Does “Mainstreaming” Guarantee Access to Care for Medicaid Recipients with Asthma?

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OBJECTIVE: Recent reforms in the federal Medicaid program have attempted to integrate beneficiaries into the mainstream by providing them with managed care options. However, the effects of mainstreaming have not been systematically evaluated.

DESIGN: Cross-sectional survey.

SETTING/PARTICIPANTS: A sample of 478 adult, nonelderly asthmatics followed by a large Northern California medical group.

MEASUREMENTS AND MAIN RESULTS: We examined differences in self-reported access by insurance status. Compared to patients with other forms of insurance, patients covered by the state's Medicaid program (Medi-Cal) were more likely to report access problems for asthma-related care, including difficulties in reaching a health care provider by telephone, obtaining a clinic appointment, and obtaining asthma medication. Adjusting for relevant clinical and sociodemographic variables, Medi-Cal patients were more likely to report at least one access problem compared to non-Medi-Cal patients (adjusted odds ratio [AOR], 3.34; 95% confidence interval [CI], 1.43 to 7.80). Patients reporting at least one access problem were also more likely to have made at least one asthma-related emergency department visit within the past year (AOR, 4.84; 95% CI, 2.41 to 9.72). Reported barriers to care did not translate into reduced patient satisfaction.

CONCLUSIONS: Within this population of Medicaid patients, the provision of health insurance and care within the mainstream of an integrated health system was no guarantee of equal access as perceived by the patients themselves.

KEY WORDS: Medicaid; Medicare; asthma; access to care; primary care.

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Among patients with chronic medical conditions, barriers to timely and effective use of health services can lead to increased costs and worse clinical outcomes.^{1,2} Asthma is a useful model for assessing health care access and quality of care because regular access to medical care plays an important role in managing the illness, minimizing its disabling effects, and preventing hospitalizations.³⁻⁶ Moreover, the impact of the disease from a public health perspective is substantial. In the United States, asthma affects approximately 17 million persons⁷ and generated approximately 433,000 hospital admissions in 1997,⁸ making it one of the nation's most common and costly chronic diseases.^{9,10}

Impaired access to care among the poor and disabled may result from both financial barriers, such as lack of health insurance or inability to pay out-of-pocket costs, and nonfinancial barriers, which may be related to geographic, temporal, health system, cultural, linguistic, and gender- or race-based factors.^{11,12} One approach to addressing both sets of barriers has involved incorporating publicly insured patients into managed care programs. These efforts are designed to lower financial barriers by expanding benefits and to mitigate nonfinancial barriers by increasing the number of mainstream providers willing to accept Medicaid patients. In most California counties, nondisabled individuals under the age of 65 years covered under the state's Medicaid program (Medi-Cal) are required to enroll in a regional contracted managed care program.¹³ Sacramento County began implementing its Geographic Managed Care (GMC) program in 1994. Six provider groups negotiated contracts with three health plans under State auspices to care for approximately 140,000 patients.

The premise of the GMC program is that Medi-Cal patients who are “mainstreamed” via capitated plans will face fewer access problems than those enrolled in traditional fee-for-service arrangements. Indeed, there is evidence that managed care may increase access to primary care and satisfaction with services among publicly-insured individuals.¹⁴ However, there is also evidence that poor and chronically ill patients have problems accessing services, despite having insurance coverage and a regular source of care.¹⁵ To further examine the influence of public insurance on access to care, we analyzed survey data from a sample of nonelderly asthma patients cared for by one large medical group in Northern California. In doing so, we addressed three main research questions. First, in a population of patients with asthma cared for by the same medical group, are there differences in self-reported access-to-care between Medi-Cal and non-Medi-Cal

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patients? Second, is Medi-Cal coverage an independent predictor of impaired access after controlling for relevant clinical and demographic factors? Third, to the extent that Medi-Cal asthma patients experience greater access problems than non-Medi-Cal patients, are these difficulties reflected in reduced patient satisfaction or increased asthma-related emergency department use?

METHODS

Sampling of Sites and Subjects/ Survey Implementation

The survey was conducted in the UC Davis Primary Care Network (UCD PCN), an academically affiliated group practice consisting of roughly 120 primary care providers. UCD PCN providers practice within approximately two dozen branch offices in Sacramento and surrounding areas in north-central California. All 91 primary care practitioners who were members of the PCN on March 1, 1997, and who had responsibility for the care of adult patients (49 family physicians and family nurse practitioners, 29 general internists, and 13 obstetrician-gynecologists and certified nurse-midwives) participated in the study.

