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Physician Utilization Disparities Between the Uninsured and Insured: Comparisons of the Chronically Ill, Acutely Ill, and Well Nonelderly Populations.

[Caring for the Uninsured and Underinsured]

Hafner-Eaton, Chris
From the RAND/UCLA Center for Health Policy Study, Los Angeles, Calif. Dr Hafner-Eaton is now with the Department of Public Health, Oregon State University, Corvallis.
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Reprint requests to Department of Public Health, 318 Waldo Hall, Oregon State University
Corvallis, OR 97331-6406 (Dr Hafner-Eaton).
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Abstract

BACKGROUND: This study examines the associations between lack of health insurance coverage and physician utilization for the chronically ill, acutely ill, and well nonelderly populations in the United States.

METHODS: Cross-sectional data from the 1989 National Health Interview Survey, conducted by the National Center for Health Statistics, were analyzed for the nonelderly population using a correlational, two-group design (N=102 055). Analytic models, using multiple logistic regression, were tested to predict the odds and likelihood of physician utilization for the uninsured and insured in the three subpopulations (ie, chronically ill, acutely ill, and well), controlling for health status, number of conditions, and geographic, sociodemographic, and economic factors. Disparities in utilization were then calculated between the uninsured and insured for each subpopulation.

RESULTS: The nonelderly uninsured were consistently less likely than the insured to have received any health care within 12 months. Moreover, there were differential effects of being uninsured on utilization depending on whether an individual was chronically ill, acutely ill, or well. Whereas chronically ill and well uninsured persons were half as likely to have seen a physician as their insured counterparts (odds ratio, 0.50), acutely ill uninsured persons were almost two thirds as likely to receive physician care (odds ratio, 0.62). Thus, the disparity in physician utilization between the uninsured and insured was larger for the chronically ill and well than for the acutely ill; uninsured acutely ill were less likely to go without care. Of the three populations, those in the well population had average disparities with the largest magnitude (40%), compared with disparities of the chronically ill (20%) and acutely ill (10%).

CONCLUSIONS: These disparities represent large inequities in utilization of care by the uninsured, particularly for the chronically ill and well. Whether these disparities result from lower access or individual choice cannot be determined from this study. When viewed in light of other studies examining the impact of utilization on health status, these results provide support for the development of comprehensive health insurance packages with universal coverage and better inclusion of chronic and preventive care models in benefit packages. (JAMA. 1993;269:787-792).

Recently, there have been numerous studies reporting the number of uninsured to be between 31 million and 37 million [1,2,3,4]. These studies have provided valuable insight as to the increasing numbers of uninsured in the United States, who they are by sociodemographic characteristics, and perhaps even a glimpse at why they are uninsured. We now know that the young, poor, and near poor, as well as ethnic minorities, tend to

be disproportionately represented in the uninsured population. In addition, substantial discussion has evolved regarding what, if any, ameliorative policies should be pursued by state and/or national governments, private insurers, providers, and consumers [5,6,7,8,9]. Although this existing body of research literature and policy discussion has done much to further our understanding of the magnitude of the uninsured population, little nationally representative research has been published that examines and compares the differential access of uninsured persons suffering from various conditions.

Concern over diminishing third-party coverage arises from several perspectives. First, several studies have demonstrated that lack of insurance has a negative impact on access to care and health status [10,11,12,13,14]. The impact of being uninsured on access to care has also been captured through telephone surveys. Americans without insurance or public coverage are less likely to have their children immunized, seek early prenatal care, obtain annual blood pressure checks, or see a physician (especially those in fair or poor health), and are much less likely to seek care for serious symptoms such as persistent bleeding or pain [10]. These negative distortions in obtaining care may then lead to compromised health status. The RAND Health Insurance Study showed that even small cost sharing could have a negative impact on particular groups, namely, the poor, those with ill health, and children [15,16]. Second, rising numbers of uninsured mean that providers may be faced with increasing uncompensated care charges (ie, bad debt) and difficult decisions over whom to treat [17,18,19,20]. Third, when care is obtained by the uninsured, the condition treated may have deteriorated to a more disabling and resource-intensive point in the treatment spectrum [18]. Care for those who do obtain these services, more expensive or otherwise, must eventually be at least partially paid for either by those who are privately or publicly insured (ie, through cost shifting) or by taxpayers (ie, through care provided in county facilities) [21].

