Quality of Follow-Up After Hospitalization for Mental Illness Among Patients From Racial-Ethnic Minority Groups

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Abstract

Objective—Outpatient follow-up after hospitalization for mental health reasons is an important indicator of quality of health systems. Differences among racial-ethnic minority groups in the quality of service use during this period are understudied. This study assessed the quality of outpatient treatment episodes following inpatient psychiatric treatment among blacks, whites, and Latinos in the United States.

Methods—The Medical Expenditure Panel Survey (2004–2010) was used to identify adults with any inpatient psychiatric treatment (N=339). Logistic regression models were used to estimate predictors of any outpatient follow-up or the beginning of adequate outpatient follow-up within seven or 30 days following discharge. Predicted disparities were calculated after adjustment for clinical need variables but not for socioeconomic characteristics, consistent with the Institute of Medicine definition of health care disparities as differences that are unrelated to clinical appropriateness, need, or patient preference.

Results—Rates of follow-up were generally low, particularly rates of adequate treatment (<26%). Outpatient treatment prior to inpatient care was a strong predictor of all measures of follow-up. After adjustment for need and socioeconomic status, the analyses showed that blacks were less likely than whites to receive any treatment or begin adequate follow-up within 30 days of discharge.

Conclusions—Poor integration of follow-up treatment in the continuum of psychiatric care leaves many individuals, particularly blacks, with poor-quality treatment. Culturally appropriate interventions that link individuals in inpatient settings to outpatient follow-up are needed to reduce racial-ethnic disparities in outpatient mental health treatment following acute treatment.

Hospitalization serves a crucial function in mental health systems by providing treatment for individuals with acute psychiatric needs. Timely follow-up after hospitalization can reduce the duration of disability and, for certain conditions, the likelihood of rehospitalization (1–3). For these reasons, the time between inpatient discharge and outpatient follow-up is considered an important indicator of health system quality. For example, the National Committee for Quality Assurance (NCQA) reports follow-up within seven or 30 days after psychiatric hospitalization in the Healthcare Effectiveness Data and Information Set (HEDIS), and these indicators are used nationally to assess quality and continuity of mental health care (4). These service use data are reported by health organizations to the NCQA and represent how these organizations are improving on important health outcomes over time. In 2011, the rate of follow-up care within 30 days of inpatient discharge ranged from 56% among patients enrolled in Medicare to 77% among patients with commercial insurance plans (5).

In the United States, individuals from racial-ethnic minority groups frequently use inpatient psychiatric services (6,7). Such individuals, particularly black patients, are at risk of poor follow-up, although few studies of service use among racial-ethnic groups have described patterns of aftercare beyond the initial follow-up visit, and most have focused on regional Medicaid data or the elderly (8,9). Studying the quality of treatment episodes after psychiatric hospitalization is especially relevant for racial-ethnic minorities because people in these groups suffer greater persistence and severity of illness (10,11). For example, this approach revealed that black individuals were less likely than whites to receive adequate depression treatment during treatment episodes after a psychiatric hospitalization (12). Predictors of racial-ethnic disparities in follow-up after hospitalization include public insurance, co-occurring substance use and mental disorders, lack of follow-up care, and psychiatric treatment prior to hospitalization (9,13–16).

Health care disparities have been measured by comparing differences in unadjusted means (17), by interpretation of race coefficients determined by regression modeling (18–21), and by model-based estimations of disparities (22–26). The latter approach, which was the one used in this study, uses the Institute of Medicine (IOM) definition of disparities as any difference in health care that is unrelated to clinical appropriateness, need, or patient preferences (27). Treatment differences that are due to these three factors are justifiably excluded from the estimate of disparity (28), although information about preferences and clinical need is rarely available in national data sets.

The IOM definition suggests that normative differences in illness severity should not contribute to the disparity in care. In the context of follow-up care after hospitalization, differences in severity among racial-ethnic groups beyond those that led to inpatient admission should not contribute to the disparity. For example, if one group has a higher

burden of illness that reduces their ability to seek follow-up care, related treatment differences should not be considered part of the disparity.