Patients were eligible for this clinic-based survey if they were at least 18 years old; could speak, understand, and read English; and had no physical or mental condition that would preclude unassisted completion of a written questionnaire. Quotas for each practice were established roughly in proportion to practice size and volume; the target for full-time family physicians, internists, and obstetrician-gynecologists was 60 completed surveys per practice. Participating practices were instructed to collect surveys from consecutive eligible patients until quotas were filled. Between May and September 1997, a total of 5,320 patients were approached, of whom 3,990 (75%) completed usable questionnaires. Among the 1,330 patients who declined to participate, 279 (21%) were too ill, 562 (42%) were late for their appointment, and 489 (37%) refused outright. There were no meaningful differences between responders and nonresponders in terms of age (mean 49 vs 50 years), gender (34% vs 35% female), or ethnicity (14% vs 13% nonwhite). The current study focuses on the 478 patients (12% of 3,990) who answered "yes" to the question, "Do you have asthma?"

Measures

The survey instrument was divided into two sections. Section I consisted of questions covering sociodemographic characteristics (including age, gender, race/ethnicity, and level of education), insurance status (Medi-Cal, Medicare, Private, Other, None), mental and physical health status, access to care, and utilization of health services. Patients were instructed to complete this section either immediately before or right after their clinic visit. Section II contained questions on visit-specific

satisfaction. Patients were instructed to answer these questions after seeing the doctor or nurse, but before leaving the office.

Physical and Mental Health Status. Physical and mental health status was assessed using the SF-12 physical and mental health summary scores.¹⁶ In addition, a list of 15 chronic conditions was used to evaluate comorbidities and determine the mean number of chronic condition diagnoses for each patient group. The chronic conditions assessed included visual problems; auditory problems; seasonal allergies; chronic lung disease; hypertension; congestive heart failure; chronic heartburn or peptic ulcer disease; cirrhosis or other serious liver damage; hemorrhoids; sciatica or chronic back pain; rheumatoid arthritis or systemic lupus erythematosus; limitation in the use of arms or legs; dermatitis or other chronic skin disease; HIV infection or AIDS; and depression.

Severity of Asthma. Four survey items were used to create a classification scheme for asthma severity. Three of the items focused on the four weeks preceding the survey and asked patients to estimate the frequency of "asthma attacks" (defined as "increased difficulty breathing that may be accompanied by cough, wheezing, chest tightness, or other symptoms"), the frequency of nocturnal symptoms, and the impact of the disease on daily activities. The fourth item assessed the patients' "baseline status," or breathing between asthma attacks. Each item constituted a severity feature, and was incorporated into a composite variable with levels that were based loosely on the National Asthma Education and Prevention Program's classification of asthma severity.¹⁷

Patients were classified as having mild-intermittent asthma if they met all of the following symptom-based criteria: fewer than 3 asthma attacks a week, fewer than two nocturnal symptoms a month, no need to cancel or rearrange activities because of asthma, and "no problems" breathing between asthma attacks. Patients classified as having mild-persistent asthma reported fewer than three asthma attacks a week and at least one of the following as their most severe feature: 2–4 nocturnal symptoms a month, the need to cancel or rearrange their activities "a little bit" because of asthma, or "some breathing problems on some days" between asthma attacks. Patients were classified as having moderate-persistent asthma if they at most reported any of the following: 5 or more asthma attacks a week, 5–7 nocturnal symptoms a month, the need to cancel or rearrange "some" of their activities because of asthma, or "some symptoms on most days, requiring inhaler for relief" in between asthma attacks. Patients classified with severe-persistent asthma reported at least one of the following severe features: 8 or more asthma attacks a month, 8 or more nocturnal symptoms a month, the need to cancel or rearrange "quite a bit" of their activities because of asthma, or asthma symptoms "most of the time" between attacks.

Perceived Access to Care. Three survey questions were adopted from the Health Survey for Asthma Patients¹⁸ to assess asthma-related access to care for the past year. Patients reported whether they had experienced problems reaching a practitioner by phone, accessing a clinic appointment or obtaining asthma medication by answering the following questions: "Over the past 12 months, have you had any of the following things happen to you?" 1) "You had a problem with your asthma, but had trouble reaching the doctor or nurse by phone."; 2) "You had a problem with your asthma, but had trouble getting an appointment to see the doctor."; or 3) "You needed medicine for your asthma, but had trouble getting it." In addition, a composite variable was generated, indicating at least one positive response to any of the individual access items.

