Published in final edited form as:

Med Care. 2008 August ; 46(8): . doi:10.1097/MLR.0b013e318178eb08.

The Prevalence and Predictors of Mental Health Treatment Services in a National Sample of Depressed Veterans

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Abstract

Background—Few studies of acute depression care have examined the provision of psychotherapy or combined treatment in addition to medication management. This study examined acute phase depression treatment in the VA healthcare system, including measures of medication treatment (MT), psychotherapy (PT), and combined treatment (CT = MT plus PT). Both *low level* care (receipt of any MT, PT, or CT, but all below guideline levels) as well as *guideline concordant* care (*GC MT*, *PT*, and *CT*) were examined.

Methods—The sample included 41,412 patients with new depression diagnoses. Analyses examined the relationship between demographics and psychiatric comorbidities (eg, substance use disorders, post-traumatic stress disorder, depression with both substance use disorders and post-traumatic stress disorder) and receipt of each type of care (*low level* and *guideline concordant MT*, *PT*, and *CT*).

Results—The majority (75%) received at least some treatment, with 35% of the sample receiving *guideline concordant* care (particularly *GC MT*). Those with psychiatric comorbidities generally were more likely to receive *GC* care, older veterans were less likely to receive each type of care, and African Americans were less likely to receive *GC MT* but more likely to receive *GC PT* and *GC CT* than whites.

Conclusions—Although it is difficult to benchmark, the VA overall seems similar or better than the private sector in providing guideline concordant acute phase treatment for its depressed patients. The majority of veterans received some acute phase depression treatment, but only a minority seem to receive guideline concordant care (particularly *PT* and *CT*).

Keywords

depression; quality of care; treatment guidelines; psychotherapy; pharmacotherapy; combined treatment

Depression is associated with numerous individual and societal consequences from lower productivity to higher mortality.^{1–2} The effectiveness of interventions [pharmacotherapy, psychotherapy (PT), combined pharmacotherapy/PT] for depression has been repeatedly demonstrated,^{3–5} however, the treatment of depression is frequently suboptimal.^{6–8} For example, according to epidemiological data in the United States,⁹ less than 60% of those with depression reported any general medical or mental health service use (pharmacological treatments, counseling) for depression, fewer than 33% received any mental health specialty care, and of those treated under 38% received at least minimally adequate care.

To monitor and improve care for patients with depression, health care organizations have developed measures for depression treatment that is likely to be effective. One of the most widely-used measures of depression treatment quality is the Health Plan Employer Data and Information Set (HEDIS).¹⁰ The HEDIS measures of acute phase depression treatment focuses on whether patients with new episodes of depression who are started on antidepressants receive adequate medication coverage and follow-up appointments (defined as 3 or more appointments) in the first 84 days after the initial prescription fill. According to 2005 HEDIS data, less than 21% of those treated for depression had adequate provider follow-up in the acute phase of treatment, and rates of adequate medication coverage were 61% for commercially insured patients, 55% for Medicare patients, and 46% for Medicaid patients.¹⁰

However, the HEDIS measures are likely to provide imperfect estimates of depression care quality in large health-care systems for several reasons. First, the HEDIS measures only include patients with new episodes of depression started on antidepressant medications, excluding a substantial proportion who does not receive antidepressants (eg, due to patient/provider preferences, poor accessibility of care, etc). Also, the HEDIS measures do not address treatment with PT or combined therapy (CT), both of which have been shown to be effective depression treatments.^{3–5,11–18} Finally, existing guidelines (eg, American Psychiatric Association¹⁹; Agency for Health Care Policy and Research^{20,21}) recommend that high quality treatment for depression extend beyond the basic elements of medication management monitored by HEDIS. Relatively few studies^{8,22,23} have examined rates and quality of PT or CT. Thus, little is known about overall rates of medication treatment (MT), PT, and CT, or more comprehensive measures of “quality” depression care.