In the aggregate, this system that reacts to the uninsured at the point of service appears to lead to provider frustration, increased administrative costs, increased treatment costs, and decreased health status [12,18,22,23]. Moreover, it may also be inherently discriminatory against persons with chronic conditions that are not highly visible, or for which preventive methods might have eliminated or greatly reduced the severity of the condition.

This study examines the associations between lack of public or private health insurance coverage and physician utilization for the chronically ill, acutely ill, and well nonelderly populations in the United States. We also know from the aforementioned studies that persons with particular high-cost conditions are considered medically uninsurable by private insurers [24]. Thus, people who probably need care the most are less likely to have financial protection against the high costs of care. Whether being uninsured has a different impact on access depending on a person's diagnosed condition or health status is an important question for policymakers, practitioners, and third-party payers. Other studies have used telephone survey techniques (missing large groups of uninsured) [10,25], have been community or state based (not nationally generalizable) [12,14], or have not included a completely uninsured group [15]. Knowledge of the impact of the lack of insurance on access to health care may assist in the development of rational comprehensive health insurance packages (public or private) with better inclusion of chronic disease and preventive care models, as well as demonstrate the relative importance of universal coverage.

METHODS

Data Methods

This report is based on data from the 1989 National Health Interview Survey (NHIS), conducted by the National Center for Health Statistics (NCHS). The NHIS is an annual in-person, nationally representative survey that collects comprehensive information on health status, specific conditions, health care utilization, health insurance, demographics, and a variety of supplemental topics from the civilian, noninstitutionalized population. Chronic conditions are defined by the NCHS as those conditions lasting over 3 months, or a condition that is always classified as chronic such as diabetes, any heart condition, neoplasms, and so forth. Correspondingly, acute conditions are those that last less than 3 months [26]. For the purpose of this study, persons reporting only acute conditions were assigned to the "acute" population. Anyone reporting a chronic condition, regardless of whether he or she also had an acute episode of the same or another condition, was assigned to the "chronic" population. This study also assigned a health status of "well" to all those not reporting either a chronic or an

acute condition. Indeed, a person in the "well" population may have some health condition, but either did not report it or was unaware of it. Comorbidities are those conditions that simultaneously occur with another condition.

Overall, the response rate for the NHIS is 97%, with the supplements having only a slightly lower response [26,27]. Over 48 000 households with 116 900 individuals nationwide are included in the entire database of all ages. This sampling represents approximately 244 million noninstitutionalized civilians living in the United States at the time of the survey. This study used the approximately 102 684 nonelderly persons from the sample to represent approximately 205 million persons under the age of 65 years.

The NHIS does not have a simple random sampling and is also not self-weighting. Because the NHIS is a complex survey, using a multistage probability design with cluster sampling, the statistical package SESUDAAN (developed by Research Triangle Institute, Research Triangle Park, NC) was used as a subprogram through SAS to account for design effects [28,29]. In general, these design effects have been conservatively estimated at 1.3 times the standard error [30]. If these design effects are not accounted for in variance estimates, statistical testing will result in falsely significant results due to the underestimation of both standard errors and confidence intervals (CIs).