Satisfaction. Using a modified version of the instrument developed by Ware and Hays,¹⁹ patients were asked to provide an overall impression of the visit and rate five aspects of the clinic visit on a 6-point scale (1 = Couldn't Be Better; 6 = Poor). The dimensions assessed included: 1) amount of time spent in waiting room; 2) amount of time spent with practitioner; 3) explanation of what was done during the visit; 4) technical skills of medical provider (thoroughness, carefulness, and competence); and 5) personal skills of medical provider (courtesy, respect, sensitivity, and friendliness). An overall satisfaction score was generated by calculating the average scale-response to these visit-specific questions. An additional item—"Would you recommend this office to your family or friends?"—was examined as a measure of behavioral intention.

Emergency Department Use. The number of emergency department (ED) visits for asthma-related care was determined from an open-ended survey item, in which patients were asked to write in the number of ED visits they made for asthma in the past 12 months. For analytic purposes, visit numbers were tabulated and truncated at 3 or more in the past year.

Statistical Analysis

Categorical variables were analyzed using Fisher's exact test for comparison of proportions. In comparisons of means for continuous variables, two-sided *t* tests were used. Results with a *P* value less than or equal to .05 were considered statistically significant. The independent association of Medi-Cal status with perceived access problems was assessed using logistic regression analysis. The final logistic regression model was constructed using a combination of a priori decisions about the plausibility and clinical importance of the explanatory variables and the results of preliminary bivariate analysis. In effect, variables were forced into the regression model if they were considered clinically important or if their bivariate association with access problems was significant (*P* < .05). Smoking was not included in the final model because

neither current nor past smoking were significantly associated with reported access problems, and neither smoking variable appreciably altered the point estimates for the effect of insurance status on access problems. The final model contained independent variables for age, gender, ethnicity, insurance status, education, mental and physical health status, asthma severity, and comorbid (chronic) conditions. A similar strategy was used to construct the logistic regression model predicting self-reported emergency department use in the past 12 months. This model contained all of the independent variables used in the model predicting access problems and an additional dichotomous variable for self-reported access problems (none/at least one access problem).

RESULTS

Of 3,990 respondents to the survey, 478 (12%) reported that they "had asthma" and formed the analytic sample. Of these, 63.2% had private insurance, 17.6% had Medicare, 9.9% had Medi-Cal, 7.6% had other insurance, and 1.7% were uninsured. Only 3 of the 47 Medi-Cal patients were older than 65 years of age. The majority (70% of Medi-Cal patients and 77% of non-Medi-Cal patients) reported that "the health care provider I am seeing today" or "another provider at this office or clinic" was "mainly responsible for taking care of my asthma." Compared to patients covered by other forms of insurance or no insurance, Medi-Cal patients were younger and less educated (Table 1). Medi-Cal patients had higher mean asthma severity scores; worse SF-12 physical and mental health component scores; and more chronic conditions (*P* < .05; Table 1). There were no other significant demographic or clinical differences between insurance categories (Table 1).

Approximately 23% of Medi-Cal and 8% of non-Medi-Cal patients reported difficulty reaching a practitioner by phone for asthma related health problems (*P* = .0015). Obtaining a clinic appointment for asthma care was a problem for 18% of the Medi-Cal patients and 6% of those with other coverage (*P* = .004). Similarly, 25% of the Medi-Cal group reported a problem obtaining asthma medication, compared with 8% of the non-Medi-Cal patients (*P* = .0003). Thirty-six percent of Medi-Cal patients, but only 13% of non-Medi-Cal patients, reported at least one access problem (*P* < .0001). Medi-Cal patients had a mean of 0.62 access problems, while those with other insurance reported a mean of 0.21 access problems (*P* < .0001). There were no significant differences in reported access problems among patients of family physicians (*n* = 248; percentage with access problems, 11.7%), general internists (*n* = 201; percent with problems, 18.9%), or obstetrician-gynecologists (*n* = 29; percent with problems, 13.8%) (*P* = .10; data not shown in tabular form).