In addition to establishing rates of care, it is important to identify whether subsets of patients (demographic groups, those with co-occurring substance use disorders) are more or less likely to receive quality depression care (eg, guideline concordant medication coverage and/or number of PT sessions). Previous studies of depression care for veterans have suggested that the VA system seems to have higher rates of guideline concordant MT for depression than non-VA health-care systems (private sector, Medicare/Medicaid).²⁴ Further research is needed to establish whether patient demographic and psychiatric characteristics are associated with more comprehensive measures of the quality of depression care, including measures of guideline concordant PT and CT.

Based on guidelines for depression management and evidence demonstrating the benefits of MT, PT, and CT, we examined the extent to which veterans with new episodes of depression received guideline concordant (GC) MT, PT, or a combination of both (CT). We also examined whether receipt of these services was associated with demographics and psychiatric comorbidities [including substance abuse disorders (SUD), post-traumatic stress disorder (PTSD), and both SUDs and PTSD]. Finally, we examined predictors of receiving “low level” care (receipt of care across the MT, PT, and CT categories that did not meet guidelines), as well as predictors of receiving “*guideline concordant*” acute phase care based on depression care guidelines.^{10,19–21} Examination of multiple types of depression

care (MT, PT, CT), as well as both *low level* and *guideline concordant* acute phase care helps address a number of important gaps in the treatment literature on depression care quality in large healthcare systems. Such an approach is needed to provide important information regarding the quality of overall depression treatment.

METHODS

Data on patient diagnoses, demographics, the provision of antidepressant medications and inpatient and outpatient services were obtained from the VA National Registry for Depression, maintained by the Serious Mental Illness Treatment, Research, and Evaluation Center (SMITREC) in Ann Arbor, Michigan. The National Registry for Depression includes an array of VA data sources, and it provides a unique longitudinal data resource, with detailed services and pharmacy data for all VA patients diagnosed with depression from FY99 through FY06. The Veterans Affairs Ann Arbor Health System IRB approved the study, granting a waiver of informed consent for access to protected health information.

Study Population

A total of 41,412 VA patients diagnosed with depression during the first quarter of Fiscal Year 2003 (FY03) were included in the study cohort. To be consistent with HEDIS, we identified patients using the following International Classification of Diseases, Ninth Edition (ICD-9) codes: 296.2x, 296.3x, 298.0, 300.4, 309.1, and 311. Patients with at least 1 principal diagnosis of depression in any setting (inpatient or outpatient), or at least 2 secondary diagnoses of depression on different dates in any outpatient setting, or one or more secondary diagnoses of depression in an inpatient setting were identified (N = 170,913). Patients who died during the 84-day period after index diagnosis date (N = 1634) were excluded, as were patients with a depression diagnosis during the dormant period 120 days before the index diagnosis date were excluded (N = 94,716). Disqualifying diagnoses of depression included occurrence of 1 or more of the following ICD-9 codes in any setting: (311, 296.2, 296.3, 296.4, 296.5, 296.6, 296.7, 296.8, 296.9, 298.0, 300.4, 309.0, 309.1, 309.28). In addition, patients with any antidepressant fills during the dormant period 120 days before index diagnoses date were excluded (N = 33,151).

Measures

Patient Characteristics—Patients were categorized into 5 age groups based on their age at the beginning of FY03: (1) <35 years, (2) 35–49 years, (3) 50–64 years, (4) 65–79 years, or (5) 80 years of age. Each patient was classified into 1 of 4 racial categories (black, white, other or unknown race), and patients' ethnicity was defined as Hispanic or non-Hispanic. Patients were assigned to one of the following 4 mutually exclusive depression categories based on the presence of diagnosis codes for SUD and PTSD in any setting: (1) depression with no or minor comorbidities (see Table 1 for details), (2) depression with at least 1 diagnosis of PTSD and no diagnosis of SUD, (3) depression with at least 1 diagnosis of SUD and no diagnosis of PTSD, or (4) depression with 1 or more diagnosis of both PTSD and SUD. PTSD was defined as the presence of the ICD-9 code 309.81 in the primary or secondary position during the time period from 6 months before the index depression diagnosis through the end of the first quarter of FY03. SUD was defined by the presence of any of the following ICD-9 codes (303.0–305.0, 305.2–305.9, 291, 292) during this time period.