Only one variable in these analyses, family income, includes any imputed data. In its original form, the family income variable contains approximately 16% missing values due to the sensitivity of income questions. To correct for this, a sequential, hot-deck imputation was employed using a more complete dichotomous family income variable, region of residence, ethnicity, and marital status and education of household head. The hot-deck method of imputation sorts and classifies the data according to several predictive variables, replacing the missing observation value with a value from the most recent similar case [30,31,32]. For all other variables with low item nonresponse (<2%), entire cases were removed from the analyses after examination of their missing value patterns by ethnicity, sex, age, income, and region. To improve the sampling of blacks, the NHIS oversamples areas with high concentrations of blacks [26]. Therefore, the sample itself is not directly proportional to the population.

All data used in this study are exclusively from the NCHS-released public use tapes, which have all unique identifiers removed. Thus, this study was exempt from human subjects standard committee review.

Analytic Methods

The NHIS data were analyzed using a correlational, two-group design (nonelderly N=102 055). Cross-sectional analyses of the 1989 NHIS data were performed to compare within and between subpopulation means and frequencies. Utilization disparities were calculated by comparing the probability of utilization for the uninsured and insured in three subpopulations: those with only acute conditions, those with chronic conditions (may include those with both chronic and acute), and those with no conditions (ie, the well group). Because of this classification system, frequencies are not the focus of these analyses (especially for the acute population, which is minimized by this method). Rather, the rates, proportions, and percent differences are of importance. Respondents are considered uninsured only after they fail to report having any private health insurance, Medicaid, Medicare, or military (CHAMPUS or CHAMPVA) coverage during the previous year. Therefore, the uninsured category is a residual group that gives priority to any type of reported health coverage. Means and frequency distribution were considered significant at $P<.05$ using Duncan's groups for multiple comparisons and analysis of variance f tests.

Analytic models, using multiple logistic regression, were tested to predict the likelihood of a person having made any physician visits during the previous 12 months. Thus, the total volume of care was not examined for those who did obtain care. This decision was based on the theory that initial physician visits are more patient initiated than follow-up visits [33] and are therefore more sensitive to insurance status differences. If patients are able to obtain some care, they have passed the threshold of such utilization determinants of their own perceptions, physician screening, geographic supply barriers, and so forth Figure 1 [34,35,36].

$$P_{dv} = 1 / \left[1 + e^{-(\text{Intercept} + \text{Insurance Status} + \text{Age} + \text{Education of Household Head} + \text{Gender} + \text{Ethnicity} + \text{Family Income} + \text{Family Size} + \text{Number of Conditions} + \text{Subpopulation} + \text{Perceived Health Status} + \text{MSA Size})}\right]$$

Figure 1. Physician utilization logistic regression model. P_{dv} indicates probability of any physician visit within 1 year; MSA indicates metropolitan statistical area

All utilization disparities simultaneously control for the following covariates using multiple logistic regression [37,38]: health insurance coverage/noncoverage, perceived and functional health status, number of comorbidities, gender, age, ethnicity, region, metropolitan statistical area (MSA) size or non-MSA socioeconomic indicators of family size and income, and household head's education. For the logistic regressions, design or dummy variables were created for each categorical variable (using the reference group listed first): insurance coverage (insured, uninsured), gender (female, male), ethnicity (non-Latino white, non-Latino black, Latino, other), subpopulation (well, chronically ill, acutely ill), and perceived health status (excellent, very good, good, fair, poor). Overall model fit was assessed at $P<.0001$ using both the Wald statistic and the log likelihood ratio statistic [37,39,40]. Hospital utilization was excluded from the modeling because retrospective hospital utilization predicted utilization of physicians almost perfectly, thereby masking the effects of the variables of interest. All CIs for odds ratios (ORs) were calculated at 95%.

