Differences in Treatment of Ischemic Heart Disease at a Public and a Voluntary Hospital: Sources and Consequences

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IN THIS ARTICLE, I REPORT ON A STUDY THAT FOUND differences in the treatment of patients with ischemic heart disease at a public and a nonprofit voluntary (i.e., private) teaching hospital in New York City. The research was designed to identify factors in the hospital's organizational environment and the patient's social background that have an impact on treatment and to examine both patient and provider perspectives on the quality of care. To accomplish this, patients who had similar medical conditions were followed through their inpatient care at both institutions and for three months after discharge.

The strictly clinical findings, which have been reported elsewhere (Yedidia 1992), revealed that the public hospital patients received less care—fewer diagnostic tests, fewer surgeries, and fewer follow-up visits—than their voluntary hospital counterparts. An independent physician audit revealed that significant numbers of public hospital patients should have received more extensive services but did not; the disparity thus could not be attributed to differences in the need for care between the two cohorts. Furthermore, the discrepancies were not a function of *lack* of health insurance on the part of the public hospital patients: all of these cardiac patients were enrolled in either Medicare or Medicaid, or were insured by a commercial policy that fully covered the cardiac procedures under study. However, as the analysis makes plain, variations in coverage

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The Milbank Quarterly, Vol. 72, No. 2, 1994

Published by Blackwell Publishers,
238 Main Street, Cambridge, MA 02142, USA, and 108 Cowley Road,
Oxford OX4 1JF, UK.

of other benefits played an important, if indirect, role in access to these services. Differences in care appeared to be a product of subtle interpersonal, social, and economic factors in the health care environment.

The study design incorporated a diverse array of techniques to examine these factors, including observation of the care of each patient on hospital rounds and at the bedside, in-depth interviews with patients and physicians, and postdischarge home interviews. A distinctive feature of the research design was its emphasis on firsthand observation of physician decision making for each patient over the course of eight months in the coronary and intensive care units and on the wards at the two institutions. The richness of the data emanating from this approach is essential to the central task of this article: revealing the sources of the previously reported differences in clinical care.

The research strategy differs from any used in prior studies of access to health care; these earlier studies were concerned primarily with enumerating the extent to which services are delivered to specific populations—notably the poor, the uninsured, or particular ethnic or racial minorities. Prior work has relied on such measures as number of physician visits in a given time period, receipt of essential services when they are needed (e.g., prenatal visits), rates of preventive measures such as Pap smears or vaccinations, or number of untreated medical conditions (Aday and Andersen 1981; Kleinman, Gold, and Makuc 1981; Davis and Rowland 1983; Blendon et al. 1986; Freeman et al. 1987). They have addressed the impact of race on the utilization of services by patients with coronary disease (Ford et al. 1989; Wenneker and Epstein 1989; Hannan et al. 1991) and patients with kidney disease (Held et al. 1988; Kjellstrand 1988). They have explored the effects of social and economic factors on treatment of specific cancers (McWhorter and Mayer 1987; Greenberg et al. 1988) and the impact of insurance status on overall receipt of hospital procedures (Weissman and Epstein 1989).

All of these studies suggest inequities in the present allocation of health care services. However, the fact that there are differences in rates of service use raises further questions: *How* do differences in utilization arise? How may relations between patients, cardiologists, primary care providers, and hospitals contribute to an outcome in which some groups receive fewer services than others? Are there differences in the appropriateness of care received by one group compared with the other? Do differences in utilization reflect "overtreatment" of high users and "undertreatment" of those receiving fewer procedures? The above-mentioned hospital- and population-based studies—often relying on computerized administrative data sets—lack the requisite depth to generate insight into the *reasons* for observed differences in resource use. The research reported here was designed to overcome this limitation by generating a rich database from multiple sources on each of the individuals in the sample.

This article addresses three sets of issues:

1. Public hospitals are regarded as providers of last resort; they serve people who have no other options. Yet, all of the patients in the public hospital panel were insured for hospital care. Why then did they choose to use the public institution?
2. Patients cared for at the public and the voluntary hospital received markedly different care. What factors were observed to contribute to these disparities?
3. The quality of care of patients in the public hospital panel was seriously deficient from a medical perspective. Compared with their voluntary hospital counterparts, how did public hospital patients assess their health care experiences?

Supplementing these analyses, the well-being of patients from the two hospitals was examined, comparing self-reported health status between the two panels three months following discharge.

Methods

Research Sites

The study hospitals, although located in the same geographic area, serve a demographically distinct group of patients, with lower-income patients usually seeking care from the public hospital, and most middle- to upper-income patients utilizing the voluntary institution. Interns, residents, and fellows rotate between the two hospitals, and full-time cardiologists at both institutions are members of the same teaching faculty, essential considerations in selecting these research sites. Also important in choosing these institutions were several factors that typify differences between public and private hospitals: At the public facility, patients were cared for by house staff that was supervised by staff physicians. Voluntary hospital patients were followed by private physicians. The voluntary hospital offered a full range of invasive and noninvasive diagnostic tests for cardiac disease. The public hospital had facilities for noninvasive procedures including exercise stress testing. However, as it did not have a cardiac catheterization laboratory, it relied upon transfer to other institutions for this procedure. This arrangement is typical of the public hospital system in New York, where seven (out of a total of 11) public hospitals do not have facilities for cardiac catheterization. Nationwide, at the time of this study, 81.1 percent of nonfederal, short-term general hospitals (public and private) did not have cardiac catheterization laboratories; 90.1 percent of all public hospitals lacked such facilities (American Hospital Association 1987, 20, 207).

Sample

To undertake this study, clinically comparable groups of patients were carefully assembled; all were hospitalized for acute episodes of ischemic heart disease in 1987. Ninety patients, 45 at each hospital, who met strictly defined criteria for acute myocardial infarction (MI, or "heart attack") or unstable angina over the course of 3.5 months at each institution, were enrolled prospectively in the study. Patients were identified as having suffered an acute MI if their serum MB-creatine kinase levels exceeded 5 percent of their total creatine kinase and if they had appropriate electrocardiographic changes. Patients were classified as having unstable angina based on a classic clinical presentation and an electrocardiogram showing acute ischemic changes (Yedidia 1992).