Type of Treatment—We examined whether patients received MT, PT, or CT. Both *low level* treatment (receipt of any MT, PT, or CT) as well as guideline concordant treatment (GC MT, PT, and CT) were examined. *Any* MT was defined as the receipt of at least 1 antidepressant prescription during the 114 day period after the index depression diagnosis.

Any PT was defined as receipt of one or more outpatient PT encounters during the 114-day retention period after the index depression diagnosis. *Any* CT was defined as receipt of *any* MT and *any* CT. The list of qualifying antidepressants and PT visit codes are displayed in Table 1.

Guideline concordant MT was defined as receipt of antidepressants for at least 84 of the 114 days after the index depression diagnosis. This measure allowed for a gap in coverage for up to 30 days, to allow for delays in filling prescriptions and for clinicians “washing out” 1 medication before starting another if needed. Overlapping medications were not counted twice. For example, if a prescription fill was for 30 days but the patient came in at 15 days and received a 15-day supply of a different medication, then the total count for the 2 medications was 30 days. *Guideline concordant PT* was defined as the receipt of 12 or more outpatient PT visits during the 114 days after the index depression diagnosis date. This intensity of PT sessions is similar to the number of PT (cognitive-behavioral therapy and interpersonal PT) sessions shown to be effective for depression in randomized controlled trials and is consistent with guidelines suggesting weekly therapy for 12–16 weeks.^{19–21} We note that the criteria for adequate PT is more stringent than some prior attempts to assess PT adequacy (eg, 8 therapy visits over a 12-month interval,⁸ 2 or more visits per month²²).

Using these parameters, patients were categorized into 5 mutually exclusive groups for our primary analyses: (1) no care (no MT, PT or CT), (2) *low-level* treatment (receipt of *any*, but not guideline concordant, MT, PT, or CT), (3) *GC MT* (patients receiving guideline concordant medication, but not guideline concordant PT), (4) *GC PT* (receipt of guideline concordant PT, but not guideline concordant MT), and (5) *GC CT* (receipt of guideline concordant PT and MT).

RESULTS

Descriptive Information

Table 2 provides descriptive information regarding the study sample and the relationship between predictor variables (demographics, comorbidity types) and the care type groups. The majority (91%) of patients in the sample were men, which reflects the high percentage of men in the VA population. Approximately 65% of patients were 50 years of age or older, and 43% were married. In terms of race, 65% were white, 17% black, and the remainder were of “other” or “unknown” race. Comorbid PTSD and SUD were common, with 20% of depressed patients having a SUD diagnosis, 12% having a PTSD diagnosis, and 8% with both PTSD and a SUD. Of note, Table 2 illustrates that those with comorbidities were more likely to receive care, particularly with regard to PT and CT.

Figure 1 provides details regarding the percentage of veterans in both the *low level* and *guideline concordant* care type groups. Overall, about 75% of depressed veterans received some treatment (at least 1 prescription for an antidepressant or at least 1 PT visit), with about 40% receiving *low level* care and 35% receiving *guideline concordant* depression care. Approximately 30% of patients received *GC MT*, 3% received *GC PT*, and 1.7% received *GC CT*. Figure 1 also illustrates that among the *guideline concordant* groups, there were relatively low rates of PT and CT due to relatively few veterans receiving approximately weekly PT visits. However, the figure also illustrates that 49.6% of the *GC MT* group had some PT visits that were below guidelines (for those with visits, mean = 2.73, SD = 2.22), and 28.4% of the *PT* group had below guidelines MT (1 prescription, although insufficient medication coverage).