In contrast, treatment differences that are due to the operation of health care systems or the legal or regulatory climate should be considered factors in the disparity, because they unfairly decrease access by racial-ethnic minorities. Differences that are due to discrimination are also considered part of the disparity, according to the IOM. In regression models of survey data, independent effects of race-ethnicity on service use can be considered a proxy for discrimination (29).

In this study, we implemented a conceptually based definition of health care disparities to assess differences in quality of follow-up after hospitalization among members of racial-ethnic groups. Quality of follow-up was measured by rates of any follow-up and of adequate treatment after discharge. On the basis of available literature, we hypothesized that black and Latino patients received less follow-up (both any and adequate) after inpatient discharge compared with non-Latino white patients.

Methods

Source of data

We analyzed data from adults age 18 and older in the Medical Expenditure Panel Survey (MEPS) (30), a nationally representative survey of health care utilization by the noninstitutionalized U.S. population. The survey features a panel design, in which respondents participate in several rounds of interviewing over the course of two full calendar years. We combined six two-year panels (2004–2010), in which respondents were interviewed in five rounds per panel about medication prescriptions, provider visits, and in-patient stays. Diagnoses for mental health care "events" were translated to *ICD-9* codes 291, 292, and 295–314. Events included office-based visits, for example, psychotherapy visits; partial hospitalizations; or prescription fills associated with mental health or substance use disorder diagnoses (31). Dates for inpatient, office-based, and outpatient visits and initial prescription fills were identifiable in the data. For subsequent prescription fills, the round of interviewing, not the exact date of the fill, was indicated. We imputed dates of prescription fills by using an established method (32). The study received approval from the institutional review board at the Cambridge Health Alliance.

Measures

Treatment episodes—Treatment episodes started with hospitalization and ended at the last outpatient visit before a gap of 12 weeks or more. The first two dependent variables were HEDIS measures (4): any follow-up within seven days and within 30 days of discharge. The second two were extensions of the HEDIS measures: minimally adequate care beginning within seven days and within 30 days of discharge. Adequate treatment was defined as a treatment episode consisting of at least eight visits to a mental health provider or at least four mental health care visits or events and at least one psychotropic medication fill (33–36). This definition is consistent with recommendations for treatment type and

duration by the American Psychiatric Association (37). For those with psychotic disorders, only the latter criterion was applied (34).

Race-ethnicity—Racial-ethnic categories were based on U.S. Census definitions and included non-Latino white, non-Latino black (includes those identifying as African American), and Latino (includes those identifying as Hispanic). Asian Americans and Native Americans were not included because of small samples.

Clinical need variables—Clinical need was measured by the Patient Health Questionnaire–2 (PHQ-2) depression checklist; the K6 measure of psychological distress; the mental and physical component summary scales of the 12-Item Short-Form Health Survey (SF-12), version 2; self-reported mental health; and number of psychiatric in-patient nights. The PHQ-2 is sensitive (93%) and specific (75%) for any depressive disorder (38), whereas the K6 is predictive of severe mental illness (39). Because comorbid general medical illness is predictive of mental illness severity (40–43), we also defined clinical need as any limitation due to general medical or mental health and self-reported "fair" or "poor" mental health. Sex, age, and marital status were considered proxies for clinical need, given the large differences in mental illness prevalence within these categories (44). Other indicators of need were number of hospitalizations during the study period and outpatient treatment prior to hospitalization.

"Non-need" variables—"Non-need" variables were income, education, health insurance, participation in a health maintenance organization (HMO), region, employment status, and metropolitan statistical area residence.

Statistical analysis

Racial-ethnic differences in clinical need and non-need variables were measured by using chi square tests for dichotomous variables, such as sex, and t tests for continuous variables, such as mental health measures. Correlates of follow-up were examined with multivariate logistic regression. Individuals with multiple hospitalizations during a MEPS panel could have multiple episodes of care. Therefore, the non-independence of individuals with multiple episodes of care was accounted for by using the balanced repeated replication (BRR) method of computing standard errors in disparity predictions. The panel number was entered into regression models to adjust for secular trends.