All 90 patients agreed to participate in the hospital phases of data collection. Sixty-nine patients (77 percent) were available for a follow-up interview three months following discharge: 32 patients from the public hospital and 37 from the voluntary institution (the denominators for the analyses reported herein). Selected demographic and clinical characteristics of these 69 patients are presented in table 1. An examination of the demographic characteristics of the patients shows family income, as expected, to be significantly higher among patients at the private hospital; the percentage of patients from households with annual incomes in excess of $30,000 was nearly four times higher at the private hospital than at the public institution. Among patients at the public hospital, 55 percent were black, compared with 11 percent at the voluntary one. Remarkably, all patients from both hospitals had some form of insurance coverage; however, a higher proportion of patients from the voluntary institution had private policies. All of the voluntary patients had a pri-

TABLE 1
Selected Demographic and Clinical Characteristics of Ischemic Patients at the Two Hospitals

Patient characteristics	Public (n = 32)	Voluntary (n = 37)
Age (mean)	55.6	54.6
	% (n)	% (n)
Gender		
Male	62 (20)	81 (30)
Female	38 (12)	19 (7)
Race		
White	18 (6)	78 (29)*
Black	55 (17)	11 (4)*
Hispanic	18 (6)	8 (3)*
Other	9 (3)	3 (1)*
Household income		
<$10,000	28 (9)	14 (5)*
$10,000–$29,999	56 (18)	25 (9)*
$30,000+	16 (5)	61 (23)*
Insurance coverage		
Health insurance (nongovernmental)	47 (15)	64 (24)
Medicare	25 (8)	28 (10)
Medicaid (including Medicare + Medicaid)	28 (9)	8 (3)
None	0 (0)	0 (0)
Source of follow-up care		
Public clinic	53 (17)	0 (0)*
HMO (closed panel)	13 (4)	11 (4)*
Private MD	34 (11)	89 (33)*
Cardiac condition		
Acute MI	78 (25)	86 (32)
Unstable angina	22 (7)	14 (5)
Type of MI[a]		
Q wave	48 (12)	69 (22)
Non-Q wave	52 (13)	31 (10)
Prior CAD		
Present	41 (13)	41 (15)
Absent	59 (19)	59 (22)
Presence of risk factors		
Hypertension	47 (15)	43 (16)
Positive smoking history	63 (20)	70 (26)

[a] For those who ruled in for an MI at each institution, n = 25 and n = 32 for the public and the voluntary hospitals, respectively.

$*p < .01, \chi^2$

Abbreviations: CAD, coronary artery disease; HMO, health maintenance organization; MI, myocardial infarction.

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vate physician or belonged to a staff-model health maintenance organization (HMO), whereas the majority of public hospital patients sought care from the public hospital clinic.

The lack of uninsured patients in the public hospital panel reflects their age. In New York City, in 1984, the majority of the uninsured, fully 86 percent, were under 45 years of age (New York City Health and Hospitals Corporation 1987, 29). The vast majority of patients who suffer an ischemic event are over the age of 55. Those 65 and over are covered by Medicare. Those between the ages of 55 and 65 tended to be employed and were covered by job-related insurance. Of course, people in this age group without insurance suffer from heart disease, but none happened to be hospitalized during the three and one-half month period at the municipal facility.

Of the 21 patients who were lost to follow-up, 2 had died and 2 were too sick to respond to the questionnaire (these patients were equally distributed between public and private hospitals); 6 could not be located; and 11 declined to participate in the follow-up survey. A comparison of the demographic and clinical characteristics of nonrespondents and respondents in the public panel showed similarities in age, gender, race, source of follow-up care, cardiac condition, and presence of prior coronary artery disease (CAD); nonrespondents were more frequently covered by Medicaid and less often by private insurers. Nonrespondents and respondents in the private panel were similar in all categories except two: nonrespondents were slightly older and more likely to have had a history of prior CAD (75 percent, compared with 41 percent).

Data Collection

Data were collected from four principal sources:

- my direct observation of the care of each patient on rounds and at the bedside
- interviews that I conducted with physicians concerning the rationale for their decisions
- a process-oriented chart audit performed by a senior cardiology fellow to assess the appropriateness of care
- a 90-minute home interview, conducted by a research assistant with each patient three months after discharge, to establish further use of health services, health status, determinants of patients' choice of providers, and satisfaction with care

In the observations, I focused on the decision-making process concerning the use of several cardiac services: exercise stress testing, cardiac catheterization, coronary artery bypass surgery, and percutaneous transluminal coronary angioplasty (PTCA). Cardiac catheterization is an invasive diagnostic procedure for assessing the extent of coronary disease. Exercise stress testing is a noninvasive approach to assessment that produces less definitive results than cardiac catheterization. Coronary artery bypass surgery is a treatment for blocked arteries that entails rerouting the arteries to sustain blood flow. Angioplasty is a less invasive procedure for opening a blocked artery. Thrombolytic therapy, or the use of drugs to reestablish blood flow in a blocked artery, was experimental at the time of data collection and was not an element of the care of any patient in either panel.

The review of the patient's medical record (the chart review) was conducted by a senior cardiology fellow, and it focused on patient management during the initial hospitalization. The fellow was trained in the teaching program at the research sites, but he did not participate in the care of any of the study subjects. He was asked to evaluate the appropriateness of diagnostic and treatment procedures, as well as follow-up care, using his best clinical judgment, based upon the norms of his cardiology training program, and to note all the factors leading to his decisions. Thus, uniform criteria guided by the standards of the training program served as the basis for judging whether or not a particular procedure was indicated, rather than externally validated criteria of appropriateness of care such as those generated by the Rand Corporation (Chassin et al. 1987). A randomly selected subset of 12 charts was reaudited by a second fellow in the same program to assure reliability, which exceeded 90 percent. These methods are presented in more detail elsewhere (Yedidia 1992).

