

Depression Care Following Psychiatric Hospitalization in the Veterans Health Administration

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Objectives: To assess quality of depression care during the high-risk period following a psychiatric hospitalization.

Study Design: Retrospective administrative data analysis.

Methods: Using Veterans Health Administration (VHA) administrative data, we assessed mental health follow-up within 7 and 30 days of psychiatric hospitalizations for major depression from 2004 to 2008. Adequate antidepressant medication coverage and number of psychotherapy visits were assessed within 90 days of discharge. Multivariable logistic regression was used to identify patient demographic and clinical characteristics associated with each quality indicator.

Results: Of the 45,587 patients discharged from a psychiatric inpatient stay with a diagnosis of major depressive disorder, 39.4% and 75.8% received an outpatient visit within 7 and 30 days of discharge, respectively; 58.7% of patients received adequate antidepressant coverage (72 of 90 days) and 12.9% received adequate psychotherapy encounters (8 visits). Receipt of outpatient mental health visits and of adequate psychotherapy were less likely among patients who were male, aged <35 or >65 years, had ≥3 major general medical comorbidities, lived ≥30 miles from a VHA clinic, or whose hospital length of stay was <7 days. Patients with comorbid substance use disorders were less likely to receive adequate antidepressant treatment.

Conclusions: To optimize evidence-based depression care after a psychiatric hospitalization, health systems might increase receipt of psychotherapy by considering potential barriers related to age, medical condition, and distance. Patients with comorbid substance use disorders or their providers may need additional services to support antidepressant treatment.

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Immediately following discharge from a psychiatric hospitalization, patients are at high risk for functional impairment, rehospitalization, and suicide.¹⁻³ Suicide risk is high among depressed patients, and it is nearly 5 times higher during the 12 weeks after a psychiatric hospitalization compared with other time periods.^{4,5} To reduce risks of adverse outcomes, it is important for health systems to optimize the quality of depression care immediately following psychiatric hospitalization.

Quality of post-discharge depression care encompasses several domains, including timeliness of follow-up with outpatient mental health providers and the delivery of an adequate course of antidepressant treatment or psychotherapy. To date, research studies of factors associated with post-discharge follow-up have not focused on care for patients with depression. Among general populations of psychiatric inpatients, nearly half of patients that schedule a post-hospitalization follow-up appointment do not show up for the first appointment, and slightly less than half have no follow-up within 30 days of discharge.^{6,7} Prior studies of depression-treatment indicators have focused on new and recurrent episodes of depression in predominantly outpatient settings, rather than during the high-risk, post-hospital period.^{8,9} One study of patients diagnosed with depression measured adherence to antidepressant medication regimens following a psychiatric hospitalization and found nearly half had inadequate adherence; however, the study excluded patients with no follow-up appointments and did not examine antidepressant treatment in the context of other quality indicators.¹⁰

In this study, we examined administrative data from the Veterans Health Administration (VHA) to determine the patient characteristics associated with the quality of post-hospital depression care across various quality indicators. The VHA provides comprehensive inpatient and outpatient specialty mental health care to eligible veterans and has an electronic medical record system to support communication between inpatient and outpatient services and across facilities. By describing factors affecting post-hospital care in a large integrated health system, study findings may inform both VHA and non-VHA efforts to improve post-hospital transition care.

METHODS

Data Source and Study Population

Patient data were obtained from the VHA's National Registry

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for Depression, which includes comprehensive inpatient and outpatient records, including diagnoses, pharmacy records, and demographic information on all patients receiving treatment for depression within the VHA.¹¹ Patients were included if they received a diagnosis of major depressive disorder (MDD; *International Classification of Diseases, 9th Edition, Clinical Modification* [ICD-9-CM] codes 296.3 or 296.2) during an inpatient psychiatric hospitalization between fiscal years 2004 and 2008. We excluded patients who had diagnoses of bipolar disorder, schizoaffective disorder, or schizophrenia, because these patients may require substantially different post-discharge care. The study was conducted following an institutional review board approval of database analyses through the Veterans Affairs Ann Arbor Healthcare System.

