. This information was used to assign appropriate *ICD* codes for visits for well-child care, immunizations, and general medical examinations. Disability conditions, which were given "X codes" in the NMES, were also reassigned to appropriate *ICD* codes. The episode-of-care methodology categorized 30 967 visits (75.8% of the total number of visits made for the 24 conditions) into 20 282 discrete episodes among 11 024 persons. The mean number of episodes of care per person among respondents with at least 1 was 1.8, with a mode and median of 1. Additional details on episode-of-care methodology are given elsewhere.¹⁰

The provider identification number of an individual's self-reported primary care physician was linked to claims for all visits in the database. The NMES gave provider codes to physicians only, and not to sites of care; only provider codes at the level of the individual physician could be linked with provider identifiers in the claims.

Acute episodes that began with a visit to an individual's self-identified primary care physician were categorized as having first-contact care. The proportion of all ambulatory visits, regardless of where they occurred, made with the self-identified primary care physician constituted continuity.

Control Variables

Sociodemographic data consisted of age, sex, race/ethnicity (Hispanic, Black non-Hispanic, other non-Hispanic), poverty status (% of poverty line), and urban vs rural residence (urban was defined as being within a standard metropolitan statistical area). Health status was characterized by morbidity and self-perceived health status. All *ICD* codes from all ambulatory visits were assigned to 1 of 34 ambulatory diagnostic groups.¹⁷ For each person, the number of unique ambulatory diagnostic groups was summed to obtain a count of comorbidities. Self-reported health was categorized as excellent, good, fair, or poor.

If respondents reported that their physician was a specialist, they were asked the specialty. Responses were recoded as primary care (family practice, general surgery, internal medicine, obstetrics and gynecology, and pediatrics) or other. General practitioners, family practitioners, internists, and pediatricians were labeled generalists; all others (9.6%) were categorized as specialists.

Type of practice site for each primary care physician was based on respondents' report: doctor's office, doctor's clinic, health maintenance organization (HMO), community health clinic (family health center, company clinic, school clinic), or other.

Data Analysis

The statistical software SUDAAN was used because of the multistage, stratified cluster sampling of the NMES. All data analyses accounted for both the design effect and the sampling weights.¹⁸ Analysis of variance was used to assess differences between means, using the REGRESS procedure. The F statistic for the overall model was used to test the null hypothesis that all the means were equal. Hypothesis testing for cross tabulations of proportions was done with the χ^2 statistic for weighted survey data.

Logistic regression was used to examine the effects of access on first-contact care, and multivariate linear regression was used to examine the effects of access on continuity of care. All regressions controlled for socio-demographics, health status and comorbidities, training of the primary care physician, and type of primary care site. In these regres-

TABLE 1—Percentage Distribution of Five Access Barriers, Overall and by Primary Care Physician Practice Site and Training, Experienced by Respondents to the National Medical Expenditure Survey, 1987

	Access Barrier				
	Travel Time ≥ 30 min	Uninsured	No After-Hours Care	Appointment Wait ≥ 5 d	Office Wait ≥ 30 min
Total sample (n = 19 835) ^a	15.8	14.7	19.2	18.9	32.8
Practice site of primary care physician					
Doctor's office	15.3	14.0**	18.4**	18.2	33.2
Doctor's clinic	16.0	17.2	21.1	22.3	30.3
HMO	37.7	7.7	26.2	34.0	21.7
Community health clinic ^b	18.0	21.1	32.4	21.4	37.7
Other	23.8	20.4	17.4	18.0	30.8
Training of primary care physician					
Generalist ^c	14.6**	14.6	18.0**	17.4**	32.6
Specialist	26.1	14.3	23.7	32.5	35.0

^aThis was the number of respondents with a self-identified primary care physician.

^b"Community Health Clinic" included family health centers, company clinics, and school clinics.

^cGeneral practitioners, family practitioners, internists, and pediatricians were categorized as generalists.

***P* < .01 for χ^2 test.

sion models, each access barrier was entered into the model as a dummy variable. All controlling variables entered the regression models as design variables. SUDAAN produces design-weighted least squares estimates for multivariate linear models. The logistic procedure of SUDAAN uses maximum likelihood techniques to estimate parameters and their variances. We examined both the raw and Pearson residuals from both the logistic and multivariate linear regression models. Scatter plots of the residuals indicated random distributions and constant variance, indicating good model fit.