Using multivariate logistic regression analysis, the adjusted odds of reporting at least one access problem were 3.3 times higher for Medi-Cal than for non-Medi-Cal

Table 1. Patient Characteristics by Insurance Status

	Total (N = 475)	Medi-Cal (Medicaid) (n = 47)	Non-Medi-Cal (n = 428)	P Value
Mean age, y	46.2	41.2	46.8	.04
Female gender, %	74.0	78.3	73.7	.50
Race/ethnicity, %				
White	78.4	73.9	78.9	
African American	4.3	4.4	4.3	
Hispanic	10.5	15.2	10.0	
Other*	6.9	6.5	6.9	.75
Less than high school education, %	7.1	21.3	5.7	.0001
Mean mental health summary score	47.7	41.6	48.3	.0009
Mean physical health summary score	40.6	35.4	41.2	.0007
Mean number of chronic conditions	4.5	6.0	4.4	.0000
Asthma severity, %				
Mild-intermittent	31.0	19.2	32.2	
Mild-persistent	35.4	38.3	35.1	
Moderate-persistent	19.4	19.2	19.4	
Severe-persistent	14.3	23.4	13.3	.14
Mean asthma severity score	1.2	1.5	1.1	.04

* Includes patients self-identified as Asian or Pacific Islander, American Indian/Alaskan Native, or Other.

patients (95% CI, 1.43 to 7.80, Table 2). Compared to patients less than 65 years of age, older patients were less likely to report access problems (AOR, 0.16; 95% CI, 0.05 to 0.52). Patients reporting race as "Asian or Pacific Islander," "American Indian/Alaskan Native," or "Other" were at higher risk for reporting at least one access problem than those reporting race as "White or Caucasian" (AOR, 3.24; 95% CI, 1.10 to 9.52). Finally, patients with moderate and severe asthma were at higher risk for reporting access problems relative to patients with the mildest symptoms (AOR, 8.22; 95% CI, 3.13 to 21.55 for patients with moderate-persistent asthma; AOR, 10.69; 95% CI, 3.84 to 29.81 for patients with severe-persistent asthma).

In evaluating associations between insurance status and visit satisfaction, we found that Medi-Cal patients were significantly more likely to give a rating of "Excellent" or "Couldn't Be Better" to the survey item addressing the personal skills of the practitioner (96% vs 84%, $P = .05$, Table 3). Medi-Cal patients were also more likely to report that they "would recommend the practice to a friend" than patients in other insurance groups (96% vs 82%, $P = .02$). However, there were no other significant differences by insurance status with respect to any of the other visit-specific satisfaction items or with respect to overall visit satisfaction (Table 3).

Among 475 patients with asthma who completed the survey item on emergency department (ED) utilization, 17.0% reported making an ED visit in the past 12 months. The proportion was higher (although not significantly so) among patients with Medi-Cal (29.8%) and those who were uninsured (25%) than among those with Medicare (17.7%) or private insurance (15.7%) ($P = .12$). In a bivariate analysis (not shown), patients reporting "yes" to any of the three access problem items were more likely to have made

at least one visit to the ED in the past year than those reporting no problems. Adjusting for insurance status and other potential confounders, reporting at least one access problem was significantly associated with making at least one asthma-related ED visit in the past year (AOR, 4.84; 95% CI, 2.41 to 9.72, Table 4). In addition, compared to whites, African Americans and Hispanics were significantly more likely to have made at least one asthma-related ED visit in the past year, regardless of insurance status (Table 4). As expected, patients with more severe asthma were also more likely to have visited the ED than those with mild disease. After adjusting for perceived access problems, disease severity, and sociodemographic factors, insurance status was not an independent predictor of ED visits (Table 4).

DISCUSSION

Our findings from this survey of asthma patients followed in an academically affiliated primary care network in Northern California suggest that patients with Medi-Cal insurance perceive more barriers to asthma-related health care than patients with other forms of health insurance. Medi-Cal patients were substantially more likely to report problems with reaching providers by phone, obtaining clinic appointments, and obtaining asthma medication when needed than were non-Medi-Cal patients. These results support the inference that "mainstreaming" does not necessarily eliminate barriers to care for poor and disabled patients with chronic illness. Additional measures may be necessary to create equity of access for this vulnerable population.

Lack of health insurance is associated with decreased health care utilization and impaired health, but having

insurance does not completely eliminate financial and nonfinancial barriers to care.²⁰ Medicaid patients may be especially vulnerable; they are about half as likely as uninsured persons and about twice as likely as privately insured persons to report difficulties obtaining medical services.²¹ However, estimating the effect of Medicaid insurance on access and quality across health care organizations is threatened by selection bias. For example, if Medicaid patients differentially seek care from certain providers, access problems due to the organization of care within these practices may be inappropriately ascribed to the Medicaid program or to its beneficiaries. Comparing Medicaid enrollees with other patients cared for by the same health maintenance organization or medical group eliminates this potential bias.