Quality Indicators

For each patient, we identified the first inpatient psychiatric stay that included a diagnosis of MDD during the study period and used the discharge date from that hospitalization as the index discharge date. Adequacy of outpatient follow-up was determined using 2 indicators: whether patients received an outpatient visit with a mental health provider within 7 days and within 30 days of the index discharge date. These have been included as measures in the National Committee for Quality Assurance's *Healthcare Effectiveness Data and Information Set* (HEDIS), which tracks performance on health-related quality measures among commercial, Medicare, and Medicaid health plans within the United States.¹² Analysis of these measures was limited to patients who did not have another inpatient admission within 7 or 30 days, respectively.

Adequacy of antidepressant treatment was determined by whether patients received at least a 72-day supply of an antidepressant during the initial 90 days following the index discharge date and refilled their medication at least once after their initial discharge prescription. A similar measure was shown to predict decreased odds of psychiatric hospitalization among VHA outpatients initiating treatment for depression.² Coverage for 72 out of 90 days corresponds to a medication possession ratio of 0.80 (80%), a commonly used cut off for adequacy of medication receipt.¹³ The requirement of at least 1 refill was chosen so that a large initial prescription would not automatically satisfy the measure. Adequate psychotherapy was defined as the receipt of 8 individual or group psychotherapy visits (Current Procedural Technology [CPT] codes: 90804-90815, 90845, 90847, 90849, 90853, 90857) during the 90-day period following the index discharge date. These CPT codes include insight-oriented, behavior-modifying, supportive, family, and multi-family psy-

Take-Away Points

To enhance treatment of depression during the high-risk period following a psychiatric hospitalization, health systems should:

- Ensure timely access to outpatient mental health care and consider additional transition support, particularly for patients without mental health encounters prior to their psychiatric admission.
- Increase receipt of an adequate course of psychotherapy. Patients aged either <35 or >65 years, those with ≥ 3 serious medical comorbidities, and those residing ≥ 30 miles from a clinic were particularly less likely to receive psychotherapy.
- Increase antidepressant medication coverage for depressed patients with comorbid substance use disorders.

chotherapy and psychoanalysis. A cut-off of 8 visits was used for adequate treatment based on manualized clinical trials of psychotherapy for depression and prior retrospective studies of psychotherapy adequacy.¹⁴ Analysis of receipt of adequate antidepressant treatment and adequate psychotherapy in the 90 days following psychiatric hospitalization was limited to patients who had <30 inpatient days during the follow-up period.

Covariates

Demographic characteristics included age (categorized as <35, 35-49, 50-64, 65-79, 80+ years), gender, race (white, black, other, unknown), Hispanic ethnicity, and marital status (married or unmarried). The distance patients lived from their nearest VHA facility was approximated using a straight-line distance from the population centroid of the patient's ZIP code of residence (categorized as <30 miles, 30 to 60 miles, or >60 miles).

Comorbid mental health conditions diagnosed during the index hospitalization were categorized as substance use disorder, post-traumatic stress disorder (PTSD), other anxiety disorders, or personality disorder. General medical comorbidity was measured using the Charlson Comorbidity Index¹⁵ and scores were categorized as 0 (least morbidity), 1-2, or ≥ 3 .

Length of stay during the index hospitalization was categorized as <7 days, 7 to 14 days, 15 to 30 days, or >30 days. We also created indicators of whether patients had mental health visits, received antidepressant treatment, or received psychotherapy in the 90 days before the index hospitalization.

Continuous variables (eg, age, distance, inpatient length of stay) were categorized to facilitate interpretation of resulting odds ratios (ORs) and because prior studies have demonstrated non-linear relationships between patient characteristics, such as age and depression care.¹⁶

Analyses

We calculated the frequencies of each quality indicator by each of the covariates. In bivariate analyses for each covariate, we used χ^2 tests to determine whether there were significant differences in receipt of the quality indicators.