The home interviews consisted of a mix of open-ended questions—permitting patients to provide their own accounts of the critical events in their experience with cardiac care—as well as close-ended items. Six measures relevant to the research issues were incorporated in the patient follow-up home interview: two assessing hospital stress and one each measuring receipt of information, satisfaction with hospital physician, functional status, and perceived health status. Each measure demonstrated acceptable reliability based on Cronbach's alphas (reported separately for public and voluntary hospital patients below). Two hospital-related stress scales adapted from those of Volicer and Bohannon (1975) were administered: One focused on generic irritants (alpha = .72 and .71 for public and voluntary patients, respectively), or those likely to be independent of the particular institution in which the patient is hospitalized (e.g., how much they were bothered by having to be assisted with a bedpan, thinking they might have pain because of tests and procedures, knowing they have a serious illness). The other (alpha = .79 and .61) focused on aspects of hospitalization that are sensitive to the particular institution (e.g., how much they were bothered by an overly hurried staff or by too many people sleeping in the same room). Satisfaction with hospital physicians (alpha = .77 and .84) was measured by a 10-item scale adapted from the work of Greeneley, Young, and Schornherr (1982). Respondents were asked how much they agreed with statements describing various attributes of their doctors: how organized were they?; did they ask about personal concerns?; to what degree were they thorough, warm, and confident? The amount of information provided by hospital physicians and nurses (alpha = .81 and .84) was measured by a scale adopted from Shapiro and colleagues (1983). Functional status was measured using a 13-item assessment of activity. For each, patients were asked whether and to what extent they engaged in the activity prior to their hospitalization and how their activity level compared three months later. Changes in levels of function rather than absolute levels were analyzed to (1) minimize the impact of socioeconomic status on participation in specific activities, and (2) account for baseline differences in functional status. The items were drawn from a standard list of activities classified by metabolic equivalents (METS), which was distributed to patients prior to leaving the hospital. Examples include walking up a flight of stairs, cleaning windows or floors, walking several blocks, and riding a bicycle. Responses suggested that the lifestyles of all of the patients from both hospitals permitted them access to the range of activities in the scale. Health status was measured, using a patient self-report that has been shown to be a valid predictor of overall physical health (Davies and Ware 1981).

Data Analysis

I relied upon a combination of qualitative and quantitative analyses to address the research questions. Examination of the first issue, concerning choice of hospital, required analyses of the detailed accounts by each patient of the events that transpired between onset of symptoms and hospitalization. These data were supplemented by responses to structured questions on whether patients were hospitalized at their first choice of institutions and the reasons for their choice. Responses to these open-ended questions were coded, and response frequencies were tabulated to provide an indication of the generalizability of themes emerging from the more lengthy patient accounts.

The second research issue, identification of contributory factors to the disparities in care, relied upon analyses of the fieldwork notes from my observations of physician decision making on rounds and on interviews with physicians and patients concerning the process of care. All qualitative data from the eight months of fieldwork on rounds and at the bedside in the hospitals, as well as from the patient and physician interviews, were entered into Ethnograph (Seidel, Kjolseth, and Seymour 1988), a software package designed to facilitate analysis of text-based data. Transcripts of field notes and interviews were coded and analyzed, using standard qualitative methods (Lofland 1971). The purpose was to identify commonly recurring themes concerning physician decision making and patient perspectives on care, and to calculate their frequencies. I will present verbatim quotations from this material to illustrate the major themes emerging from the analyses.

Examination of the third issue, patient responses to the quality of care, entailed both qualitative and quantitative analyses. First, using the qualitative techniques previously described, I identified themes from responses to open-ended questions (in both the in-hospital and home interviews) that elicited patient views of their care. Second, scores for public and private hospital patients on measures of perceived hospital stress, satisfaction with hospital physicians, and receipt of information about their medical conditions were contrasted statistically. Finally, to assess patient well-being, the self-reported health status and functioning of patients from the two institutions were compared.

For the quantitative data, chi-squares were calculated for nominal data, and two-tailed *t*-tests were conducted for continuous variables to test for statistical differences among patients at the two hospitals. Ordinary least squares (OLS) regression was used to examine the relationship between source of hospital care and functional status, while accounting for the effects of age, cardiac condition, prior known coronary disease, and in-hospital complications. All quantitative analyses were performed using SAS statistical software (Statistical Analysis System 1986).

Findings

Determinants of Hospital Choice

Three factors stand out as major determinants of public hospital use among the patients in this study: limitations in their insurance coverage, lack of a private physician, and use of the public ambulance service. Analysis of fieldwork data was central to identifying these forces and to understanding how they exert their influence.

Insurance Coverage. Although all the public hospital patients had some form of health insurance coverage, the extent of their benefits played a role in their selection of hospitals. The majority, including Medicare beneficiaries as well as private policy holders, cited copayments as a barrier to utilizing voluntary hospitals. One such patient, a 68-year-old man with an annual household income of $15,000 for himself and his wife, explained his choice of a public hospital as follows:

> I don't have much money to pay. I only have Medicare. And Medicare pays 80 percent, and I pay the rest. The bills at the general hospital are less and they don't hound me if I can't pay my share. My Social Security check is only $260 per month, and I have to pay $600 for rent. We pay the rent, the electric, the phone—there's nothing left. It's not an easy life. And I work now—as a handyman.

In contrast, the latitude of choice afforded to patients in the private hospital panel, by virtue of their more comprehensive insurance coverage, was typified by the following comment:

> I heard—my doctor told me—that this hospital [the private institution] is rated either fourth or seventh best hospital in the United States. You could want no better recommendation than that. And it's all being paid for. Medicare will pay whatever their portion is, and Metropolitan [a commercial supplemental policy] will pay the other 20 percent. I can go wherever I want; it doesn't cost me.