Implementation of the IOM definition of health care disparities (27) involved an adjustment for differences in service use due to clinical appropriateness, need, and patient preferences. Differences due to system-level factors, which are considered to be unjustifiable, were counted in the disparity estimation (24,28).

Implementing the IOM definition required a four-step process, beginning with the estimation of a logistic regression model of quality of care, conditional on both need and system-level covariates. Next, we used a rank-and-replace method to adjust only the distributions of clinical need variables in order to balance them across racial-ethnic groups (24,45). Predictions for quality of care among blacks, and then Latinos, were made by using the original coefficients from the model in step 1, the transformed clinical need

characteristics, and the original non-need characteristics. In step 4, predicted rates of quality of care among blacks and Latinos were compared with those of whites to compute disparities. Standard errors for disparity estimates were generated with BRR estimation (46) from BRR samples supplied by the Agency for Healthcare Research and Quality (47).

Whereas the logistic regression model in step 1 adjusted for clinical need and non-need variables, the analysis in step 4 adjusted only for clinical need variables. A comparison of the results of these models, therefore, provides information about the role of socioeconomic status in determining racial-ethnic disparities.

We estimated disparities both with and without adjustment for outpatient treatment in the three months preceding hospitalization. Not adjusting for prior treatment assumes that hospitalized individuals needed such treatment and that lack of access reflects a failure of the health system. Differences in this variable between racial-ethnic groups would, therefore, enter the disparity estimation. Conversely, adjusting for prior treatment assumes it is a justifiable indicator of need, with more severely ill individuals more likely to have had prior treatment.

Results

Our sample included 263 treatment episodes involving 206 white patients, 104 episodes involving 78 black patients, and 65 episodes involving 55 Latino patients, with a number of individuals from each racial-ethnic group having multiple treatment episodes during the two-year data collection period.

Table 1 reports the rates of follow-up, severity of illness, and sociodemographic information among white, black, and Latino patients. Across all patient groups, rates of follow-up ranged from 16% to 22% for any out-patient visit within seven days, 11% to 14% for adequate treatment beginning within seven days, 29% to 51% for any outpatient visit within 30 days, and 17% to 26% for adequate treatment beginning within 30 days. Differences in these variables by racial-ethnic group were not statistically significant.

Approximately one-third to one-half reported fair or poor mental health, and greater than half reported a limitation in work, housework, or school. Scores on the K6, PHQ-2, and SF-12 were suggestive of moderate psychological distress (38,48,49). Relative to whites, blacks were significantly more likely to receive a psychotic disorder diagnosis while hospitalized, to have low family income, and to have public insurance. Latinos were significantly more likely than whites to have lower income and to live in urban areas and significantly less likely to be high school graduates. No racial-ethnic differences in outpatient treatment preceding in-patient care or in percentage of multiple inpatient episodes were identified.

Compared with whites, blacks were half as likely to receive any follow-up within 30 days of inpatient discharge (odds ratio [OR]=.45), and were one-third as likely to receive adequate care beginning within 30 days of discharge (OR=.36) (Table 2). Several clinical need variables were also predictive of follow-up, according to the regression models. Having two or more comorbid general medical illnesses and being age 35–64 years old (as compared

with younger adults) were significantly positively predictive of some measures of follow-up care. For non-need variables, greater income, higher education, and employment were significant positive predictors of some measures of follow-up care. Outpatient mental health service use prior to inpatient treatment was a consistently strong and significant predictor of any and adequate treatment across both time periods, with ORs ranging from 4.29 to 8.45. Finally, a one-unit increase in MEPS panel enrollment was associated with decreased likelihood of receiving any treatment (OR=.79) or beginning adequate treatment (OR=.65) within seven days of discharge.