RESULTS

Descriptive Results

The three subpopulations--chronically ill, acutely ill, and well--differ not only by the type of conditions represented, but also by the mean number of comorbidities reported, utilization, age, and, to a lesser degree, insurance coverage Table 1. Chronically ill persons tend to be older (mean, 36 years), have more conditions (almost two conditions each) and use more physician care (seven visits), and are least likely to be privately insured when age is considered. Acutely ill persons tend to be younger (mean, 21 years), have fewer conditions (one condition) and use a moderate amount of care (four visits), and are the least likely to have private insurance coverage, but more likely to have Medicaid. Last, the persons in the well population by definition have no reported conditions, have a mean age of 27 years, are the least likely to use care (two visits), but, ironically, are the most likely to be covered by health insurance. For other sociodemographic, economic, and geographic characteristics the three subpopulations are statistically equivalent. The population represented herein is composed of approximately 12% blacks, 8% Latinos, 3% Asians or other ethnic groups, and 76% whites (percentages do not total 100% due to rounding).

Characteristic	All	Chronically Ill	Acutely Ill	Well
Age, y	29	36	21	27
Family size, persons	3.5	3.1	3.7	3.7
No. of conditions	0.6	1.8	1.1	0.0
Education of head, y	13.4	13.4	13.6	13.5
No. of MD visits in 12 mo	3.6	7.1	4.3	2.0
% With MD visit	75	86	90	68
% Uninsured	17.8 (37 million)	17.8	19.9	17.6

*The source of these data is the 1989 National Health Interview Survey Data, National Center for Health Statistics; original analyses; N=102 055.

Table 1. Summary Characteristics for All Non-elderly and Chronically Ill, Acutely Ill, and Well Subpopulations, United States, 1989

Modeling Results

As expected, the uninsured in all three health condition groups were much less likely than the insured to have had any physician visit within the previous 12 months. The uninsured were consistently less likely than the insured to have received any physician visits even when controlling for perceived health status, number of conditions, functional status, age, gender, family income and size, or MSA/non-MSA size as covariates. Moreover, there were differential effects of being uninsured on utilization depending on whether an individual was chronically ill, acutely ill, or well. Whereas chronically ill and well uninsured persons were half as likely to have seen a physician as their insured counterparts (OR, 0.50; 95% CI, 0.49 to 0.53; calculated from single subpopulation models), acutely ill uninsured persons were almost two thirds as likely as their insured counterparts to receive physician care (OR, 0.62; 95% CI, 0.55 to 0.69). Essentially, the chronically ill and well populations had a 22% lower probability of having had any physician visits when compared with the uninsured acutely ill population. Uninsured persons with acute illnesses were less likely to go without care than chronically ill or well persons. To view the effects of all covariates and the three subpopulations together, Table 2 summarizes the ORs and CIs.

Characteristic	Odds Ratio	95% CI
Intercept	NA	NA
Insurance coverage		
Insured (reference)		
Uninsured	0.51	0.49-0.53
Age (birth to 64 y)	0.98	0.98-0.98
Education (0-17+ y)	1.06	1.05-1.06
Gender		
F (reference)		
M	0.56	0.54-0.58
Ethnicity		
Anglo (reference)		
Black	0.94†	0.90-0.99
Latino	0.93†	0.87-0.98
Asian and others	0.74	0.69-0.80
Family income	1.01	1.01-1.01
Family size	0.92	0.92-0.93
No. of conditions	1.52	1.45-1.59
Subpopulation		
Well (reference)		
Chronically ill	1.54	1.43-1.66
Acutely ill	2.40	2.16-2.66
Health status		
Excellent (reference)		
Very good	1.26	1.22-1.31
Good	1.35	1.29-1.41
Fair	2.00	1.83-2.18
Poor	3.95	3.18-4.92
MSA size/rural	0.95	0.94-0.96

*CI indicates confidence interval; NA, not applicable; and MSA, Metropolitan Statistical Area. $P<.0001$ (unless otherwise noted). N=102 055. (−2) Log likelihood=104 350. Model χ^2 value=21 092; *df*=18; $P<.0001$.
†*P* not significant.