Several Medicare recipients in the public panel were attempting to qualify for Medicaid to fill in the gaps. One such patient delayed seeking care, even though she had been experiencing chest pain for several months. She explained:

> Well, I tell you, I waited for a long while before I came to a hospital for the simple reason that I didn't have Medicaid. And I wanted to be covered before I came into any hospital. So they worked on that and got everything straightened out, and here I am.

Finally, there were patients who utilized the public hospital because they did not have to pay extra for their medicines once they were discharged. The fee for their outpatient visit at the public hospital clinic covered their prescriptions. As Medicare does not cover medicines, this could yield substantial savings for these patients. Several patients cited these savings as a reason for choosing the municipal hospital instead of a voluntary one.

Lack of a Private Physician. Fifty-three percent of the public hospital patients did not have a private physician; they utilized the public clinic as their regular source of outpatient care. Lacking a physician with admitting privileges elsewhere, they were hospitalized at the public facility. Explained one patient:

> Well, the reason I came to [the public hospital] is I had no private physician to get me into any other hospital. . . . I have Blue Cross/ Blue Shields [*sic*], but you just can't go into a hospital. They'll take you as an emergency patient, for that moment, and then they'll ship you to a public hospital. So I may as well come here to begin with.

In contrast, patients in the private hospital panel—89 percent of whom had a private physician, while the remainder belonged to an HMO—relied upon their personal physicians for selecting a hospital and serving as advocates to assure admission:

> Well, I'll tell you about [the private hospital]. My doctor is affiliated here to begin with. And I went to the emergency room and you're always afraid that they'll say that there are no rooms upstairs. Then I'd raise mortal hell and say: "Hey, get my doctor, Dr. ______. Get me into a room at [the private hospital]." If they said you have to go to one of the other hospitals, I'd want his [my physician's] concurrence.

Public hospital patients who relied upon the clinic expressed considerable dissatisfaction with the inconvenience associated with this source of primary care:

> I've had to wait four hours at the clinic before being seen. They schedule patients all for one time. And you have to wait. They give everyone the same appointment. . . . People are not slaves of the system. The system must be made to work for them. . . . Systems here are too rigid. The patient becomes a slave to the system. Workers say they can't do anything. Doctors know the patient will take up a given appointment accordingly.

Likewise, lack of continuity was a source of concern for many of them:

> I like to go to one doctor. See if he can't do me no good, only then, let me go to another doctor. Now every time I go there, there's a different doctor. See, if there's a different doctor every time, he's changing this, he's changing that. It's no good.

Given the association between type of doctor and site of hospitalization, it is important to examine why so many patients from the public hospital were without a private physician. Of those relying upon the clinic (16), 14 reported having an interest in using a private physician, but indicated that this course would have required significant out-of-pocket expenses. Twelve reported that such costs were an important consideration in using the public clinics; they indicated that they would seek a private doctor if their insurance covered the fee. However, six of these reported that they would have trouble locating such a physician in their neighborhood, which is designated as a medically underserved area.

A schoolteacher, who had work-related insurance with a $200 deductible for outpatient care, recounted two experiences with private physicians before she resigned herself to utilizing the public hospital clinics:

> Yes, I did have a private doctor a few years ago. A very good doctor, she was one of the prominent doctors; she was referred by another girl that had her. But I found that they just tell you to come back every two weeks, and they charge $45 a shot, and then instead of doing the testing themselves, they send you out to someone else which is another $30. That's the way it was.

A few years later, she again tried a private doctor:

> The first thing that the doctor did, the minute I walked in, he asked what insurance and what money I had. He immediately let me know that I should go to [the public hospital]. He just wasn't interested

> even to bother about examining the little fella [people with limited financial resources]. He wrote it out and told me to take a cab there. So you know the way you fit; with some private people, you know where you fit. The dollar means more than the idea you're looking for help. I mean, that's my personal opinion.

Use of the Public Ambulance Service. New York City is served by an extensive public ambulance system, the Emergency Medical Service (EMS) with 125 vehicles, as well as by a network of some 30 private companies that collectively own 150 ambulances. The EMS, summoned by calling 911, is required to take patients to a designated hospital within a 10-minute radius of where they are picked up. According to the president of one of the major private companies:

> If a patient dials 911, he's taken to the nearest hospital. If his doctor is affiliated with another hospital and he wants to be treated there, the city won't transfer him. So the patient or his doctor hires a private ambulance. (Yarrow 1987, 52)

The fee is similar for public and private ambulance services; Medicare and Medicaid cover part of the fee, as do many insurance policies, and all services must accept patients with such coverage. However, EMS will bill for the service later, whereas the private companies generally require payment at the time of delivery.

For patients in the public panel, calling 911 was a disruptive factor in their health care experience far more often than for the private hospital patients. For one thing, they depended upon the service much more than their voluntary hospital counterparts, who, when they did not drive or get a ride from family or friends, tended to rely upon taxicabs or private ambulance companies:

> I called my doctor when I had the pains. He called the [private] ambulance company to arrange to get me to [the voluntary hospital]. Last time it took me much less time to call a cab. In the future, that's what I'll do.

The prospect of immediate payment for a cab or for an ambulance was a deterrent for lower-income patients, however. Once they called 911, they often had little choice in the institution to which they would be taken. Although, according to policy, distance is the overriding factor, in practice the driver's assessment of the patient's ability to pay often appeared to be the prime determinant:

> PT: I would have preferred [a nearby voluntary hospital], but since I didn't have any money, they said I had no choice.
>
> MY: Who said you had no choice?
>
> PT: The ambulance driver. He asked me if I had money. I said no, and he said it will have to be [the public hospital].

Most of the patients, however, assumed they had no choice, regardless of finances or distance. They shared the assumptions of the following patient, who was a member of an HMO affiliated with a voluntary hospital near his home:

> My wife called the ambulance. They only take you to a public hospital. To go to the other hospital, you need to call a cab.