Table 3 presents results for disparities in predicted probability of treatment after the analyses were adjusted for clinical need. Rates of follow-up within seven days of discharge were low for all groups (21%, 11%, and 23% for any outpatient visits and 14%, 8%, and 13% for adequate treatment among whites, blacks, and Latinos, respectively). These differences, although large in magnitude, were not statistically significant. However, blacks were significantly less likely than whites to receive a follow-up visit within 30 days of discharge (23% versus 40%, p=.02). This disparity persisted after the analysis was adjusted for prior outpatient treatment (p=.03). Whites were more likely than blacks to receive adequate care beginning within 30 days of discharge, but the difference was only marginally significant (26% versus 14%, p=.10). Latinos and whites received follow-up care at similar rates, and there were no significant differences between the groups.

Discussion

This study found low rates of follow-up, and even lower rates of adequate treatment, following discharge, across all racial-ethnic groups. Ensuring continuity of care from acute to outpatient mental health settings remains a difficult challenge. Using the IOM definition of disparities, we found that blacks were significantly less likely than whites to receive any follow-up within 30 days of discharge. They were also less likely to receive adequate care beginning within 30 days of discharge, but this finding was only marginally significant. Even when the analyses controlled for prior outpatient treatment, a potent predictor of outpatient follow-up (50), these disparities persisted.

The sample had a high burden of both mental and general medical problems, in contrast to the overall MEPS sample, which had low rates of such problems (22). However, the rates of adequate care for the sample were low, suggesting that overall illness severity in itself does not ensure follow-up. In fact, comorbid general medical illnesses were a strong predictor of follow-up, suggesting that coordination of mental and general medical services is important to ensure continuity of mental health treatment (51).

The low rates of follow-up among black patients suggest that the high burden of illness for this group is being managed, in most cases, by just a small number of outpatient visits, if any. There are several findings in the literature relevant to improving disparities in follow-up. Among black inpatients, the intent to follow up after inpatient treatment is influenced by the level of empathic understanding they receive from mental health providers during the hospitalization (52). When patients from racial-ethnic minority groups perceive provider discrimination or bias during inpatient treatment, the negative impacts on mental health and

follow-up can be profound and potentially debilitating (53). Culturally competent in-patient care of black patients might include efforts by inpatient staff to use brief psychotherapeutic approaches to convey empathy and act as ambassadors for outpatient colleagues. Collaborative-care approaches—in primary care or by telephone—also are associated with strong evidence for engaging individuals from racial-ethnic minority groups in outpatient mental health treatment (54).

As time passes after discharge, hospitals have decreasing control over a patient's disposition, and the influence of low community resources and other social determinants grows (55). The emergence of significant disparities 30 days after discharge suggests that outpatient treatment among black patients is influenced by community factors, such as a lack of available treatment or stigma against pursuing further care. Because the odds of receiving follow-up decreased significantly during successive MEPS panels (Table 2), it also seems possible that the economic downturn may have had a negative impact on both hospital resources to ensure follow-up, such as social work and case management, and community availability of mental health treatment (56). African Americans were particularly affected by the recession, as indicated by more unemployment, lower rates of insurance, and decreases in health visits compared with whites (57). Future research should examine ways to modify community factors in order to improve follow-up. Such work would also be useful for understanding contributors to 30-day rehospitalization, another important health system quality indicator (58,59).

We chose to treat duration of in-patient treatment as a measure of clinical need, and, therefore, we adjusted for this variable. However, duration of inpatient stay may also represent availability of follow-up in the health system or the management of behavioral health care by payors. In post hoc sensitivity analyses, we treated this outcome as a non-need variable; when we compared the racial-ethnic groups on this variable, we found no differences of significance nor any changes in direction of our predicted outcomes. Further research using data sets that make it possible to describe management of care, variation in inpatient duration policies, and associations with disparities in follow-up is warranted.