Table 2. Relative Odds of Physician Utilization by the Nonelderly, United States, 1989

The ORs presented above control for the covariates, but because there are several design variables, specific scenarios are helpful in understanding how the utilization of individuals with differing ethnicity, health status, number of conditions, and age is specifically affected by being insured. Data presented in Table 3 compare the likelihood of a physician visit for the uninsured and insured 29-year-old men (blacks and whites had statistically

equivalent odds), in good health by self-report, for each of the three categories. The difference between the insured and uninsured may be calculated and compared as "disparities" for each subpopulation. In this example, there is a 30% disparity between the uninsured and insured in the well group. This difference contrasts with the 19% and 11.5% disparities of the uninsured and insured in the chronic and acute condition groups, respectively. In this comparison, the chronically ill have a 65% greater disparity in access than the acutely ill. Those who reported themselves as well and in good health have a 160% greater disparity when compared with the acutely ill in good health.

	Chronically Ill	Acutely Ill	Well
Uninsured, %	69	78	53
Insured, %	82	87	69
% Difference	18.8	11.5	30.2

*Black or white, good reported health, mean on all other variables.

Table 3. Probability of a Physician Visit in 12 Months by Insurance Coverage for the Chronically Ill, Acutely Ill, and Well Subpopulations in Good Reported Health

Comparing the utilization disparities of the chronically ill, acutely ill, and well for their relative magnitudes emphasizes the differences between the subpopulations. Furthermore, as these characteristics became more indicative of "need" for care, such as large numbers of reported conditions, there is no increased ratio of care by the uninsured compared with the insured. The chronically ill consistently have larger disparities between the uninsured and insured than the acutely ill, and the well have larger disparities than both groups regardless of ethnicity, gender, age, health status, and so forth. However, the magnitude of the disparity changes by these characteristics. Looking at the disparity size or magnitude for a cross-section of these scenarios (varying age, gender, ethnicity, and so forth) provides a pattern where the well average approximately a 40% disparity, the chronically ill average a 20% disparity, and the acutely ill average only a 10% disparity.

Using the same scenario as above, but with the uninsured person reporting poor health, the overall probability of utilization would be 87% for the chronically ill, 91% for the acutely ill, and only 77% for the well Table 4. Although the probability of accessing care increased for all three subpopulations, substantial differences exist depending on whether one is well or has a chronic or acute condition, but nonetheless is in poor reported health. The disparity between the uninsured and insured chronically ill is nearly 60% greater than for the acutely ill. For those in the well population, the disparity between the uninsured and insured was almost 200% greater than for the acutely ill.

	Chronically Ill	Acutely Ill	Well
Uninsured, %	87	91	77
Insured, %	93	95	87
% Difference	7.0	4.4	13.0

*Black or white, good reported health, mean on all other variables.

Table 4. Probability of a Physician Visit in 12 Months by Insurance Coverage for the Chronically Ill, Acutely Ill, and Well Subpopulations in Poor Reported Health

As Tables 3 and 4 illustrate, the worse a person's perceived health status is, the smaller the disparity between the insured and uninsured in all three subpopulations. Similarly, the more medical conditions are reported, the smaller the utilization disparity. Still, even with many conditions and poor perceived health status, a significant disparity remains. Depending on sociodemographic characteristics, the self-reported healthy uninsured experience as much as 60% lower probabilities of physician utilization than the insured (averaging approximately 25% disparity). In contrast, those with self-reported poor health average only a 10% disparity across the three subpopulations.

Although the ORs for insurance status demonstrate reduced likelihood of a physician visit in the previous 12 months for the individual, insurance status is not the strongest of all utilization predictors. Insurance status is the third most powerful predictor of utilization. The most robust predictors of physician utilization included were (in order) perceived fair or poor health status, acute condition reported, female gender, and increasing number of conditions. These findings are consonant with the models predicting utilization set forth by Aday and Shortell [34] and Aday et al [35]. Persons reporting poor health but with no known condition were four times as likely as those reporting excellent health to have had a physician visit (OR, 3.95; 95% CI, 3.18 to 4.92). Overall, those in the acute condition population were nearly 2 1/2 times more likely to have seen a physician than those in the well population; persons in the chronically ill population were 1 1/2 times more likely to have seen a physician. For those in excellent reported health, a single acute condition more than doubled the chance of having seen a physician, but a single chronic condition for someone reporting excellent health raised only slightly the chance that a physician had been consulted.