Of the 45 designated hospitals served by the public ambulance, 11 of them are public and 34 are private. Some patients were taken to the voluntary facility by EMS, reflecting the arbitrariness of policy:

> PT: My doctor did not belong to this [voluntary] hospital. He couldn't get an ambulance to go to his hospital. So we got EMS and it was just a lucky break that we got here.
>
> MY: Did they ask you where you want to go?
>
> PT: They said you got two choices [the voluntary or the public hospital]. I said [the voluntary hospital], no question. And the guy said, "You made a good decision."

For patients with another established source of care, the consequences of going to the public hospital were predictably unsettling. In addition to anxiety provoked by unfamiliar providers, they often expressed concern about whether or not their health insurance would cover the bill, particularly if they were members of an HMO affiliated with another hospital.

Finally, public hospital patients seeking a private ambulance sometimes had difficulty persuading one to come to their neighborhood. One patient, whose private physician had admitting privileges at a voluntary hospital where she had been hospitalized several times previously, reported:

> My husband tried to get a private ambulance to take us to [a voluntary hospital], but he couldn't get one. He called fifteen of them; he couldn't get one. They work out of areas; I didn't know of any in our area. He called all around—each one had a story. Some of them would come in an hour, but I figured that was too long. So then I decided to call 911.

In sum, a combination of ambulance-related factors adversely affected the likelihood that lower-income patients would be transported to a voluntary hospital: arbitrary decisions on the part of EMS drivers, often based upon perceptions of ability to pay for hospital care; patient perceptions of EMS services; and financial and related barriers to use of a private ambulance company.

Data from the home interview confirmed the saliency of these constraints. Not surprisingly, the voluntary hospital patients were much more successful in getting to their first choice of hospitals: 87 percent of them did so, compared with 59 percent of those who used the public hospital. All patients who were hospitalized in their first choice of institutions were asked, in an open-ended question, why they chose that hospital. The reasons and their frequencies, for patients from the two institutions, are categorized in table 2.

The patterns are clearly different. Almost two-thirds of the patients who selected the public hospital as their first choice cited familiarity or convenience of location, whereas the vast majority at the voluntary insti-

TABLE 2
Patients Hospitalized at Their First Choice:
Reasons for Their Choice

Public (n = 19)		Voluntary (n = 32)	
Reason	Frequency % (n)	Reason	Frequency % (n)
Familiarity	37 (7)	MD was affiliated	28 (9)
Closest	26 (5)	Quality of care	22 (7)
They'll take me	21 (4)	Familiarity	22 (7)
Quality of care	11 (2)	Closest	16 (5)
Other	5 (1)	Other	12 (4)

tution cited either the affiliation of their physicians or the quality of care. When asked how they assessed quality of care, most voluntary patients reported having discussed it with their physicians. In effect, their choice of physician predetermined their choice of hospital. Public hospital patients, in contrast, either did not have a personal physician or were deterred from using the one they had. For them, access to care was through the institution, not the physician. If they made judgments about quality of care, they did not—or could not—act on them. Compared with voluntary hospital patients, they were often more passive and resigned in their outlooks: four of them, explaining their choice of the public facility, responded that they were grateful that the public hospital would take them, accepting their insurance payments without extra charges.

Public hospital patients who cited positive reasons for selecting that institution as their first choice—familiarity, convenience, and quality—were much more equivocal in their endorsement of the hospital than were their voluntary counterparts. On interview, 10 of the 14 patients in this category qualified their assessments in the ensuing discussion. Their accounts of how they got to the hospital reflected a noticeable degree of ambivalence. For example, one such patient, critical of the shortage of nurses and the deteriorating wards, concluded nevertheless:

> This is the nearest one to me, and I've been here before. I try to make the best of things. I know all about this place and let's just say I'll get by all right.

In contrast to the rationales offered for selecting the public hospital first, quality of care was prominent among the reasons why some public patients would have preferred alternative hospitals. Of the 13 who would have liked to go to a different hospital, 5 cited higher quality of care, 4 were members of an HMO affiliated with another hospital, and 3 cited familiarity with other institutions. Twelve of the 13 would have preferred a voluntary hospital. These patients were more assertive with regard to choice, citing positive factors for their preferences rather than the absence of deterrents. Further, all but one had called 911 and indicated that the public ambulance service made their choices for them.

Finally, of the 5 voluntary hospital patients who preferred an alternative choice, 4 of them cited proximity to their homes as a reason for wanting to go to a different hospital. For these patients, getting to their first choice of hospitals was generally not a problem; none reported that calling 911 served as a deterrent.

In sum, a substantial proportion of patients who used the public hospital would have preferred a private institution. Inadequate insurance coverage was a significant deterrent: high copayments and the cost of drugs were barriers for non-Medicaid patients. Lack of a private physician with admitting privileges at a voluntary hospital was also a major obstacle. Almost all of the patients who used the public clinic as their regular source of primary care would have preferred a private physician, but they reported that out-of-pocket expenses and difficulty in locating a doctor were deterrents. Finally, reliance upon the public ambulance service often dictated use of the public hospital.

Disparities in the Content of Care

Analysis of clinical data (Yedidia 1992) revealed that cardiac catheterization was performed three times more frequently for patients at the voluntary institution than for their public hospital counterparts, and this difference persisted when the assessment of appropriateness was taken into consideration. Among patients who, by chart review, should have been catheterized, 100 percent from the voluntary hospital had this procedure, compared with 41 percent from the public institution ($p < .01$). Of those patients for whom an exercise stress test was indicated, 90 percent from the voluntary panel, compared with 50 percent from the public panel, had stress tests and appropriate follow-up care ($p < .05$). Sixteen patients from the public hospital (50 percent) did not have a complete medical work-up, compared with 2 patients (5 percent) from the voluntary institution.

At the public hospital, of the 17 patients for whom cardiac catheterization was judged to be appropriate, only 7 had the procedure. In the cases of 5 of the 10 patients at the public hospital who did not undergo catheterization, physicians incorrectly assumed that they did not have insurance coverage. Although patient interviews established that all of them had insurance for hospital care, inspection of the hospital medical record by the researcher confirmed that accurate information about insurance status was unavailable. Further, it was apparent on rounds that physicians were very uncomfortable discussing patient resources at the bedside. The setting of the public hospital itself implied scarcity of patient finances and erroneously led physicians to assume, in many cases, that resources were not available for invasive, and expensive, diagnostic procedures.