Our results reassert the need for interventions to improve continuity of care for all acuity levels of mental health services, especially for black patients. Strategies supported by evidence include conducting discharge planning with outpatient providers, initiating outpatient programs before discharge, and engaging family during inpatient treatment (60). Use of care coordinators is supported by good evidence (61–63), although research on their use with racial-ethnic minorities is needed. In the United States, black patients are served by a concentrated number of health systems (64), and these systems merit increased support to improve treatment both before and after psychiatric hospitalization.

Our findings should be assessed in the context of several limitations. Because of the limited sample size, statistically insignificant results for certain comparisons may be attributable to low statistical power, as opposed to a true absence of effects. For example, the disparity between blacks and whites in rates of starting adequate treatment within 30 days was clinically significant but not statistically significant. For the comparison to achieve 80% power, an odds ratio of .38 would have been required, which is likely too small to have been

reasonably observed in practice. A second limitation was that the MEPS excludes individuals who are institutionalized, live in congregate housing, or are homeless and, therefore, is not representative of the national population of persons with severe psychiatric disorder. In defining minimally adequate treatment, we allowed for any psychotropic medication fill during an episode, regardless of indication or diagnosis. This approach allowed broad comparisons of adequate care across psychiatric diagnoses but could not determine adequate treatment for specific diagnoses. Nor was it possible to assess the precise duration of medication use, given that dates of medication fills were imputed within MEPS rounds. As noted by other authors using similar methods (65), the MEPS cannot account for the local hospital conditions that might influence rates of follow-up mental health treatment, such as rates of referral to mental health care or availability of mental health professionals in the community (66).

Conclusions

This nationally representative analysis of follow-up after hospitalization showed low rates of adequate care and disparities between whites and blacks in rates of starting adequate follow-up within 30 days of discharge. Further investigation is needed to explore the impact of adequate care after discharge from an inpatient unit on clinical outcomes and other indicators of treatment quality, such as rehospitalization within 30 days.

Acknowledgments

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Table 1

Characteristics of white, black, and Latino patients with an inpatient admission for psychiatric treatment, in weighted, unadjusted percentages

Variable	White (N=206) %	Black (N=78) %	Black p^a	Latino (N=55) %	Latino p^a
Dependent					
Follow-up treatment within 7 days of inpatient discharge					
Outpatient visit	21.3	15.8	.48	22.2	.92
Adequate treatment begun	14.2	11.7	.73	11.2	.62
Follow-up treatment within 30 days of inpatient discharge					
Outpatient visit	39.7	28.9	.19	51.0	.19
Adequate treatment begun	25.6	16.7	.31	25.5	.99
Need related					
Mental health					
K6 score (M±SD)^b	9.2±.5	9.2±.9	.96	9.8±1.1	.61
PHQ-2 score (M±SD)^c	2.4±.2	2.1±.2	.25	2.6±.3	.58
SF-12 mental component summary scale score (M±SD)^d	38.0±1.2	38.1±2.2	.95	41.0±1.9	.19
Fair or poor mental health (self-rated)	46.7	46.7	1.00	34.4	.17
Psychotic disorder diagnosis during inpatient admission	6.7	24.8	.003	4.0	.52
Physical health					
2 comorbid general medical illnesses	43.5	44.5	.89	42.7	.93
SF-12 physical component summary scale score (M±SD)^d	44.7±1.0	42.8±2.0	.38	43.3±2.0	.49
Any limitation in work, housework, or school	58.5	63.6	.51	52.5	.53
Other					
Inpatient nights (M±SD)	7.3±.7	8.1±1.3	.61	6.8±1.3	.73
Female	54.7	58.9	.61	49.1	.57
Age					
18–34	22.9	24.5	.84	33.0	.26
35–64	59.2	66.6	.36	56.7	.81
65	17.9	9.0	.05	10.3	.25
Married	39.4	17.2	.002	43.6	.65
Office-based visit for mental health care before hospitalization	27.0	27.2	.98	29.3	.79