Table 1. Demographic and Clinical Characteristics of Patients With a Psychiatric Hospitalization for Major Depressive Disorder (N = 45,587)

Variable	N	%
Age group		
<35	4774	10.5
35-49	13,121	28.8
50-64	22,651	49.7
65-79	3749	8.2
80+	1291	2.8
Male	40,679	89.2
Race		
White	33,095	72.6
Black	9652	21.2
Other	1227	2.7
Unknown	1613	3.5
Hispanic ethnicity	2506	5.5
Married	16,463	36.4
Distance to nearest VHA clinic		
<30 miles	40,927	89.8
30-60 miles	4209	9.2
>60 miles	432	1.0
Comorbid mental health conditions		
Substance use disorder	21,183	46.5
Post-traumatic stress disorder	15,382	33.7
Other anxiety disorder	5353	11.7
Personality disorder	5272	11.6
Charlson comorbidities		
None	29,123	63.9
1-2	14,266	31.3
≥3	2198	4.8
Length of hospital stay		
<7 days	17,119	37.6
7-14 days	17,661	38.7
15-30 days	6480	14.2
>30 days	4327	9.5
Mental health visit prior to hospitalization	27,256	59.8
Antidepressant treatment prior to hospitalization	27,559	60.5
Psychotherapy prior to hospitalization	17,797	39.0

Multivariable logistic regressions were then used to predict receipt of each of the quality indicators adjusting for all covariates simultaneously. We also calculated Spearman rank correlation coefficients to assess the relationship between all possible pairs of covariates. Alpha was set at 0.05 for all comparisons. All analyses were conducted in SAS version 9.2 (SAS Institute Inc, Cary, North Carolina).

95% confidence interval [CI] 0.70-0.85) for age 65-79 vs <35 years); male (OR 0.91, 95% CI 0.85-0.97); married (OR 0.93, 95% CI 0.89-0.97); residing ≥30 miles from a VHA clinic (OR 0.71, 95% CI 0.66-0.76 for 30-60 miles vs <30 miles); had ≥1 major medical comorbidities (OR 0.78, 95% CI 0.70-0.86 for Charlson 3 or more vs 0); or received antidepressant treatment prior to hospitalization (OR 0.94, 95% CI 0.89- 0.98; **Table 2**).

RESULTS

Patient Characteristics

The demographic and clinical characteristics of the 45,587 patients discharged from an inpatient psychiatry stay with a diagnosis of MDD between 2004 and 2008 are shown in **Table 1**. Patients had a mean age of 51.6 years; 89.2% were male; 72.6% were white, and 21.2% were black; and 5.5% were Hispanic. Comorbidity with other mental health conditions was common, with 46.5% having a comorbid substance use disorder, 33.7% having comorbid PTSD, and 11.7% having a comorbid anxiety disorder other than PTSD. Only 25.8% of patients had none of these other diagnoses during their hospital stay.

Quality Indicators

Among all patients sampled, 39.4% received a mental health follow-up visit within 7 days of hospital discharge and 75.8% received a mental health follow-up visit within 30 days. Adequate antidepressant coverage was provided to 58.7% of patients; 12.9% of patients received adequate psychotherapy in the 90 days post-discharge. χ^2 tests demonstrated a statistically significant relationship between each of the covariate measures and at least 1 of the outcomes. We retained all covariates for the multivariate models and subsequently report only those results.

7-Day Mental Health Follow-up.

In adjusted analyses, patients were less likely to receive a follow-up mental health appointment within 7 days if they were aged ≥65 years (OR 0.77,

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Table 2. Predictors of Quality of Care Indicators After Discharge From a Psychiatric Hospitalization With a Diagnosis of Major Depressive Disorder