Lack of coverage should not have been a barrier to cardiac catheterization, however. Insurance status determined whether the patient could be transferred to the affiliated voluntary hospital or to a tertiary public facility for the procedure, with uninsured patients using the latter. However, transfer to the tertiary public hospital was much more difficult to arrange than transfer to the affiliated voluntary institution for the procedure. Beds at the former hospital were in short supply, and its medical staff exerted strict control over transfers. The following exchange on rounds at the public hospital illustrates the situation:

Resident: Before we thought about cath but then we said let's do a stress test, and we're still not talking cath.

Attending: He is asymptomatic.

Resident: He probably does not have insurance—we'd have to transfer him to [the public hospital], which is a pain.

Attending: Yeah. Let's follow him in the clinic and see if he has symptoms.

Regarding another of these patients for whom "cath when stable" was written in the chart, his physician handled the issue of cardiac catheterization as follows:

> Do a thallium stress [test] first and, if it is positive, then cath. It's hard to decide what to do in these circumstances—maybe he is covered [by insurance], but let's conserve.

The follow-up interview three months later revealed that this patient had had neither the stress test nor the catheterization, and he reported feeling some daily chest pain.

Access to hospital procedures, as evidenced above, was compromised by inadequate knowledge of the patient's insurance coverage and by the prospect, following from this misapprehension, of having to confront the difficulties in arranging for transfer to another public institution. Two of the other patients who did not undergo catheterization reported that their records were not forwarded to their outpatient providers. Almost half of the public hospital patients in the study received their ambulatory care from a source outside the public system. Completion of the diagnostic and treatment plan, integrating inpatient and outpatient procedures, was more problematic at the public institution than at the voluntary one, where all patients had private physicians who participated in their inpatient care and followed them after discharge.

Similar disparities were observed with regard to exercise stress testing: only 11 of the 22 public hospital patients for whom the procedure was appropriate were tested, compared with 9 of 10 of their voluntary hospital counterparts (Yedidia 1992). Both provider- and patient-related factors were seen as contributing to the deficiencies at the public hospital. In eight of the cases, either the records were not sent to the outpatient providers or the patient was not referred for testing; in the other three cases, the patients did not show up for the test. Problems arising from the lack of a primary care physician to coordinate inpatient and outpatient care resurfaced in the cases of 4 public hospital patients who had an exercise stress test but did not receive follow-up medical care. The patient home interview revealed that 2 of these patients were informed that their stress tests were positive, but, several months later, they reported that they were waiting for advice about returning for a repeat test or a catheterization; 2 patients were not aware that their stress tests were positive.

When exploring provider contributions to these deficiencies, it is difficult to document the reasons for such slippage; it is easier to observe factors that influence purposeful acts rather than the reasons for omissions. Prominent in the explanations of physicians was the "hassle factor"—reference to the inordinate amount of provider time at the public hospital consumed by such tasks as arranging for transfers, taking care of nonclinical matters, and completing paperwork. Interviews with the house staff, who rotated between the two hospitals, confirmed that there were fewer ancillary personnel at the public hospital than at the voluntary institution to assist them with these tasks. In the face of conflicting demands on their time, which are often irreconcilable, physicians are continually forced to assign priorities that necessarily affect the content of care. In the current study, observations confirmed that, in pressured circumstances, orders for follow-up tests and transfers for procedures were sometimes neglected.

In addition to provider constraints, patient-related factors also compromised follow-up care. Patients in the public panel share with other low-income groups numerous obstacles to obtaining ongoing primary care. On interview, prevalent reasons cited by these patients for missed appointments included financial difficulties in meeting the deductibles required by their insurance policies, problems in locating a private doctor, long wait-times at the public clinic, frustration with seeing a different doctor for each visit, and conflicts between appointment schedules and job demands.

In sum, factors that were observed to play a contributing role to these disparities included providers' misperceptions of patients' insurance status, difficulties in arranging transfers within the public hospital system, obstacles to integrating inpatient and ambulatory care among multiple providers, and problems faced by patients in seeking outpatient care.

Patients' Perspectives on Their Hospital Care

I examined patients' overall assessment of the institution in which they were hospitalized, as well as their outlook on specific elements of the care they received. Two measures of hospital stress were incorporated in the survey questionnaire: one addressed generic irritants, which are likely to be independent of the institution in which the patient was hospitalized; the other focused on aspects of hospitalization that are sensitive to the particular institution. From table 3, it is apparent that absolute stress levels among patients in both panels were moderate. It is notable,

TABLE 3
Patients' Assessments of Their Experience by Hospital

	Public (n = 32)		Voluntary (n = 37)	
Scale	mean	(s.d.)	mean	(s.d.)
Hospital stress score—generic[a]	18.66	(6.79)	16.32	(6.01)
Hospital stress score—specific[b]	15.26	(11.07)	6.59*	(5.21)
Receipt of information score[c]	14.53	(5.00)	17.81**	(5.16)
Satisfaction with hospital MD[d]	35.72	(5.78)	41.44**	(5.40)

[a] Nine-item scale; 0 = no stress, 36 = most stressful.
[b] Thirteen-item scale; 0 = no stress, 42 = most stressful.
[c] Six-item scale; 6 = least information, 24 = most information.
[d] Ten-item scale; 10 = least satisfied, 50 = most satisfied.
**p* < .01, two-tailed *t*-test; ***p* < .05, two-tailed *t*-test.

however, that whereas stress levels from generic sources were comparable between both panels, public hospital patients reported significantly higher levels of stress from hospital-specific sources than their private hospital counterparts ($p < .01$).

Consistent with this finding, when asked their overall assessment of the hospital in an open-ended question, public hospital patients said they were very displeased with aspects of the physical plant. They were, however, reticent about criticizing the quality of care. Several public hospital patients discussed the institution in a tone reserved for a difficult family member—aware of its faults, but accepting nonetheless.