Results

Access Barriers

Overall, 63.6% of individuals had encountered at least 1 of the 5 access barriers. Compared with the White non-Hispanic subgroup (0.96 access barriers per person), Hispanic and Black non-Hispanic respondents faced significantly more access barriers (1.22 and 1.14, respectively, *P* < .001). Individuals living in poverty faced 34.7% more barriers than those above the poverty line (1.32 vs 0.98, *P* < .001). Community health clinics as primary care practice sites were associated with a mean of 1.31 barriers; HMOs, 1.27; doctors' clinics, 1.07; doctors' offices, 0.99; and other sites of care, 1.10 (*P* < .001). The most commonly reported barrier was an office wait of at least 30 minutes (Table 1). Each of the other 4 barriers affected 15% to 20% of the respondents.

Generalists as primary care physicians were associated with significantly fewer access barriers than were specialists (0.97 vs 1.31 access barriers, *P* < .01). Respondents seeing specialists were more likely to encounter geo-

TABLE 2—Correlates of First-Contact Care and Continuity Among Respondents to the National Medical Expenditures Survey, 1997

	% of Episodes With First-Contact Visit to Primary Care Physician (n = 20 282 episodes) ^a	% of All Visits Made With Primary Care Physician (n = 16 145 persons) ^b
Total sample	49.6	42.9
Age, y		
1-4	61.6	55.3
5-17	51.4	42.4
18-44	40.9	36.3
45-64	47.9	43.8
65+	52.7***	46.9***
Sex		
Male	50.5	42.7
Female	48.3*	43.0
Race/ethnicity		
Hispanic	51.3	44.6
Black, non-Hispanic	47.3	45.0
Other, non-Hispanic	49.2	42.3*
Poverty status		
At or below poverty line	48.1	46.8
Above poverty line	49.3	42.4***
Residence		
Urban	49.1	42.3
Rural	49.5	44.3
Health status		
Excellent/good	49.0	41.3
Fair/poor	50.0	47.6***
Total no. of annual visits		
1-3	51.6	44.9
4-9	51.2	44.6
10+	44.9***	36.8***
Total no. of comorbidities ^c		
1	51.6	43.5
2-4	49.5	43.3
5+	46.0***	38.9***
Primary care site		
Doctor's office	49.8	43.3
Doctor's clinic	47.0	42.0
HMO	52.4	40.8
Community health center	45.4	38.5
Other	42.0	36.7

(Continued)

graphic access barriers, had less after-hours care, and had longer appointment waits (see Table 1).

First-Contact Care and Continuity

Overall, 49.6% of the respondents with acute episodes had first-contact visits with their self-identified primary care physicians, and 42.9% of all ambulatory visits were made with these physicians (Table 2). Age had a U-shaped relationship with both first-contact care and continuity. Children aged 1 through 4 years and the elderly (aged 65 and older) had the highest levels of care of both types, and adults aged 18 through 44 years had the lowest levels.

The probability of first-contact visits' occurring with individuals' primary care physicians varied by type of acute condition. Compared with general medical examinations

(53.6%), acute infections (58.1%) were more likely to be associated with first-contact care, and symptoms (39.7%), injuries (23.7%), and other types of episodes (32.4%) were all less likely ($P < .01$ for all comparisons).

Training of the primary care physician was significantly related to the probability of a first-contact visit with that physician. Individuals who identified a generalist as their primary care physician began 50.0% of episodes with that practitioner, compared with 43.7% of episodes for those who identified specialists ($P < .01$). Continuity differed neither by the practice site nor by the training of the primary care physician.

Access to and Use of Primary Care Physicians

Each of the 5 access barriers was associated with less first-contact care and continuity,

although not all relationships were statistically significant (Table 3). Access barriers in after-hours care (odds ratio [OR] = 0.78, 95% confidence interval [CI] = 0.70, 0.87), travel time (OR = 0.86, 95% CI = 0.77, 0.97), and office wait (OR = 0.88, 95% CI = 0.80, 0.97) had the strongest effect on decreasing first-contact care. For continuity, absence of any after-hours care was significantly associated with a decrease of 6.0%; longer appointment waits, a 9.4% decrease; and being uninsured, a 6.9% decrease.

An increasing number of access barriers led to progressive declines in both first-contact care and continuity. Individuals with 3 to 5 access barriers had a 22.2% lower probability of beginning a new episode of care with their primary care physician than those without any access barriers ($P < .001$). The effect of more access barriers on continuity was weaker than the effect on first-contact care: individuals with 3 to 5 access barriers had an 11.5% decrease in continuity compared with those without any access barriers ($P < .01$).