Variable	AOR Mental Health Follow-up		AOR Adequate Antidepressant Rx (n = 42,780) ^c	AOR Adequate Psychotherapy (n = 42,780) ^c
	Within 7 days (n = 44,052) ^a	Within 30 days (n = 41,574) ^b		
Age group vs <35				
35-49	1.14 (1.06-1.22)	1.57 (1.45-1.71)	1.47 (1.36-1.58)	1.37 (1.23-1.53)
50-64	0.98 (0.91-1.05)	1.48 (1.37-1.60)	1.62 (1.50-1.74)	1.22 (1.10-1.36)
65-79	0.77 (0.70-0.85)	1.18 (1.06-1.32)	1.46 (1.32-1.61)	0.68 (0.57-0.80)
80+	0.58 (0.50-0.67)	0.81 (0.70-0.94)	1.12 (0.97-1.28)	0.38 (0.28-0.52)
Male	0.91 (0.85-0.97)	0.87 (0.80-0.94)	0.78 (0.73-0.84)	0.78 (0.71-0.85)
Race vs white				
Black	1.00 (0.95-1.05)	0.89 (0.84-0.94)	0.56 (0.53-0.59)	0.95 (0.88-1.02)
Other	0.97 (0.86-1.09)	0.81 (0.70-0.93)	0.76 (0.67-0.87)	1.13 (0.96-1.34)
Unknown	0.96 (0.86-1.07)	0.86 (0.76-0.96)	0.79 (0.71-0.89)	0.91 (0.77-1.08)
Hispanic	0.97 (0.89-1.05)	1.10 (0.99-1.22)	0.82 (0.75-0.90)	0.79 (0.69-0.90)
Married	0.93 (0.89-0.97)	1.19 (1.13-1.25)	1.33 (1.27-1.39)	0.94 (0.88-1.00)
Distance to nearest VHA clinic vs <30 miles				
30-60 miles	0.71 (0.66-0.76)	0.83 (0.77-0.90)	1.15 (1.07-1.23)	0.56 (0.50-0.64)
>60 miles	0.69 (0.56-0.85)	0.67 (0.54-0.83)	0.97 (0.78-1.20)	0.40 (0.27-0.60)
Comorbid mental health conditions				
Substance use disorder	1.39 (1.34-1.45)	0.95 (0.91-1.00)	0.66 (0.63-0.69)	1.47 (1.38-1.56)
Post-traumatic stress disorder	1.11 (1.06-1.16)	1.18 (1.12-1.24)	1.07 (1.02-1.12)	1.39 (1.31-1.48)
Other anxiety disorder	1.05 (0.98-1.11)	1.12 (1.04-1.21)	1.25 (1.17-1.34)	0.98 (0.89-1.07)
Personality disorder	1.04 (0.98-1.11)	0.94 (0.87-1.01)	0.86 (0.81-0.92)	1.01 (0.93-1.10)
Charlson comorbidities vs none				
1-2	0.94 (0.90-0.98)	0.90 (0.86-0.95)	1.00 (0.96-1.05)	0.94 (0.88-1.00)
≥3	0.78 (0.70-0.86)	0.64 (0.58-0.71)	0.85 (0.77-0.93)	0.62 (0.53-0.74)
Length of stay vs <7 days				
7-14 days	1.15 (1.10-1.20)	1.33 (1.26-1.40)	1.34 (1.28-1.41)	1.34 (1.25-1.43)
15-30 days	1.26 (1.18-1.34)	1.25 (1.16-1.34)	1.32 (1.23-1.41)	1.50 (1.37-1.64)
>30 days	1.66 (1.54-1.78)	1.28 (1.18-1.39)	1.08 (1.00-1.16)	1.47 (1.33-1.63)
Mental health visit prior to hospitalization	1.34 (1.27-1.42)	1.48 (1.39-1.57)	1.00 (0.94-1.06)	1.05 (0.96-1.16)
Antidepressant treatment prior to hospitalization	0.94 (0.89-0.98)	1.27 (1.20-1.34)	3.08 (2.93-3.23)	0.89 (0.83-0.95)
Psychotherapy prior to hospitalization	1.57 (1.49-1.66)	1.59 (1.49-1.69)	1.09 (1.03-1.15)	2.51 (2.31-2.73)

AOR indicates adjusted odds ratio resulting from multivariable logistic regression including all covariates; VHA, Veterans Health Administration.
^aPatients readmitted within 7 days excluded.
^bPatients readmitted within 30 days excluded.
^cPatients with >30 inpatient days in the 90 days post-discharge excluded.