Satisfaction with hospital physicians was measured on a 10-item, Likert-type scale. Patients from both hospitals reported an average level of satisfaction slightly more favorable than neutral (table 3). Patients from the voluntary institution were significantly more satisfied than their public hospital counterparts, however ($p < .05$). Nevertheless, acknowledging the fact that almost all of the patients in the voluntary setting were being treated by physicians familiar to them, which was rarely the case for the public hospital patients, these results may reflect positively upon the individual performances of public hospital physicians in these circumstances.

When asked how much information they received in the hospital about key dimensions of their condition and its care (e.g., cause of the problem, likely effects of medicines, dietary instructions), public hospital patients reported receiving significantly less information than patients in the voluntary panel ($p < .05$). Further, when asked how much information they would have liked to receive, public hospital patients reported a desire for high levels of information, often exceeding those demanded by their voluntary counterparts. Consistent with these findings, fieldwork data revealed problems in communication at the public facility, particularly when it related to cardiac catheterization. Observations on rounds in the hospital disclosed that catheterization was discussed as a likely possibility with 100 percent of the public hospital patients for whom the chart audits determined that cardiac catheterization was appropriate—including the 50 percent for whom the procedure was not carried out. The lack of follow-through was problematic for the patient. For example, on rounds at the bedside, the attending physician explained to one such patient:

> You have had a heart attack. It involves the bottom part of your heart and blood vessels. You'll do fine in the next few weeks, but we're concerned about the other vessels. If they are clogged, there could be more damage which could compromise the functioning of your heart. You're young [45 years old] and have a long life ahead of you. The best test is a cardiac cath. . . . There are risks—one in 1,000 have some trouble such as a heart attack, stroke, or death—but these are usually elderly patients who have poor heart function. This is the test with the best information—I recommend it in one week from now. We'll talk more about it.

In an interview with this patient the day she was discharged, she commented:

> I don't know about the cath. They never said anything else about it to me. I did overhear them talking. When the doctors come around your bed, you have 10 doctors standing there talking among themselves about you. I heard them talking about the costs of these different tests. I think they said $5,000. And I'm thinking, "Excuse me, let me in on this—it is my body, my heart." I have insurance. I'm thinking, "Talk to me—I'm the one who is sick." Maybe they decided I didn't need the cath. I hope that's what they decided. I don't know. I was too scared to ask.

In most such cases, the patient tended to place this course of events in a positive light. Another patient, asked how he felt about the absence of any further talk about cardiac catheterization, responded:

> I have to think they're doing what's right for me. There's nowhere else I can go. So, I've decided they're not talking about the cath, I don't need it. More important, I don't need the knife. They don't do surgery without the cath.

Although almost all patients from the public facility tended to express resignation regarding their choice of hospital and the care they received, there were a few exceptions. One patient, after cataloguing the problems with the physical plant at the hospital, expressed his anger and frustration with the inequities in the system:

> PT: I told you the problems—but I don't think too much better could be done here. It's not fair.

MY: Why is that?

PT: Someone should see to it that we have somewhere's else to go. The President—but he doesn't care about us.

MY: Who is us?

PT: Well, us that doesn't have choices.

Patients' Self-Reported Outcomes

Self-reported health status has been shown to be a better indicator of the need for further health care than a measure of the outcome of prior care (Blendon et al. 1986). Examining health status here is intended to provide a gauge of relative need for follow-up care among the two panels three months postdischarge, when 50 percent of public hospital patients had not had a complete medical work-up (compared with 5 percent of their private hospital counterparts). Table 4 suggests that the patients from the public hospital were not as healthy, three months postdischarge, as those from the voluntary institution. The functional status at baseline of patients from public and private hospitals did not differ significantly, although the functional status of both groups deteriorated over the postdischarge period. Notably, patients from the public hospital were functioning more poorly, and the difference was statistically significant ($p < .05$). Similarly, the self-reported health status of public

TABLE 4
Patients' Self-reported Health Status by Hospital[a]

Health status	Public (n = 32)	Voluntary (n = 37)
Average change in functional status[b]	Mean = −0.22	Mean = −0.10*
Perceived health status (%)		
Excellent	0	16**
Good	25	41**
Fair	59	41**
Poor	16	3**

[a] Three months postdischarge.
[b] Thirteen-item scale; −1 = much worse than prehospitalization, +1 = much better than prehospitalization.
*$p < .05$, two-tailed t-test; **$p < .05$, χ^2

hospital patients was significantly poorer than that of their voluntary hospital counterparts ($p < .05$), although lack of baseline data on this measure limits interpretation of this difference. Nevertheless, the findings on self-reported health status lend further credence to the documented differences in functional status between the two patient groups.

The differences by hospital for functional status remained statistically significant when the effects of age, cardiac condition, prior known coronary disease, and in-hospital complications were accounted for in an OLS regression model. In this model, use of the voluntary hospital and absence of an MI were independently, and positively, related to functional status, although hospital was the stronger predictor (beta coefficients were .263 and .241, respectively; $p < .05$). The inferior health and functional status of the public hospital patients are likely to be a consequence of more basic stresses associated with poverty (Syme and Berkman 1978) rather than the variations in health care documented here. In addition, presence of comorbid conditions, other than prior cardiac involvement, was not included in the model. Nevertheless, the findings constitute persuasive evidence of the need for more careful follow-up of public hospital patients.

Discussion

Focus on the experiences of a population of lower-income patients—all of whom had some form of insurance coverage—is critical to substantiating the magnitude of our deficiencies in assuring access to adequate health care and revealing the scope of reform necessary to ameliorate such problems. Within the boundaries of today's discussions of policy priorities, these are not the medically neediest; they are not among the ranks of the 37 million uninsured who, if they do get care, constitute a significant threat to the financial solvency of our hospitals, and if they do not, endure the misfortunes of going without needed services. Consequently, in comparing them with their more well-to-do counterparts at a voluntary hospital, what emerges is not a portrait of extremes, with its inherent drama, but rather a confluence of routines, banal in their familiarity but unhealthful in their consequences. In the allocation of health resources, such lower-income patients find that their social status often renders them unable to get the health care they need. As reflected in the findings reported above, they suffer the adverse consequences of rationing.