Multivariate Regression Models

In the logistic regression analysis, no after-hours care, office waits of 30 minutes or longer, and travel times of 30 minutes or longer were all significantly related to the odds of first-contact care (Table 4). The U-shaped relationship between age and first contact persisted in the multivariate analysis. Once the effects of access and other factors were controlled, the chances of first-contact care did not differ significantly by type of primary care practice site or physician training. That is, generalists provided more first-contact care than specialists largely because generalists provide more accessible primary care. The odds that individuals in HMOs began an acute episode with their primary care physician were increased by 29%, compared with persons whose primary care site was a doctor's office, although this difference was not statistically significant.

The multivariate linear regression model demonstrated that individuals with access barriers in after-hours care, appointment wait, and lack of insurance had significantly lower levels of continuity of care (Table 4). With respect to the primary care practice site, continuity was significantly lower for community health clinics than for other sites.

Discussion

Recent changes in both private and public sector health policy are promoting greater reliance on primary care. There is little evidence available to guide policy-making concerning strategies to promote use of primary

TABLE 2—Continued

	% of Episodes With First-Contact Visit to Primary Care Physician (n = 20 282 episodes) ^a	% of All Visits Made With Primary Care Physician (n = 16 145 persons) ^b
Primary care physician training		
Generalist	50.0	43.1
Specialist	43.7***	41.8
Type of acute episode ^d		
Routine care (general medical examination)	53.6	...
Symptoms		
Fatigue	65.8	...
Chest pain	45.3	...
Abdominal pain	44.7	...
Headache	33.5	...
Infections		
Acute upper respiratory infection	63.4	...
Gastroenteritis	62.9	...
Mononucleosis/hepatitis	61.4	...
Viral exanthems	61.3	...
Acute lower respiratory infection	60.6	...
Otitis media	54.9	...
Nonfungal skin infections	52.4	...
Scabies/pediculosis/helminthiasis	51.2	...
Viral warts	47.9	...
Urinary tract infection	46.6	...
Conjunctivitis	43.9	...
Vaginitis/vulvitis/cervicitis	41.6	...
Injuries		
Acute sprains and strains	28.3	...
Burns	24.5	...
Lacerations/contusions/abrasions	23.1	...
Fractures and dislocations	16.9	...
Other		
Bursitis/synovitis/tenosynovitis	38.4	...
Dermatitis	38.3	...
Diseases of nail	11.5	...

^aThe episode-of-care methodology categorized 30 967 visits (75.8% of the total number of visits made for the 24 conditions) into 20 282 episodes among 11 024 persons.

^bContinuity-of-care analyses included 16 145 individuals (81.4% of total population) with at least one ambulatory encounter.

^cFor each person, unique ambulatory diagnostic groups¹⁷ were summed to obtain a count of comorbidities.

^dSignificance testing was not done for this variable.

* $P < .05$; ** $P < .01$; *** $P < .001$.

TABLE 3—Effects of Accessibility of the Primary Source of Care on First-Contact Care and Continuity Among Respondents to the National Medical Expenditure Survey, 1987

Access Barrier	% of Episodes With First-Contact Visit to Primary Care Physician (n = 20 282 episodes) ^a	% of All Visits Made With Primary Care Physician (n = 16 145 persons) ^b
After-hours care		
Yes	50.3	43.4
No	44.0***	40.8***
Appointment wait		
<5 d	49.7	43.7
≥5 d	47.1	39.6***
Office wait		
<30 min	50.2	43.2
≥30 min	47.0**	42.3
Travel time		
<30 min	49.7	43.0
≥30 min	46.0**	42.6
Insurance status		
Insured	49.5	43.3
Uninsured	46.7	40.3*
No. of barriers		
0	52.8	45.3
1	48.2	42.4
2	46.7	40.7
3–5	41.1***	40.1***

^aThe episode-of-care methodology categorized 30 967 visits (75.8% of the total number of visits made for the 24 conditions) into 20 282 episodes among 11 024 persons.

^bContinuity-of-care analyses included 16 145 individuals (81.4% of total population) with at least one ambulatory encounter.

* $P < .05$; ** $P < .01$; *** $P < .001$.

care physicians rather than other types of physicians. This study indicates that access was directly related to individuals' initiating visits and maintaining a relationship with their primary care physicians. More after-hours care, shorter travel time to a practice site, and shorter office waits were significantly associated with patients' beginning an acute episode of care with primary care physicians. Greater continuity was observed for individuals with shorter appointment waits, insurance, and more after-hours care.