Patients were more likely to follow up within 7 days if they were aged 35 to 49 years versus <35 (OR 1.14, 95% CI 1.06-1.22 for age 35-49 vs <35); had a comorbid substance use disorder (OR 1.39, 95% CI 1.34-1.45); had comorbid PTSD (1.11, 95% CI 1.06-1.16); had a hospital length of stay for ≥7 days (OR 1.26, 95% CI 1.18-1.34 for 15-30 days vs <7 days); had any outpatient mental health encounter before being hospitalized (OR 1.34, 95% CI 1.27-1.42); or had a psychotherapy encounter prior to being hospitalized (OR 1.57, 95% CI 1.49-1.66).

30-Day Mental Health Follow-up. Similar trends were seen for receiving a mental health follow-up within 30 days except that black, unknown, and other race were associated with decreased odds of follow-up (OR 0.89, 95% CI 0.84-0.94 for black vs white patients); patients who were aged 50 to 64 years (OR 1.48, 95% CI 1.37-1.60 vs age <35); married (OR 1.19, 95% CI 1.13-1.25); had a comorbid anxiety disorder other than PTSD; (OR 1.12, 95% CI 1.04-1.21) or had prior antidepressant use (OR 1.27, 95% CI 1.20-1.34) had

increased odds of follow-up. Having a comorbid substance use disorder was no longer associated with follow-up.

Adequate Antidepressant Treatment Duration. Receipt of adequate antidepressant use was more likely among patients who were aged >35 years (OR 1.47, 95% CI 1.36-1.58 for age 35-49 vs <35) but <80 years (OR 1.12, 95% CI 0.97-1.28 for age 80+ vs <35); were married (OR 1.33, 95% CI 1.27-1.39); had comorbid PTSD (OR 1.07, 95% CI 1.02-1.12) or other anxiety disorder (OR 1.25, 95% CI 1.17-1.34); lived 30 to 60 miles from a VHA clinic (OR 1.15, 95% CI 1.07-1.23 vs <30 miles); had a hospital length of stay >7 days (OR 1.34, 95% CI 1.28-1.41 for 7 to 14 days vs <7 days); or had antidepressant use (OR 3.08, 95% CI 2.93-3.23) or psychotherapy (OR 1.09, 95% CI 1.03-1.15) prior to hospitalization. Patients were less likely to receive adequate antidepressant treatment if they were male (OR 0.78, 95% CI 0.73-0.84), black (OR 0.56, 95% CI 0.53-0.59 vs white) or other or unknown race, Hispanic (OR 0.82, 95% CI 0.75-0.90); had a comorbid substance use disorder (OR 0.66, 95% CI 0.63-0.69) or personality disorder (OR 0.86, 95% CI 0.81-0.92); or had ≥ 3 Charlson comorbidities (OR 0.85, 95% CI 0.77-0.93 vs Charlson of 0).

Adequate Number of Psychotherapy Visits. Receipt of adequate psychotherapy was more likely among patients aged 35 to 64 years compared with younger or older patients (OR 1.37, 95% CI 1.23-1.53 for 35-49 vs <35). Blacks were not significantly different from whites in receipt of psychotherapy, and Hispanic patients were less likely to receive adequate psychotherapy (OR 0.79, 95% CI 0.69-0.90 vs non-Hispanic). Living ≥ 30 miles from a VHA clinic (OR 0.56, 95% CI 0.50-0.64 for 30-60 miles compared with <30 miles); having ≥ 3 Charlson comorbidities (OR 0.62, 95% CI 0.53-0.74 vs Charlson of 0); and having received an antidepressant prior to hospitalization (OR 0.89, 95% CI 0.83-0.95) were associated with decreased odds of receiving adequate psychotherapy. Having a comorbid substance use disorder (OR 1.47, 95% CI 1.38-1.56); PTSD (OR 1.39, 95% CI 1.31-1.48); length of hospital stay of ≥ 7 days (OR 1.34, 95% CI 1.25-1.43 for 7-14 days vs <7 days); or psychotherapy prior to the hospitalization (OR 2.51, 95% CI 2.31-2.73) were all associated with increased odds of adequate psychotherapy after discharge.