Blixen et al.²² recently noted significant racial and insurance-based differences in utilization patterns for asthma-related care between African-American and white members of a large managed care organization. African-

Table 2. Independent Association of Patient Characteristics with Reported Access Problems*

Parameter	Unadjusted Odds Ratio	Adjusted Odds Ratio (95% CI)
Age		
Under 65 years	1.00	1.00
65 years and over	0.32	0.16 (0.05 to 0.52)
Gender		
Male	1.00	1.00
Female	0.97	0.82 (0.40 to 1.67)
Race/ethnicity		
White	1.00	1.00
African American	0.63	0.21 (0.04 to 1.12)
Hispanic	1.13	1.55 (0.59 to 4.10)
Other [†]	2.03	3.24 (1.10 to 9.52)
Insurance status		
Non-Medi-Cal	1.00	1.00
Medi-Cal	3.92	3.34 (1.43 to 7.80)
Education		
Less than high school education	1.00	1.00
High school/college education	0.88	2.88 (0.68 to 12.27)
Graduate/professional education	1.05	2.72 (0.50 to 14.74)
Mental health score	0.98	1.01 (0.99 to 1.04)
Physical health score	0.96	0.98 (0.95 to 1.01)
Asthma severity		
Mild-intermittent	1.00	1.00
Mild-persistent	0.40	1.25 (0.46 to 3.37)
Moderate-persistent	2.93	8.22 (3.13 to 21.55)
Severe-persistent	4.21	10.69 (3.84 to 29.81)
ln (number of chronic conditions) [‡]	2.77	1.79 (0.9 to 3.54)

* N = 456; model adjusted for age, gender, race/ethnicity, insurance status, education, mental and physical health score, asthma severity, and number of comorbid (chronic) conditions.

[†] Includes patients self-identified as Asian or Pacific Islander, American Indian/Alaskan Native, or Other.

[‡] The natural log of the number of chronic conditions.

Table 3. Patient Satisfaction by Insurance Status

Satisfaction	Medi-Cal (n = 47)	Non-Medi-Cal (n = 428)	P Value
Amount of time spent in waiting room	38.6	46.5	.34
Amount of time spent with practitioner	76.2	66.8	.30
Explanation of what was done during visit	76.2	71.4	.60
Technical skills of practitioner	88.4	78.7	.17
Personal skills of practitioner	95.5	83.5	.05
Overall visit satisfaction	90.7	79.0	.07
Mean satisfaction score	82.5	79.3	.87
% Who would recommend the office to a friend	95.7	81.7	.02

American patients made fewer asthma-related primary care and allergy/pulmonary visits and more emergency department visits than white patients enrolled in the same HMO, even after controlling for socioeconomic factors. In addition, the study found that among African-American members, those with Medicaid HMO had more asthma-related rehospitalizations than those with private HMO insurance. This study is consistent with our findings that patients with public insurance have different health care experiences than privately insured patients even within the same managed care system.

Despite differential reporting of access problems, Medicaid patients reported high visit-specific satisfaction with care. One possible explanation is that patients may interpret access problems as a systems issue and not cast blame on the current provider. Another explanation involves diminished expectations. In California, Medi-Cal patients have traditionally been responsible for finding a provider or group that is willing to accept Medicaid insurance. The recent introduction of Medicaid HMO plans means that Medi-Cal patients now have several options when seeking primary care services. Patients who are accustomed to being denied care due to insurance status may be more likely to report increased satisfaction with the availability of consistent care, despite perceived barriers to obtaining care. Alternately, patients may view occasional barriers to care as unrelated to overall satisfaction with care.