Variable	White (N=206) %	Black (N=78)		Latino (N=55)	
		%	p[a]	%	p[a]
2 inpatient episodes during the study period	20.5	22.0	.82	10.3	.14
Non-need related					
Socioeconomic status					
Income 200% of the federal poverty level	52.3	30.4	.01	30.8	.03
Education less than high school graduate	20.3	21.9	.80	46.7	.002
Other					
Health insurance					
Private	45.6	29.4	.05	25.7	.05
Uninsured	16.6	14.9	.76	20.3	.61
Any public	37.8	55.8	.03	54.0	.09
HMO	25.7	32.3	.35	39.5	.11
Employed	38.7	37.4	.87	31.8	.47
Resides in Northeast	16.9	17.5	.92	29.9	.10
Urbanicity	74.5	86.6	.11	95.7	<.001

[a] For comparisons with white patients

[b] Possible scores range from 0 to 24, with higher scores indicating greater psychological distress.

[c] Possible scores on the Patient Health Questionnaire–2 range from 0 to 6, with a score above 3 indicating probable depressive disorder.

[d] From the 12-Item Short Form of the Medical Outcomes Study. Possible scores range from 0 to 100, with higher scores indicating higher levels of mental health or physical health relative to individuals of similar age.

Table 2

Predictors of follow-up within seven and 30 days after discharge from hospitalization for mental illness

Variable	Within 7 days of discharge						Within 30 days of discharge					
	Any follow-up[a]			Adequate treatment begun[b]			Any follow-up[a]			Adequate treatment begun[b]		
	OR	CI	p	OR	CI	p	OR	CI	p	OR	CI	p
Race-ethnicity (reference: white)												
Black	.46	.17–1.23	.12	.49	.14–1.71	.26	.45	.22–.91	.03	.36	.13–.97	.04
Latino	1.06	.26–4.41	.93	.63	.13–3.20	.58	1.75	.66–4.67	.26	.90	.27–2.98	.86
Need related												
Mental health												
Severe psychological distress (reference: no distress)	1.07	.96–1.19	.23	1.06	.93–1.21	.38	1.02	.94–1.11	.64	1.03	.93–1.14	.52
Probable depressive disorder (reference: no disorder)	.76	.56–1.04	.09	.81	.53–1.25	.34	.99	.76–1.29	.96	1.02	.74–1.41	.89
SF-12 mental component summary scale score	.98	.94–1.03	.37	.97	.92–1.03	.30	.98	.94–1.02	.25	.97	.92–1.02	.30
Fair or poor mental health (self-rated) (reference: good, very good, or excellent)	.86	.35–2.06	.73	1.03	.39–2.74	.95	.77	.40–1.48	.43	.71	.31–1.66	.42
Psychotic disorder diagnosis during inpatient admission (reference: no psychotic disorder)	.45	.12–1.73	.24	.53	.13–2.21	.38	1.10	.48–2.53	.82	1.11	.40–3.06	.84
Physical health												
2 comorbid medical illnesses (reference: <2)	2.96	1.31–6.69	.01	3.19	1.20–8.49	.02	1.90	1.02–3.53	.04	1.45	.74–2.87	.28
SF-12 physical component summary scale score	.98	.95–1.01	.14	1.00	.96–1.04	.92	1.01	.98–1.03	.68	1.01	.98–1.05	.54
Any limitation in work, housework, or school (reference: none)	.68	.28–1.60	.37	1.02	.35–3.00	.97	1.19	.62–2.30	.59	2.25	1.01–5.04	.048
Other												
Number of inpatient nights	.97	.93–1.01	.11	.97	.92–1.02	.27	.98	.95–1.01	.13	.98	.95–1.02	.36
2 inpatient episodes (reference: <2)	1.50	.74–3.03	.26	1.16	.43–3.17	.76	.83	.47–1.46	.51	.60	.29–1.24	.16
Office-based visit for mental health care before hospitalization (reference: none)	6.18	3.18–12.02	<.001	8.45	3.87–18.44	<.001	4.29	2.26–8.13	<.001	6.27	2.93–13.42	<.001
Female (reference: male)	1.63	.72–3.69	.24	1.40	.50–3.96	.52	1.51	.87–2.63	.14	1.54	.78–3.04	.20
Age (reference: 18–34)												
35–64	1.09	.41–2.94	.86	3.38	1.10–10.35	.03	1.31	.68–2.52	.41	2.20	1.02–4.75	.05
65	.28	.05–1.52	.14	.35	.02–5.23	.44	.65	.22–1.88	.42	.43	.05–3.73	.43
Married (reference: not married)	.68	.30–1.53	.35	.92	.33–2.52	.86	.51	.28–.93	.03	1.05	.51–2.15	.90
Survey panel	.79	.63–.99	.04	.65	.47–.89	.01	.86	.74–1.01	.07	.82	.67–1.00	.05