Correlation Among Covariates. The largest correlations among the covariates were between Charlson comorbidity index and age ($P = .31, P < .001$), male sex and age ($P = .21, P < .001$), and being married and having a substance use disorder ($P = -.20, P < .001$).

DISCUSSION

Effective transition from inpatient to outpatient care is intended to sustain the process of recovery and to prevent

relapse, readmission, or worse outcomes. The post-hospital transition may be particularly important for patients with MDD because it is the highest risk period for suicide. Per the HEDIS quality measure, we found that fewer than half of patients hospitalized for major depression had outpatient mental health follow-up within 7 days of discharge (39.4%), similar to the rate found in the general US population among Medicare (38.1%) and Medicaid (42.6%) beneficiaries in 2008.¹² Follow-up within 30 days of discharge was substantially more common (75.8%). Unfortunately, follow-up within these time frames has not yet been shown to improve the outcomes of depressed patients. Follow-up within 30 days of discharge was not associated with reduced risk of suicide among psychiatric inpatients in a prior VHA study, but 7-day follow-up or the effect on longer-term outcomes of follow-up among patients with depression was not included in this prior study and should be a focus for subsequent work.⁷

Many patients received adequate psychopharmacologic treatment following a hospitalization for depression (58.7%) while relatively few patients received adequate psychotherapy post-discharge (12.9%), despite the fact that post-hospital needs likely remain high. The rate of adequate psychotherapy post-discharge is higher than that observed among VHA patients, who are primarily outpatients, newly diagnosed with depression (<5%), but it is lower than that observed among US community residents with depression or anxiety disorders (16%-23%).¹⁷ Such differences in receipt of care may reflect a general treatment bias toward pharmacologic treatment among providers or patients within the VHA, and, potentially, additional biases favoring pharmacologic treatment for patients with severe versus milder forms of depression. However, because 39% of patients received at least 1 psychotherapy visit within 90 days prior to their hospitalization, patients may be referred for psychotherapy after a hospitalization yet may have difficulty adhering to an adequate course of treatment in the post-hospital period. Although little information is available regarding the role of psychotherapy for depression following a psychiatric hospitalization, combining psychotherapy with pharmacologic treatment of depression is cost-effective and is particularly more effective than either modality alone for patients with severe or chronic depression.¹⁸ Extensive training in evidence-based psychotherapies has been made available to VHA providers; whether this improves access to psychotherapy for recently hospitalized patients is yet to be determined.

Several specific patient characteristics emerged as important predictors of the level of post-inpatient treatment of depression. Medical comorbidity as measured by a Charlson score of ≥ 3 was associated with poorer quality of care for all 4 indicators. This is of concern because depression is commonly comorbid with chronic medical conditions, such as diabetes

and cardiovascular disease,^{19,20} and is associated with a nearly 2-fold increase in risk of all-cause mortality.²¹ Medically ill patients may be less likely to engage in follow-up psychiatric care if they receive their mental health care through their primary care provider or medical specialist or if they or their providers perceive their general medical care to take priority over specialty mental health treatment. The VHA has historically provided mental health treatment in specialty clinic settings to a greater degree than other health systems, and this could contribute to fragmenting of care for veterans with serious medical and psychiatric needs.²² In recent years, the VHA has made concerted efforts to enhance mental health services provided in primary care settings; such services may assist in improving treatment quality for psychiatric patients hospitalized for depression with multiple serious medical comorbidities.