In our study, having Medi-Cal insurance was not independently associated with utilization of asthma-related emergency care. However, patients reporting barriers to obtaining asthma care or medication were more likely to report at least one asthma-related emergency department visit within the past year, regardless of insurance status and disease severity. In 1998, Sox et al. investigated the effects of insurance status and having a regular source of care on use of emergency services.²³ They found that lacking a regular source of care was a stronger predictor of emergency department visits than insurance status. While the cross-sectional design limits causal inference, our results suggest that even among those with a regular

Table 4. Independent Association of Patient Characteristics with Reported Emergency Department Use*

Parameter	Unadjusted Odds Ratio	Adjusted Odds Ratio (95% CI)
Age		
Under 65 years	1.00	1.00
65 years and over	0.64	0.83 (0.34 to 2.02)
Gender		
Male	1.00	1.00
Female	1.04	1.07 (0.55 to 2.10)
Race/ethnicity		
White	1.00	1.00
African American	4.39	5.14 (1.74 to 15.17)
Hispanic	2.43	4.43 (1.93 to 10.18)
Other [†]	0.68	0.51 (0.13 to 1.99)
Insurance status		
Non-Medi-Cal	1.00	1.00
Medi-Cal	2.29	1.06 (0.44 to 2.55)
Reported access problems		
None	1.00	1.00
At least one	5.99	4.84 (2.41 to 9.72)
Education		
Less than high school education	1.00	1.00
High school/college education	1.18	0.67 (0.20 to 2.16)
Graduate/professional education	0.61	0.33 (0.07 to 1.53)
Mental health score	0.97	0.99 (0.96 to 1.01)
Physical health score	0.97	1.00 (0.97 to 1.02)
Asthma severity		
Mild-intermittent	1.00	1.00
Mild-persistent	0.72	4.22 (1.49 to 11.93)
Moderate-persistent	2.70	9.13 (3.07 to 27.12)
Severe-persistent	3.38	9.33 (2.94 to 29.57)
ln (number of chronic conditions) [‡]	1.71	1.11 (0.61 to 2.03)

* N = 456; model adjusted for age, gender, race/ethnicity, insurance status, reported access problems, education, mental and physical health score, asthma severity, and number of comorbid (chronic) conditions.

[†] Includes patients self-identified as Asian or Pacific Islander, American Indian/Alaskan Native, or Other.

[‡] The natural log of the number of chronic conditions.

source of primary care, real or perceived barriers to obtaining care may translate into increased use of the emergency department. In general, regular access to preventive care and education is beneficial for managing asthma symptoms and reducing the morbidity and mortality associated with the disease. Furthermore, the financial impact of increased reliance on emergency services in a capitated system can be substantial. Clearly, efforts to address perceived access barriers may result in improved and more cost-effective patient care.

Our study has several limitations. The sampling scheme excluded patients who did not attend a scheduled visit with a primary care provider, as well as those who were illiterate and/or non-English-speaking. However, because these groups are characterized by individuals who are particularly vulnerable to access problems, any bias

introduced through our sample restrictions would be expected to underestimate the actual magnitude of access problems. Following this line of reasoning, we would anticipate that including such patients in our analyses would only serve to strengthen our findings.

We did not determine whether patients had uninterrupted insurance coverage in the year preceding this survey. In addition, our study did not address whether length of time enrolled in a health system decreases perceived access problems. Perceived barriers to care will likely diminish as patients gain greater experience within the system. However, the length of the learning period and the ultimate comfort level achieved may differ by insurance type, education level, severity of illness, and frequency of visits. The role of transition periods in evaluating perceived access merits further investigation, particularly in light of the frequent health plan changes experienced by many consumers.

These results indicate the need to further investigate the relationships between insurance status, access to care, and utilization. Prospective studies are needed to confirm that interventions to improve perceived access to care can also reduce emergency department use. Future studies should also explore, in a more qualitative manner, why some Medi-Cal patients, who have financial access to services and are documented users of the same academic primary care network as other patients, nonetheless report more problems with access to care. Among the factors that should be considered are cultural and logistic barriers (e.g., language discordance, limited access to a telephone, or unreliable transportation), lack of sophistication in accessing providers' offices, unrealistic expectations, and discrimination by providers or their staff. Health system models that provide adequate access to services for homogenous patient groups, such as employment-based insurance plans, may not be equipped to provide equivalent access to patients from diverse backgrounds and with varying medical and social needs.

In an effort to provide the highest quality, most efficient health care, the existence of multiple barriers to the use of services in an insured population has important implications for patients, purchasers and community health planners. Having health insurance and a regular source of care, even "within the mainstream," is no guarantee of accessible care. Creative policy solutions that address the complex medical and social needs of vulnerable populations need to be developed and rigorously evaluated.*

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* Since these data were collected, the UC Davis Health System has launched a disease management program for asthma patients, designed in part to address issues raised in this paper.

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