Logistic Regression Analyses Examining Predictors of Type of Care

Table 3 depicts the results of logistic regression models predicting type of care received (*low level* care, *GC MT*, *GC PT*, *GC CT*). For each analysis the reference group for the care receipt outcome was those receiving no care, and all models were significant at the $P < 0.0001$ level. Overall, there was decreased likelihood of older patients receiving either *low level* or *guideline concordant* care, particularly with regard to a trial of combined therapy, and women were more likely than men to receive *GC MT*. For a number of other predictors, there were some interesting differences across models. For example, married veterans were *more* likely to receive *GC MT*, but were less likely to receive *GC PT* or *GC CT*. African Americans were *less* likely to receive *GC MT* or *GC CT* but more likely to receive *GC PT*. In terms of psychiatric comorbidity, those with comorbidities generally were more likely to receive care, particularly with regard to receiving *GC PT* and *GC CT*. For example, having PTSD only, or both PTSD and a SUD, dramatically increased the odds of receiving each type of guideline concordant care. However, those with comorbid SUD only were no more likely to receive *GC MT* than those with uncomplicated depression.

Supplemental Analyses

Supplemental logistic regression analyses (eg, including “no care,” *low level*, and *GC* groups for the MT, PT, and CT types of care, respectively; analyses with nonmutually exclusive outcome groups for MT or PT) yielded significant findings for each set of analyses that were nearly identical to the primary analysis strategy. For example, older age was associated with reduced odds of receiving care (*low level* and *GC*), African American veterans were more likely to receive *GC PT* and less likely to receive *GC MT* and *GC CT*, and those with comorbidities were more likely to receive care (with the exception of the SUD only group and receipt of *GC MT*). We also repeated the primary analysis strategy with the inclusion of a variable specifying whether the initial depression qualifying diagnosis was depression (296.2x, 296.3x, 300.4) or another code (Depression NOS, adjustment disorder with depressed mood), and this yielded the same pattern of significant predictors as our primary analyses. Of the subset ($n = 8159$) with a depression diagnosis, about 82% received some care (compared with 75% for the total sample), and rates of guideline concordant were modestly higher (42% compared with 35% in the total sample). Rates of *GC PT* and *GC CT* were still relatively low (5% and 4%, respectively, compared with 3.2% and 1.7% for the whole sample). Finally, analyses with less stringent definitions of PT and CT (based on requiring only 8 sessions), yielded the same pattern of findings in terms of predictors of care, and rates of guideline concordant PT and CT increased only modestly (eg, 4.7% PT and 2.5% CT using the “8 or more” session threshold).

DISCUSSION

Our data provide unique findings about depression treatment in a large, nationally representative sample of veterans. Overall, 75% of veterans received some form of acute phase depression treatment. We found that approximately 53% of veterans with depression received antidepressant medications; a rate substantially high than the rate of 30% of depressed individuals in employer-provided health-care plans that has been reported previously.²³ Further, of those starting on antidepressants, about 61% received adequate acute phase medication coverage, a rate similar to private sector healthcare systems.¹⁰ Receipt of any PT was slightly lower than receipt of MT (~50% total had any PT contacts), with relatively few (~5% of the sample) receiving guideline concordant number of PT sessions. The rates of overall PT seem similar to other studies. For example, Kniesner et al²³ found that approximately 55% of those diagnosed with depression and enrolled in employer-provided healthcare plans received some PT. However, rates of CT in our sample (~26% had at least 1 antidepressant prescription and one or more PT visits) were slightly higher than

rates (20%) observed by Kniesner et al²³ Overall, the VA seems similar (if not somewhat better) than the private sector in initial acute phase treatment for depressed patients. However, rates of guideline concordant PT and CT were relatively low in our sample. It is difficult to benchmark the adequacy of acute phase PT and CT within the VA against other samples, given that some samples have used relatively low thresholds for guideline concordant PT (“4 or more visits” during a calendar year), and/or did not examine acute phase care specifically.^{9,25}

