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Care For Veterans With Mental And Substance Use Disorders: Good Performance, But Room To Improve On Many Measures

ABSTRACT In 2006 the Department of Veterans Affairs commissioned the Altarum Institute and the RAND Corporation to do an evaluation of its mental health treatment system. We found that veterans with mental illness and substance use disorders represented 15.4 percent of all veterans using Veterans' Health Administration (VHA) services in 2007 and that they accounted for 32.9 percent ($12 billion) of VHA costs, of which the majority was for non–mental health conditions. The average cost for a veteran with mental illness and substance use in our study was $12,337, or 2.7 times the cost for an average veteran without these conditions. The quality of care for the veterans in our study, although similar to or better than the care given to comparable privately insured patients or those enrolled in Medicare or Medicaid, varied by as much as twenty-three percentage points among regional service networks. Performance on some indicators, such as whether those with alcohol dependence received pharmacotherapy, was low. There is a need for substantial improvement in the care of these veterans, particularly with respect to ensuring the delivery of evidence-based treatments.

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Veterans have a high frequency of serious mental and substance use disorders. The influx of returning US service members with symptoms indicative of serious mental disorders has focused attention on the difficulties of providing high-quality treatment to this population.[1–3] Although returning service members are only 4.1 percent of the total veteran population, their complex psychological needs have made delivering high-quality treatment for mental and substance use disorders a national priority.

Numerous studies have examined aspects of the costs and quality of care for veterans with serious mental and substance use disorders. However, none has been comprehensive. Previous studies have focused on one, or at most two, disorders.[4–9] These studies have generally relied on a single data source and have not assessed the full spectrum of clinical services—from assessment to treatment to chronic care management—for veterans with highly prevalent and debilitating conditions.

Furthermore, no study to date has examined variations in care for veterans with different diagnoses and who are in different regions of the United States. This gap highlights the need for a more comprehensive analysis to provide patients and their families, as well as policy makers, with evidence on whether veterans are receiving appropriate care and whether quality varies by location, which might indicate that optimal care is not being delivered equitably.

In 2006, amid growing attention to the prevalence and seriousness of mental illness and sub-

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stance use problems among veterans, the Department of Veterans Affairs (VA) commissioned a comprehensive evaluation of its mental illness and substance use treatment system.[10] The evaluation took place during the implementation of the VA's five-year Mental Health Strategic Plan, a large initiative to expand and improve care for mental and substance use disorders. To support the initiative, the VA increased annual funding for mental health by $1.4 billion, from $2.43 billion in fiscal year 2005 to $3.88 billion in fiscal year 2008.

The evaluation was authorized by the Government Performance and Results Act of 1993 and Title 38 of the US Code,[11,12] which require independent evaluations of large government programs. The goal of the evaluation was to assess whether, for the population of veterans with mental and substance use disorders, the VA was meeting the goal of maximizing these veterans' physical, mental, and social functioning.

Using administrative and medical record data, we describe the growth in the population of veterans who have serious mental and substance use disorders; the health care costs associated with this population; and the processes of care provided by the VA to all veterans with schizophrenia, bipolar I disorder, post-traumatic stress disorder (PTSD), major depression, and substance use disorders. We also report on variation in performance among regional service networks.

Study Data And Methods

STUDY POPULATION AND MEDICAL RECORD STUDY SAMPLE The study population consisted of all veterans who received services from the Veterans Health Administration (VHA) in fiscal year 2007 for treatment of at least one of the five diagnoses ($N = 836,699$). To be included, veterans had to have had at least one inpatient episode with a qualifying diagnosis or two outpatient visits, at least one of which was for a qualifying diagnosis. Separate study populations for each year from fiscal years 2004–08 were identified, to describe the growth of the study population.

The study sample of veterans for whom medical record data were to be compiled consisted of veterans in the fiscal year 2007 study population who also had any additional use of VHA health services in fiscal year 2008, including non–mental health visits ($N = 657,168$). A stratified random sample of 7,069 veterans drawn from the medical record study population made up the medical record study sample.

Strata were defined by each combination of regional service network and diagnostic group, so that sufficient numbers of veterans would be included to obtain estimates of performance. The regional networks, known as Veterans Integrated Service Networks, comprise medical centers, veterans centers, and outpatient clinics offering primary and specialized care. These regional networks are designed to pool and align resources to meet local health care needs. There is a separate Veterans Integrated Service Network for each of twenty-one different geographic areas across the country.

Each veteran was categorized into a single mental health diagnostic group (schizophrenia, bipolar I disorder, PTSD, or major depression), based on the modal frequency of diagnosis codes in his or her VA medical files.[13] Veterans were additionally categorized into the substance use disorder group if their records contained diagnosis codes for such disorders.

To analyze how care varied by region, we used the most frequently reported residence ZIP code in the VA files to assign each veteran to a Veterans Integrated Service Network.

DATA COLLECTION We obtained administrative data from the VA National Patient Care Database, which includes the patient treatment files of all VA inpatient treatment discharges and outpatient care files. Laboratory and pharmacy data were obtained from the National Data Extract files.