COMMENT

The results of this study must be explained by linking them to the existing literature that models patient and provider behavior with regard to access. Underlying the physician utilization disparities presented herein is the assumption that the first physician visit in any given illness episode (or for well care) is primarily patient initiated, to the extent that care is obtainable, whereas follow-up or later utilization is more physician initiated [33]. This may also be viewed as a threshold effect. The successful obtaining of care represents the intersection of a set of conditions described by Aday et al [35] as predisposing, enabling, and organizational/structural factors. These include predisposing and intrapsychic factors such as an illness with a "cue-to-action" [36] and perception of available efficacious treatment, as well as the structural and enabling presence of physicians, means to get to facilities, pay for care, or obtain free care at a community clinic, and so forth.

When a patient lacks health insurance coverage, a more distinct threshold effect for seeking physician care was expected and subsequently observed. This was particularly true for those who are well or have chronic illnesses. Being uninsured may be interpreted as either an enabling or a structural/organizational barrier. In assessing these findings, however, it seems too easy to take data that are collected at the individual or household level and attribute the results exclusively to individuals or households and their lack of enabling factors. This is true because organizational factors of the system are more difficult to include in analytic models. For example, utilization disparities may reflect structural or organizational deficiencies in the distribution of physicians (ie, providers are not located where need is greatest). Persons who are uninsured may be highly concentrated in areas where few physicians practice (eg, inner cities), regardless of whether these physicians treat uninsured patients. Therefore, the organizational factors necessary for these people to access care are missing or less than adequate.

Structurally, some states have well-developed county health clinics to provide access in underserved areas [41]. Therefore, the uninsured in these areas may be served merely by the chance of living in a direct-service

district of a relatively affluent state. It is this type of arbitrary, differential access (ie, not based on need) with which the findings of this study are concerned.
The chronically ill, the acutely ill, and well populations do not suffer equally reduced access from lack of health insurance Figure 2. Although all uninsured persons have lower probabilities of obtaining physician care, the uninsured acutely ill obtain care at higher rates than either the uninsured chronically ill or well populations. The fact that more of the uninsured chronically ill are not getting even minimal care suggests that there is inherent inequity within the health system by disease group. The use of multivariate techniques aims to control for many of the known determinants of utilization; however, not every determinant is measured by the NHIS. Thus, we do not know to what extent these disparities are due to an inability to locate a physician who is willing to accept uninsured patients or a preemptive perception that care was unavailable or was unnecessary due to the condition's severity. Still, we do know that these conditions were salient enough to report during the interview process.

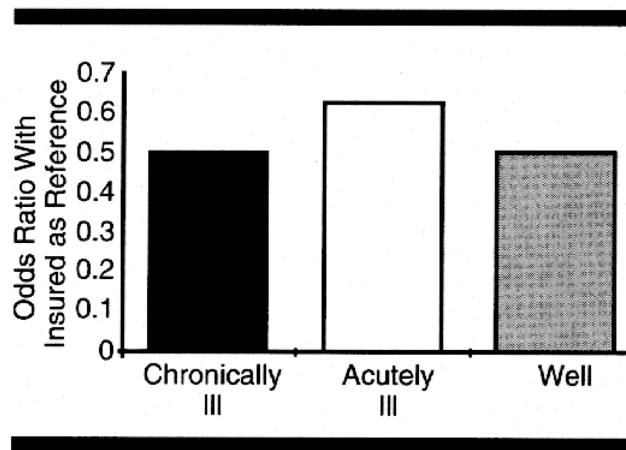

Figure 2. The uninsured's relative odds of a physician visit within 1 year by health condition group, United States, 1989. From original analyses of 1989 National Health Interview Survey, collected by the National Center for Health Statistics