Policy aimed at increasing use of primary care by reducing access barriers may be most successful if a multidimensional approach is taken. Geographic, financial, and organizational access are all important in encouraging use of primary care physicians. Targeting any single dimension alone may be insufficient to optimize a population's use of primary care physicians. On the other hand, if incremental improvements in access are desired, increasing availability of after-hours care—which was the only access indicator in this study significantly related to both first-contact care and continuity—may have the single largest effect on more appropriate use of primary care physicians.

Several limitations should be considered when interpreting results from this study. This study examined the effects of access on first-contact visits with primary care physicians for acute conditions only. Individuals' care seeking with primary care physicians may differ in the case of chronic disease. Newly occurring episodes or acute exacerbations of chronic disease may be more likely to be managed by a specialist with whom a patient has an established, long-term relationship.

We analyzed 2 types of logistic regression model to address the potential threat to statistical conclusion validity posed by clustering of episodes within individuals. In the first model, one episode of care was randomly selected per person. In the second, we used SUDAAN to control for clustering of episodes within individuals. Both models produced parameter estimates and standard errors similar to those produced by the logistic regression that did not account for clustering within individuals.

The validity of individuals' reports of the training of their primary care physicians is unclear. However, this study's finding that 9.6% of the population reported a specialist as their primary source of care is consistent with previous findings based on the American Medical Association master file, which relies on physician self-report.¹⁹

Although the generalizability of this investigation is strengthened by the national representativeness of the study population, certain caveats concerning exclusion criteria must be considered. First, because of limita-

TABLE 4—Regression-Adjusted Effects of Access to Primary Care, Features of Primary Source of Care, and Characteristics of Respondents on First-Contact Care and Continuity: National Medical Expenditures Survey, 1987

	First-Contact Care (n = 20 282 episodes) ^a		Continuity (n = 16 145 persons) ^b	
	Adjusted Odds Ratio ^c	95% Confidence Interval	β^d	SE
Access barrier				
No after-hours care	0.82	0.73, 0.92	-0.020	0.008*
Appointment wait ≥5 d	0.92	0.82, 1.03	-0.039	0.008***
Office wait ≥30 min	0.87	0.80, 0.96	-0.015	0.008
Travel time ≥30 min	0.86	0.76, 0.97	-0.015	0.011
Uninsured part or all year	0.94	0.80, 1.11	-0.032	0.013*
Primary care practice site				
Doctor's office	Reference	...	Reference	...
Doctor's clinic	0.96	0.82, 1.13	-0.008	0.013
HMO	1.29	0.69, 2.41	-0.010	0.056
Community health clinic	0.96	0.72, 1.30	-0.060	0.028*
Other	0.73	0.51, 1.05	-0.060	0.030*
Training of primary care physician				
Generalist	1.11	0.96, 1.28	-0.002	0.012
Specialist	Reference	...	Reference	...
Age, y				
1–4	1.89	1.63, 2.19	0.202	0.014***
5–17	1.36	1.20, 1.54	0.059	0.012***
18–44	Reference	...	Reference	...
45–64	1.32	1.16, 1.50	0.069	0.009***
65+	1.58	1.39, 1.79	0.099	0.010***

(Continued)