Patients with comorbid psychiatric diagnoses had variable experiences of treatment for depression. Overall, patients in all the comorbidity groups (SUD, PTSD, SUD-PTSD) were more likely to receive guideline concordant care, with such comorbidities much more strongly related to *GC PT* and *GC CT* care. However, depressed patients with SUDs (without PTSD) were no more likely to receive *GC MT*. It is possible that providers may be more reluctant to initiate antidepressant treatment for this subgroup until substance use problems are in remission and/or because of concerns that mood symptoms may be substance induced, or because some patients with a history of substance use problems may be reluctant to take antidepressants. Future research is needed to obtain a better understanding of factors related to lower antidepressant use among this comorbidity group. Nevertheless, although the depressed patients with SUDs were more likely to receive PT and CT, rates of such care for this group were relatively low. This suggests a potential need for PT approaches targeting those veterans with comorbid depressive and SUD symptoms.

Although the VA has a much lower proportion of women than the general population, consistent with a number of studies women were more likely to receive *GC MT* than men,^{8,25–27} but did not differ from men in receipt of *GC PT* or *GC CT*. Overall, older age groups were less likely to receive both *low level* and *guideline concordant* care. These findings could reflect cohort differences in views on mental health problems (higher perceived stigma among older veterans), increased difficulty/barriers for older depressed veterans to attend appointments, and/or associated treatment preferences of older adults.²⁸ For example, there is evidence that older adults with depression are more likely to be treated in general medical settings (and prefer to receive care in such settings)²⁸ where MT is the most common intervention for depression. The findings that married veterans were more likely to receive MT is consistent with a prior large study of depressed veterans,²⁶ and other studies also have reported that married individuals were less likely to receive PT.²⁹

The observed relationship between race and type of care revealed some interesting differences. African Americans were less likely to receive *GC MT* and *GC CT*, but were more likely to receive *GC PT*. This is consistent with previous studies indicating that minorities are less likely to receive antidepressant treatment, to fill prescriptions for antidepressant medications, and some minority groups are more likely to prefer PT over medications compared with whites.^{26,30,31} Further, those whose race was unknown were less likely to receive *low level* care, as well as *GC PT* and *GC CT*. It should be noted that some caution should be used in interpreting findings on race based on such VA data, given the high rates of those with “unknown” and “other” race. Nevertheless, the findings raise a number of issues in terms of providing optimal care for the veteran patient population. Overall, there is greater availability of MT given that such care can be provided by ambulatory care medical providers as well as mental health specialty settings. Thus, relatively lower availability of PT may particularly effect care provision to African American veterans. Further, the findings may suggest additional efforts may be needed to engage participants in certain care types when clinically indicated (culturally informed approaches to address concerns about MT among African Americans, and concerns about PT for some other groups). Clearly, research is needed to better understand reasons for differences (patient preferences; barriers to care, etc) in care type by race.

The present findings suggest that additional research could examine reasons for potential under-utilization of PT and CT among depressed veterans. Such factors could include patient level factors (low problem recognition/motivation, concerns about stigma, treatment preferences), and factors related to treatment access (availability of services, insufficient PT and CT resources, acceptability of services to patients and referring clinicians). Treatment access may be particularly challenging when specialty services are not available in all treatment locations (eg, lack of PT services in primary care, low availability of PT even within mental health specialty settings, lack of depression specific PT in SUD and PTSD treatment settings). Further, both patients and clinicians may struggle with whether (or when) specialty services may be indicated given issues such as the patient's primary and secondary diagnoses and treatment preferences. Research examining such factors could guide the development or application of interventions at both the clinical level (eg, motivational interviewing targeting treatment engagement for those with depression and psychiatric comorbidities, case management, provider training, patient and provider education), and at the systems level (guideline concordant treatment for depression, increased availability of PT, broader availability of integrated care approaches in primary care settings), and/or may help identify potential treatment system and staffing resource needs.