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The utilization differences between the uninsured and insured measured in this study represent these populations' relative ability to obtain any care, as well as their willingness to seek care within the structural constraints of the existing system. Multiple access barriers and/or lack of specific factors beyond insurance also may contribute to this differential access. The addition of yet another barrier (organizational or enabling), on top of being uninsured, may account for such findings as these. Persons with chronic illnesses may be more likely to have multiple barriers (eg, lack of insurance and functional limitations), yet have reduced incentive (or visible cues to action) to seek services because care will not lead to complete cure. On the other hand, the chronically ill also face the barrier that their condition is not as conspicuous or even as medically glamorous as an acute illness that will result in complete cure or heroic recognition [42]. The chronically ill patient is likely to need not only an immediate course of treatment, but a spectrum of continued care for some indefinite time in the future.

Ideally, all medical providers would seek to prevent illness and treat all who need care (including the uninsured chronically ill); scarce and poorly allocated resources, however, place constraints on this ideal. As a result, uninsured patients are placed at odds both with each other and with physicians, who must decide which patient to treat when faced with an overload of uncompensated services. This may result in system-wide access inequities for the chronically ill uninsured patient. Care provided to the well population may fall under this same rubric, where it is difficult to capture the individual benefits of prevention in dollars or lives saved [43].

Several limitations of this study must be discussed at this point. Survey data may introduce biases with regard to sampling error and respondent willingness or ability to answer a question as intended. While the NHIS has a large, nationally representative sample, some populations (eg, the homeless) may not be adequately included. Also of concern is the use of self-reported retrospective recall data and the effect that utilization has on the salience of a condition. Several researchers have refuted the contention that self-reported data are inherently

flawed, and that reports of health status can be considered reliable [44,45]. Still, we must consider the fact that persons are more likely to report a condition if they are told that they have one by an authority Figure such as a physician. The use of self-reported perceived health status as a covariate helps to control for this utilization-related diagnostic bias.

From a study design perspective, the use of cross-sectional data makes causal inference regarding health status inappropriate. Based on the previous research presented in the introduction, the findings herein suggest that large numbers of uninsured persons are at risk for underutilization, perhaps compromising their health status. This study documents that the uninsured chronically ill and well populations have lower access than the uninsured acutely ill, but does not include a measure of appropriateness for care. The use of a dichotomous utilization variable helps to overcome this limitation by emphasizing the total lack of care against any volume of care. Although it is difficult to deduce appropriateness of utilization from population-based survey data, true differences in access have been uncovered. In addition, several physicians' organizations and professional consensus committees have outlined minimum quantities of care for the well and for those with various conditions [46,47,48]. Last, the crude measure of utilization quantities does not indicate the level of quality or the actual content of care provided. Thus, even for those who do receive care there may be great differences between the quality of care received by the uninsured and the insured.

Limitations notwithstanding, the findings from this study indicate that the view of the uninsured as a homogeneous group in terms of conditions or health status is inappropriate. Clearly, some uninsured groups are worse off in terms of access than others. From the multivariate-controlled results of this study, there is strong reason to believe that this disparity in access and utilization is at least partly due to the fact that some conditions are more visible or somehow favored by our system at the expense of others. Many serious acute conditions, such as bleeding peptic ulcer or esophageal varices, that would be considered urgent are automatically classified by this study according to the underlying condition into the chronic group, thereby minimizing some questions regarding the truly acute conditions that are getting priority by the system.

These disparities represent large inequities in access to care for the uninsured, and particularly for the chronically ill and well. Knowledge of these differential effects of being uninsured lends strong support for the development of rational, comprehensive health insurance packages with better inclusion of chronic disease and preventive care models, and also demonstrates the importance of universal coverage for all populations. Without both a universal and comprehensive health insurance mechanism, the patterns of inequity observed in this study will prevail above medical need for care.

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