Psychiatric comorbidity was high within this population, exceeding that seen in the overall population of patients treated for depression in VHA settings.⁵ Patients with a substance use disorder or PTSD were more likely to receive 7-day outpatient follow-up and psychotherapy; patients with substance use disorders were less likely to receive antidepressant treatment. The increased receipt of timely follow-up appointments and psychotherapy may be related to greater illness severity and perceived need for treatment. Alternatively, because the VHA offers subspecialty care for patients with PTSD and substance use disorders, these patients may have an additional avenue for services not available to patients with major depression as their sole diagnosis. The decreased receipt of antidepressant treatment among depressed patients with substance use disorders may reflect a bias toward psychological treatments for these patients; however, pharmacologic treatment of depression is effective in patients with alcohol dependence and other substance use disorders and therefore should not be a deterrent to recommending medication as a treatment option.^{23,24}

Increased distance to the nearest VHA clinic after discharge was also associated with decreased receipt of follow-up mental health visits and psychotherapy, consistent with prior studies of veterans with serious mental illness and depression,^{16,25} despite the VHA providing travel assistance to many of its patients. An increased use of tele-psychotherapy for patients who live >30 miles from a VHA clinic following a psychiatric hospitalization for depression should be considered²⁶ and has already been implemented in various facilities across the system.

Patients with hospital stays of >7 days had increased outpatient care participation compared with those with shorter stays. Shorter length of inpatient care has been associated with greater symptom improvement among depressed patients, and these patients or their providers may perceive less of a need for follow-up care.²⁷ Conversely, the trend for shorter lengths of stay has been associated with lower Global Assessment of

Functioning scores upon discharge, in which case patients discharged after brief stays may be less likely to follow up with outpatient care due to ongoing functional impairment.¹ Yet another possibility is that patients with work, childcare, or other responsibilities may feel pressured to limit their hospital stay, and these responsibilities may subsequently also interfere with follow-up care. Assessing patient functioning and barriers to follow-up care in the post-hospital period should provide clarity to the role of length of hospital stay.

Patients who were engaged in mental health care prior to their hospitalization (psychotherapy and antidepressant treatment) were much more likely to participate in these same care practices after discharge. This is consistent with prior work, which found returning to an established provider was a significant predictor of attending the first appointment after discharge.⁶ For patients who have not previously engaged in mental health care, it may be important to establish a relationship during their hospitalization with the provider with whom they will have their scheduled follow-up.

Patients who were in the youngest and oldest age groups and who were male or non-white were less likely to receive various components of quality post-inpatient mental health care. These findings are generally consistent with those of depressed VHA outpatients and, in part, likely reflect differences in depression care preferences with regard to modality (ie, psychotherapy vs antidepressant treatment) and setting (ie, primary care vs specialty care).^{16,28,29} Additional work is needed to ensure that a range of effective depression treatment options are available to match diverse patient preferences.

Several patient characteristics were correlated with each other, raising the possibility that the additive effects associated with these characteristics may be concentrated in certain subpopulations. Older patients were more likely to be male and to have more general medical comorbidities. Each of these characteristics is independently associated with poorer 7-day follow-up and receipt of adequate psychotherapy, and the combination of these factors may therefore identify a subgroup at even further risk of inadequate care. Patients with substance use disorders were more likely to be unmarried, and the combination of these 2 characteristics may be particularly associated with poorer antidepressant treatment.

This study is limited in that it was not possible to include several measures that may be important in determining post-hospital care, such as illness severity, functional impairment, psychosocial barriers to care, and additional health insurance coverage or use of services outside the VHA. We also note that our findings may have limited generalizability due to differences between VHA users and other depressed populations, and that the VHA health system may differ from other health systems with regard to access and use of specialty mental health services.

Nonetheless, the strength of our study was the ability to analyze a very large and diverse population of hospitalized depressed patients including comprehensive clinical diagnostic, service use, and pharmacy data.

In summary, we found complex relationships between patient characteristics and measures of post-hospital depression care. These suggest there is not likely a “one-size-fits-all” intervention to improve care. Rather, study findings indicate that health systems should consider: 1) increasing delivery of adequate psychological treatments, particularly to patients in the youngest and oldest age groups, those with multiple general medical comorbidities, those living >30 miles from the nearest clinic, and those unlikely to be treated in a subspecialty clinic; and 2) increasing delivery of adequate pharmacologic treatment to patients with comorbid substance use disorders, those in the youngest age groups, and non-whites.

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