TABLE 4—Continued

	First-Contact Care (n = 20 282 episodes) ^a		Continuity (n = 16 145 persons) ^b	
	Adjusted Odds Ratio ^c	95% Confidence Interval	β^d	SE
Sex				
Male	1.07	0.99, 1.16	-0.013	0.006*
Female	Reference	...	Reference	...
Race/ethnicity				
Hispanic	1.12	0.94, 1.34	0.029	0.015
Black, non-Hispanic	0.96	0.86, 1.08	0.024	0.011*
Other, non-Hispanic	Reference	...	Reference	...
Poverty status				
At or below poverty line	0.87	0.76, 1.00	0.028	0.012*
Above poverty line	Reference	...	Reference	...
Residence				
Urban	0.96	0.86, 1.06	-0.014	0.010
Rural	Reference	...	Reference	...
Health status				
Excellent/good	0.87	0.78, 0.97	-0.056	0.008***
Fair/poor	Reference	...	Reference	...
No. of comorbidities				
1	1.40	1.22, 1.61	0.092	0.010***
2-4	1.17	1.05, 1.30	0.069	0.008***
5+	Reference	...	Reference	...
Type of acute episode				
Routine care (general medical examination)	Reference	...	...	...
Symptoms				
Fatigue	1.84	0.91, 3.69	...	...
Chest pain	0.76	0.51, 1.13	...	...
Abdominal pain	0.86	0.54, 1.36	...	...
Headache	0.50	0.38, 0.67	...	...
Infections				
Acute upper respiratory infection	1.54	1.39, 1.72	...	...
Gastroenteritis	1.52	1.03, 2.24	...	...
Mononucleosis/hepatitis	1.67	0.80, 3.47	...	...
Viral exanthems	1.33	0.89, 1.98	...	...
Acute lower respiratory infection	1.41	1.19, 1.67	...	...
Otitis media	0.94	0.76, 1.16	...	...
Nonfungal skin infections	0.98	0.70, 1.37	...	...
Scabies/pediculosis/helminthiasis	1.18	0.54, 2.62	...	...
Viral warts	0.84	0.57, 1.26	...	...
Urinary tract infection	0.81	0.67, 0.97	...	...
Conjunctivitis	0.72	0.50, 1.05	...	...
Vaginitis/vulvitis/cervicitis	0.82	0.57, 1.16	...	...
Injuries				
Acute sprains/strains	0.37	0.31, 0.45	...	...
Burns	0.31	0.17, 0.55	...	...
Lacerations/contusions/abrasions	0.27	0.23, 0.32	...	...
Fractures and dislocations	0.18	0.14, 0.24	...	...
Other				
Bursitis/synovitis/tenosynovitis	0.60	0.43, 0.84	...	...
Dermatitis	0.59	0.46, 0.74	...	...
Diseases of nail	0.11	0.05, 0.22	...	...

^aThe episode-of-care methodology categorized 30 967 visits (75.8% of the total number of visits made for the 24 conditions) into 20 282 episodes among 11 024 persons.

^bContinuity-of-care analyses included 16 145 individuals (81.4% of total population) with at least one ambulatory encounter.

^cAdjusted odds ratios can be interpreted as the odds of the subgroup's beginning an episode with a first-care visit to the primary care physician compared with the odds of the reference subgroup.

^dBeta coefficients can be interpreted as the change in level of continuity for the subgroup compared with the reference group.

* $P < .05$; ** $P < .01$; *** $P < .001$.

access to primary care requires identification of a specific practice site or practitioner. Third, nonusers of primary care were not part of the study population because of the focus on effects of access on use of primary care physicians. Fourth, data were obtained during 1987, when unrestricted access to physicians was still the dominant organizational mode. Because an increasing number of persons are enrolling in HMO systems of care, which mandate first-contact use of a primary care practitioner, it is likely that the absolute levels of first-contact care and continuity are higher today. Even so, the positive association between access barriers and use of primary care is not likely to have changed over time.

Nearly two thirds of individuals with self-identified primary care physicians in the United States faced at least 1 access barrier. This high prevalence of access problems has also been reported for AIDS patients.²⁰ However, another study found that just 17% of Michigan residents needing health care reported at least 1 of 8 financial, organizational, or geographic access barriers.²¹ The lower Michigan estimates may be a result of asking respondents about access problems experienced while obtaining services from any source of care, whereas this study inquired specifically about structural barriers to seeking care from an individual's primary source of care. These discrepancies underscore the need for a common approach to conceptualizing and measuring access if data are to be compared across studies. Moreover, each of these studies demonstrates the importance of addressing dimensions other than financial access to improve individuals' access to care. Increasing use of primary care physicians to optimal levels will require more than expansions of insurance coverage.

Empirical evidence suggests that the United States has more specialists than it needs.^{22,23} This surplus is providing incentives for physicians trained as specialists to practice primary care either as a primary or secondary specialty. Data from this study indicate that generalists and specialists may not deliver equivalent primary care. Specialists were associated with more organizational and geographic access barriers and provided less first-contact care. Thus, policy directed at shifting the specialist workforce into primary care could lead to a deterioration in the quality of the primary care delivery system. If they are to function as primary care physicians, specialists may need to modify their approach to primary care delivery by improving their accessibility and enhancing their role as first-contact providers. As this transition proceeds, health plans that employ specialists to function as primary care physicians should closely monitor their primary care delivery. □

tions in the NMES data set, we excluded individuals whose primary source of care was a practice site (rather than a specific physician), a hospital outpatient department or emergency

room, or advanced-practice nurses or physician assistants. Second, those without a primary source of care were also excluded from the study population, because measurement of

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