Limitations

Although the VA is the largest US health system, it is likely that the prevalence of MT, PT, and CT approaches differ from those seen in other health systems, and it is possible that the pattern of findings regarding patient level predictors (demographics, comorbidity) of care receipt may differ in non-VA healthcare. Further, a major strength of the VA is the ability to provide medical, general mental health and specialty care services within single medical center settings, which suggests non-VA systems may have additional (or different) barriers for providing PT and CT. The results of this and other studies²⁴ suggest the VA provides MT at somewhat higher rates than other health care systems, but it remains unknown how the VA compares to other large health systems regarding PT and CT treatment for depression (it was difficult to benchmark the PT and CT rates compared with non-VA systems given that prior studies of healthcare systems focus primarily on MT). Finally, since the data acquisition period of this study, the VA has funded numerous enhancements for VA mental health care. Future studies should examine the impact of such enhancements on care quality.

An additional limitation is the reliance on administrative data to identify the cohort of depressed veterans. There is evidence from studies of private sector managed care organizations that administrative data may yield high false positive rates, and that higher false positive rates are related to poorer performance on quality indicators.³² This makes sense in that those without a true depression diagnosis may not need or seek specialty care. Although we used methods to identify our cohort and assess care quality that allow for some comparisons with other studies, similar to such studies it is likely that a proportion our cohort were not in need of specialty care, and this could negatively impact rates of care receipt. Our supplemental analyses examining a more specific depression qualifying diagnosis did suggest some modest improvement in performance on our quality indicators, and it is likely that identification of patients with more structured and validated assessment approaches could similarly impact assessment of care quality. Clearly, further research is needed at both macro and more micro levels to better understand quality of depression care.

Additionally, our PT outcome measures also had a number of limitations; we collapsed and summed across a number of different therapy codes and provider types (eg, individual and group codes; psychologists, psychiatrists, social workers); it was not possible to examine the type of PT (supportive listening, cognitive-behavioral therapy, interpersonal PT), the degree

to which depressive symptoms actually were addressed during sessions, or whether providers were using empirically supported PT approaches. Thus, our approach may overestimate provision of any or guideline concordant PT (and CT) targeting depression. Finally, we defined *guideline concordant PT* as receiving 12 or more sessions during the 114 days after initial diagnosis; a higher number than some prior studies. This was selected to allow time to arrange a referral for PT, and to approximate the standard guidelines for acute phase provision of therapy for depression (eg, once per week sessions). However, an alternative less stringent definition of *GC PT* (“8 or more” visits) yielded only modest increases in the percent of veterans receiving such care. Overall, given our requirements for MT, PT, and CT in our study, the data suggest substantial under-provision of PT and CT in the VA population.

In summary, it seems the VA performs as well or better than other health settings in providing MT treatment to depressed patients. However, like other health systems, PT and CT treatment for depression are likely suboptimal. Future research is needed to further delineate potential patient and system level moderators that could improve access to and receipt of PT and CT for depression, thereby improving overall quality of care and quality of life for these depression sufferers.

Acknowledgments

Supported by Department of Veterans Affairs, Health Services Research and Development Service, RCD 98–350, by the Serious Mental Illness Treatment, Research, and Evaluation Center, Ann Arbor, MI, and by the VA-Mental Health Quality QUERI.

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FIGURE 1.
Percentage of veterans in each of the “Type of Care” groups.

TABLE 1

Qualifying Antidepressant Medications and Psychotherapy Codes

Diagnostic Categories for Comorbidities*	Qualifying Antidepressants [†]	Qualifying Psychotherapy Codes
Depression with no or minor comorbidities	Selective serotonin reuptake inhibitors (eg, citalopram, escitalopram, fluoxetine, fluvoxamine, sertraline, paroxetine) Monoamine oxidase inhibitors (phenelzine, tranylcypromine, isocarboxazid) Other newer mixed action antidepressants (bupropion, venlafaxine)	90804–90815, 90845, 90847, 90853, 90857
Other anxiety		
Bipolar 2 disorder		
Personality disorders		
Depression with SUDs		
Depression with PTSD		
Depression with SUD/PTSD		

* Of the depression with no or minor comorbidities group, 21.2% had an anxiety diagnosis (300.00, 300.01, 300.02, 300.09, 300.10, 300.20, 300.21, 300.22, 300.23, 300.29), 1.7% a diagnosis of bipolar 2 disorder, and 6.7% personality disorder. The study analyses were repeated by excluding those with minor comorbidities from the “depression” reference group, and the pattern of findings regarding the impact of comorbidity on care receipt remained the same.