Variable	Within 7 days of discharge						Within 30 days of discharge					
	Any follow-up[a]			Adequate treatment begun[b]			Any follow-up[a]			Adequate treatment begun[b]		
	OR	CI	p	OR	CI	p	OR	CI	p	OR	CI	p
Non-need related												
Socioeconomic status												
Income 200% of the federal poverty level (reference: <200%)	1.97	.78–4.95	.15	2.92	.91–9.35	.07	2.72	1.33–5.59	.01	1.81	.78–4.19	.17
Less than high school graduate (reference: high school or college graduate)	.68	.28–1.64	.39	.21	.05–.82	.03	1.03	.53–2.03	.92	.24	.08–.67	.01
Other												
Health insurance (reference: private)												
Any uninsured	.40	.12–1.30	.13	.38	.10–1.41	.15	.70	.32–1.54	.37	.86	.33–2.29	.76
Any public, never uninsured	1.56	.54–4.45	.41	2.74	.62–12.18	.18	1.56	.75–3.25	.23	2.04	.82–5.11	.12
HMO	.52	.21–1.28	.15	.42	.13–1.37	.15	.85	.48–1.53	.59	1.05	.52–2.10	.90
Employed (reference: unemployed)	2.05	.89–4.72	.09	3.93	1.21–12.78	.02	1.06	.51–2.18	.88	1.30	.49–3.48	.59
Resides in Northeast (reference: residence elsewhere)	1.42	.62–3.26	.40	1.81	.68–4.78	.23	1.10	.58–2.06	.77	1.46	.65–3.25	.35
Urbanicity (reference: rural)	1.50	.55–4.10	.43	2.63	.68–10.13	.16	1.93	.88–4.26	.10	2.45	1.01–5.99	.049
Constant	5.16	.06–419.44	.46	1.08	.01–196.98	.98	.96	.04–24.92	.98	.22	.00–15.97	.49

[a] Any outpatient visit

[b] Adequate treatment was defined as a treatment episode consisting of at least eight visits to a mental health provider or at least four mental health care visits or events and at least one psychotropic medication fill.

Table 3

Predicted probabilities of follow-up after discharge from hospitalization for mental illness before and after adjustment for prior office-based mental health treatment, by racial-ethnic group[a]

Follow-up measure	Before adjustment					After adjustment				
	White (N=206)	Black (N=78)	p	Latino (N=55)	p	White (N=206)	Black (N=78)	p	Latino (N=55)	p
Within 7 days										
Outpatient visit	21.3	11.4	.12	22.6	.88	21.3	11.9	.11	21.8	.96
Adequate treatment begun[b]	14.2	8.0	.34	12.5	.82	14.2	8.3	.34	10.9	.65
Within 30 days										
Outpatient visit	39.7	23.1	.02	53.1	.12	39.7	24.1	.03	53.0	.16
Adequate treatment begun[b]	25.6	13.9	.10	26.3	.93	25.6	14.1	.10	25.0	.94

[a] Both analyses adjusted for clinical need variables.

[b] Adequate treatment was defined as a treatment episode consisting of at least eight visits to a mental health provider or at least four mental health care visits or events and at least one psychotropic medication fill.