The findings from this research are consistent with those of other studies that have revealed inequities in rates of service use for treatment of heart disease (Ford et al. 1989; Wenneker and Epstein 1989; Wenneker, Weissman, and Epstein 1990; Hannan et al. 1991). Because they tended to rely on existing administrative data sets, these prior studies have lacked the depth of knowledge about individual patients necessary for examining the mechanisms that underlie observed differences in utilization. The distinctive contribution of the current study, in addition to its focus on source of care, is its emphasis on understanding the reasons for such differences through analyses of comprehensive data from multiple sources on each individual in the sample. Based on mixed methods, qualitative analyses were utilized to examine the dynamics underlying the patterns revealed through statistical analysis; similarly, responses to structured interview items provided indications of the prevalence of themes emerging from the qualitative data.

Strengths and limitations of the research design have been reported previously (Yedidia 1992). Four elements deserve restatement here because they relate to the validity and generalizability of the findings. First, although the size of the patient panels facilitated one of the study's strengths, the richness of the data, it also constituted a limitation: further study, with larger sample sizes, would be desirable to distinguish more precisely between the effects of hospital and patient characteristics. A second, and related, element is that although the research sites were selected to reflect several characteristics known to distinguish public from voluntary hospitals, multisite studies would be useful in order to document the relevance of these factors in other settings. Third, the cardiology fellow who conducted the chart review was not blinded to the identity of the institution in which each patient was hospitalized, raising the possibility that the audit may have been biased. However, observations of teaching rounds verified that the criteria applied in the chart review conformed to those prescribed by the training program; the indications cited by the fellow in making his judgments were the same as those discussed by the house staff and attending physicians at both institutions (Yedidia 1992). Further evidence of the concurrence in professional judgment between the auditor and the staff at both institutions was the fact that in all cases in which the auditor designated cardiac catheterization as being appropriate—including those instances in which the procedure was not carried out—cardiac catheterization had been discussed as a likely possibility with the patient. Fourth, baseline assessments of self-reported functional status were elicited through patient recall because, at the time of enrollment in the study, subjects had already suffered an ischemic event. In comparing change in status between the two panels, however, it is unlikely that a systematic bias in recall could explain the observed differences between public and voluntary hospital patients.

The study findings suggest that factors constraining choice of health care providers among patients from the public hospital coalesce around deficiencies in their levels of insurance coverage. Although all of the patients studied had insurance for hospital care, lack of first-dollar coverage and high copayments served as barriers for many patients to securing the services of a private physician. Without a private physician, several were deterred from using a voluntary hospital. Once under care at a public institution, differential access to procedures was fostered by inaccurate knowledge of the insurance status of the patients, real and perceived difficulties in arranging for transfer to another institution for tertiary care, and, related to this, the abundance of clinical and nonclinical work shouldered by the house staff, which apparently limited their ability to follow through in implementing phases of the treatment plan. Once discharged, their follow-up care was compromised by obstacles to integrating inpatient and ambulatory care among multiple providers and by patient-related constraints on access to outpatient care.

Examining this array of contributors to disparities in care, it appears that a preeminent factor is the lack of a primary care physician to serve as the patient's advocate, coordinating hospital and ambulatory care and assuring that the essential elements of the medical work-up are carried out. It is in large part the void created by the absence of such a force that leaves public hospital patients vulnerable to the negative impact of the factors documented here.

Depending upon the availability of finances, the public hospital could take steps to enhance technology and human resources. Such improvements could lead to better episodic care for the population it serves, but would not provide the major prerequisite for sustained access to health care: a personal physician who oversees the overall implementation of the treatment plan and serves as a persistent force for continuity of care. If reform of our health insurance system is to improve access to care, the benefits must include affordable, basic-level primary care. Such benefits must be made available not only to those who are currently uninsured, but to the underinsured as well. Failure to provide such coverage would perpetuate the problems documented in this study. Catastrophic insurance, for example, would accomplish little for the low-income patients described in this study. Catastrophic insurance would merely add to the coverage that these people already have but are unable to take effective advantage of, as evidenced in this study, and certainly would not provide access to a personal physician, either in the private sector or in the public hospital.

The inferior health status observed among public hospital patients three months postdischarge serves as a warning that we cannot afford to ignore the inequities in care for this population. They were not suffering from self-limiting conditions, which, if left untreated, would improve by themselves. The data indicate that several of them were at risk for further cardiac events, yet had not undergone a complete medical investigation of their disease, much less definitive treatment.

Finally, although public hospital patients voiced considerable displeasure with aspects of the hospital's physical plant, they were reluctant to criticize the quality of care. Most of them were reconciled to the fact that they did not have any alternatives when seeking services. They were resigned to accept the ration that was given to them; they could not afford, emotionally or materially, to question its quality. This pattern belies the argument advanced by Aaron and Schwartz, in their often-cited book (1984) about health care rationing, that Americans would not tolerate the criteria for resource allocation prevalent in England. The targets of rationing in the United States tend to be those patients who have the least choices—and without choices, they are not in a position to counterbalance the pressures culminating in differential allocation of medical procedures. Short of a social commitment to devoting resources to provision of accessible, comprehensive primary care to this population without prohibitive financial barriers, their medical needs will not be adequately met and inequities will persist.

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Acknowledgments: This study was supported in part by grants from the United Hospital Fund, New York, NY, and the Research Challenge Fund and Urban Research Center at New York University. The author thanks Nathaniel B. Epstein, MD, for medical input, Michael Hubbard, PhD, for statistical consultation, and David Richmond, MPA, for interviewing assistance. Victor Rodwin, PhD, Oliver Fein, MD, and Jan Blustein, MD, provided insightful comments on drafts of the paper.

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