[†] We note that tricyclic antidepressants (TCA) and other cyclic antidepressants are not included because they are frequently used to treat conditions other than depression (sleep problems, pain), and VA field validation efforts revealed that such medications resulted in unacceptably high rates of “false positive” results for depression care (VA Office of Quality and Performance, 2007).

TABLE 2

Type of Therapy Received by Patient Characteristics (N = 41,412 patients with depression during first quarter of fiscal year 2003)

	No Care N (%)	Low Level Care N (%)	GCMT N (%)	GCPT N (%)	GCCT N (%)	Total Sample N (%)
Overall	10,362 (25.0%)	16,479 (39.8%)	12,574 (30.4%)	1310 (3.2%)	687 (1.7%)	41,412 (100%)
Gender						
Males	9510 (25.3%)	14,951 (39.8%)	11,242 (29.9%)	1243 (3.3%)	636 (1.7%)	37,582 (90.7%)
Females	852 (22.3%)	1528 (39.9%)	1332 (34.8%)	67 (1.8%)	51 (1.3%)	3830 (9.3%)
Age (yrs) *						
<35	632 (22.2%)	1199 (42.1%)	896 (31.5%)	69 (2.4%)	49 (1.7%)	2845 (6.9%)
35-49	2529 (22.1%)	4831 (42.2%)	3198 (27.9%)	568 (5.0%)	335 (2.9%)	11,461 (27.7%)
50-64	3939 (23.2%)	6928 (40.9%)	5209 (30.7%)	590 (3.5%)	280 (1.6%)	16,946 (40.9%)
65-79	2431 (30.6%)	2791 (35.2%)	2622 (33.0%)	74 (0.9%)	22 (0.3%)	7940 (19.2%)
80	826 (37.3%)	729 (32.9%)	648 (29.3%)	9 (0.4%)	1 (0.05%)	2213 (5.3%)
Race						
Black	1749 (25.3%)	3163 (45.7%)	1327 (19.2%)	482 (7.0%)	193 (2.8%)	6914 (16.7%)
White	6653 (24.8%)	10,479 (39.1%)	8545 (31.9%)	695 (2.6%)	437 (1.6%)	26,809 (64.7%)
Other	180 (20.6%)	372 (42.5%)	272 (31.1%)	37 (4.2%)	14 (1.6%)	875 (2.1%)
Unknown	1780 (26.1%)	2465 (36.2%)	2430 (35.7%)	96 (1.4%)	43 (0.6%)	6814 (16.5%)
Ethnicity						
Hispanic	398 (22.2%)	851 (47.5%)	478 (26.7%)	47 (2.6%)	18 (1.0%)	1792 (4.3%)
Non-Hispanic	9964 (25.2%)	15,628 (39.4%)	12,096 (30.5%)	1263 (3.2%)	669 (1.7%)	39,620 (95.7%)
Marital Status						
Married	4482 (25%)	6836 (38.1%)	6187 (34.5%)	276 (1.5%)	147 (0.8%)	17,928 (43.3%)
Divorced/separated	2931 (23.8%)	4994 (40.5%)	3555 (28.8%)	556 (4.5%)	305 (2.5%)	12,341 (29.8%)
Never married	2023 (24.6%)	3571 (43.5%)	1991 (24.2%)	425 (5.2%)	204 (2.5%)	8214 (19.8%)
Widowed	696 (30.7%)	809 (35.6%)	697 (30.7%)	46 (2.1%)	21 (0.9%)	2269 (5.5%)
Unknown	230 (34.8%)	269 (40.8%)	144 (21.8%)	7 (1.1%)	10 (1.5%)	660 (1.6%)
Comorbidity Group						
None/minor	7329 (29.1%)	9337 (37.1%)	8352 (33.1%)	133 (0.5%)	49 (0.2%)	25,200 (60.8%)
SUD	1870 (22.7%)	3451 (41.9%)	1925 (23.4%)	650 (7.9%)	335 (4.1%)	8231 (19.9%)
PTSD	751 (15.4%)	2347 (48.1%)	1531 (31.4%)	175 (3.6%)	78 (1.6%)	4882 (11.8%)

	No Care N (%)	Low Level Care N (%)	GC MT N (%)	GC PT N (%)	GC CT N (%)	Total Sample N (%)
Overall	10,362 (25.0%)	16,479 (39.8%)	12,574 (30.4%)	1310 (3.2%)	687 (1.7%)	41,412 (100%)
SUD and PTSD	412 (13.3%)	1344 (43.4%)	766 (24.7%)	352 (11.4%)	225 (7.3%)	3099 (7.5%)

* Seven patients had missing age.

TABLE 3

Logistic Regression Results for Types of Treatment

Covariates	OR (95% CI)			
	Low Level Care (N = 26,835)	GC MT (N = 22,930)	GC PT (N = 11,667)	GC CT (N = 11,044)
Age (yr)				
<35	1.00	1.00	1.00	1.00
35–49	0.96 (0.86–1.08)	0.97 (0.86–1.09)	1.14 (0.85–1.54)	1.04 (0.73–1.47)
50–64	0.83* (0.75–0.93)	0.89 (0.80–1.00)	0.85 (0.63–1.14)	0.57* (0.40–0.81)
65–79	0.64* (0.57–0.72)	0.74* (0.65–0.83)	0.49* (0.34–0.71)	0.22* (0.13–0.38)
80	0.49* (0.42–0.56)	0.53* (0.46–0.62)	0.23* (0.11–0.47)	0.04* (0.01–0.27)
Race				
Black	0.98 (0.92–1.06)	0.54* (0.51–0.60)	1.41* (1.22–1.63)	0.77 [†] (0.63–0.94)
Other	1.16 (0.97–1.39)	1.07 (0.89–1.30)	1.29 (0.86–1.94)	0.81 (0.45–1.49)
Unknown	0.91* (0.85–0.96)	1.04* (0.97–1.12)	0.77 [†] (0.61–0.98)	0.57* (0.41–0.80)
White	1.00	1.00	1.00	1.00
Hispanic				
Yes	1.35* (1.19–1.52)	0.93 (0.81–1.06)	1.10 (0.78–1.56)	0.64 (0.39–1.08)
No	1.00	1.00	1.00	1.00
Gender				
Female	1.09 (0.99–1.20)	1.30* (1.18–1.43)	0.93 (0.69–1.25)	1.33 (0.94–1.88)
Male	1.00	1.00	1.00	1.00
Marital status				
Married	1.02 (0.97–1.08)	1.29* (1.22–1.36)	0.62* (0.53–0.73)	0.72* (0.58–0.88)
Not married	1.00	1.00	1.00	1.00
Comorbidity group				
PTSD	2.38* (2.17–2.60)	1.74* (1.58–1.91)	12.43* (9.74–15.85)	14.83* (10.22–21.50)
SUD	1.30* (1.21–1.39)	0.97 (0.90–1.05)	12.42* (10.12–15.23)	17.98* (13.09–24.68)
PTSD/SUD	2.32* (2.06–2.61)	1.76* (1.54–2.00)	32.19* (25.49–40.66)	59.60* (42.50–83.58)
None/minor	1.00	1.00	1.00	1.00
χ^2 , <i>df</i> , $P > \chi^2$	904.3, 13, $P < 0.0001$	680.6, 13, $P < 0.0001$	2,198.6, 13, $P < 0.0001$	1,479.42, 13, $P < 0.0001$

* $P < 0.01$.[†] $P < 0.05$.