Although the VA does not bill directly for care, the VHA's Decision Support System is a managerial cost accounting system that provides a mechanism for integrating expenses, workload, and patient services and that can attribute direct and indirect costs of care to the units of service provided and the patients who receive them.[13] We used this system to attribute and aggregate total costs associated with each veteran.

Administrative data also included care delivered by non-VA providers but paid for by the VA, from the Central Fee data sets. Costs were calculated for fiscal year 2007.

Data on service in Iraq or Afghanistan were obtained from the Defense Manpower Data Center. Medical record data were collected for the study sample ($N = 7,069$).

MEDICAL RECORD ABSTRACTION Detailed abstraction modules were developed. To account for items with high prevalence rates and for possible disagreement among raters, reliability was estimated using the prevalence-adjusted bias-adjusted kappa (PABAK) statistic.[14] Only abstracted variables having at least moderate agreement (PABAK > 0.4)[15] are reported. Throughout the data abstraction process, data quality audits were conducted and reviewed.

PERFORMANCE INDICATORS We identified and developed twenty-three performance indicators—tools that attempt to characterize the proc-

esses of care a patient experiences, to enable assessment of the degree to which recommended care is implemented—with at least moderate interrater reliability, using a modified expert panel approach.[16] Nine indicators required only administrative data, and fourteen required a combination of administrative and medical record data. Some indicators applied to only a single diagnosis, such bipolar illness for which a mood stabilizer might be prescribed, and some applied across diagnoses, such as assessment for suicidal thinking or ideation.

Some indicators applied only to veterans entering a new treatment episode. A *new treatment episode* was defined as any inpatient hospitalization for one of the five diagnoses or an outpatient visit with a study diagnosis after a break in care of 150 days or more. A *break in care* was defined as no outpatient visits for a study diagnosis or psychiatric medication. We used 150 days because the VA allows veterans to receive three-month supplies of prescriptions at a time, so a 90-day period between outpatient visits would be normal, but 150 days between visits would reasonably represent a true break in care.

STATISTICAL METHODS FOR ASSESSING PERFORMANCE We estimated descriptive statistics to summarize VA national average performance. Descriptive statistics for medical record indicators were weighted to correct for the stratified sampling design.[17] Estimates for medical record–based indicators are presented along with 95 percent confidence intervals. We do not present confidence intervals for national-level estimates of performance using administrative data–based indicators because they reflect data from the entire fiscal year 2007 population.

The performance of each regional network was estimated using generalized linear mixed models, which yielded an estimate of average network performance and an estimate of the variance of network effects around that average. Such analyses of medical record–based indicators were weighted to account for the sampling design and the multilevel structure of the data.[18,19] Because our performance indicators measure processes of care for those veterans for whom such care is recommended and provision of these services is largely under the control of providers, we present unadjusted comparisons of networks.[20,21]

LIMITATIONS There are several limitations to these results. Administrative data capture services that were recorded as being provided and medications for which prescriptions were filled. They do not reflect instances when a service or medication was recommended by a provider but refused by the patient. They also do not capture prescriptions that were written but never filled.

In addition, there may be instances when the normally recommended treatment for a condition is contraindicated. Although medical record data address some of these issues, these data have their own limitations. We were not able to observe care that was provided but not documented or care that was provided in a different way than documented. Absence of documentation may reflect poor documentation practices or a real failure to deliver recommended care. However, in the context of clinical teams delivering integrated care, failure to document is a quality problem.

Finally, although the quality indicators we developed and applied represent the best current knowledge for evidence-based care in mental health and substance use, much more needs to be done to improve quality measurement in this field.[22]
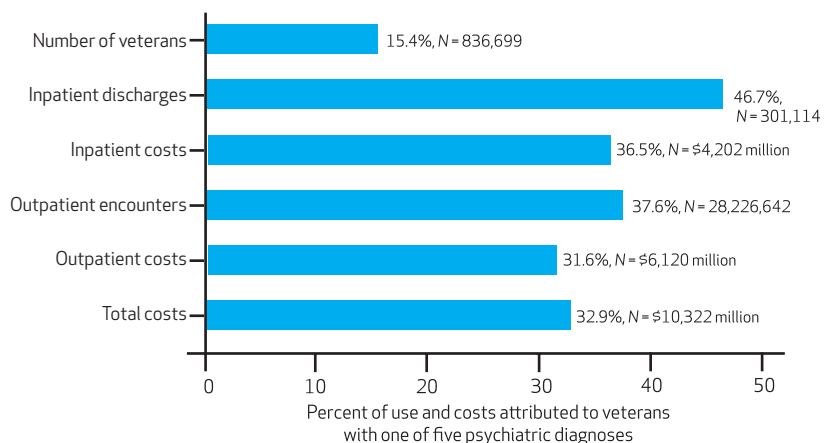
Study Results

There were 836,699 veterans with at least one of the five diagnoses considered in the study. Between fiscal years 2004 and 2008, the size of the population of veterans with mental illness and substance use disorders increased by 38 percent, from 654,354 in fiscal year 2004 to 906,394 in fiscal year 2008. The greatest increase occurred in veterans with PTSD.

Veterans in the fiscal year 2007 study population represent only 15.4 percent of all veterans
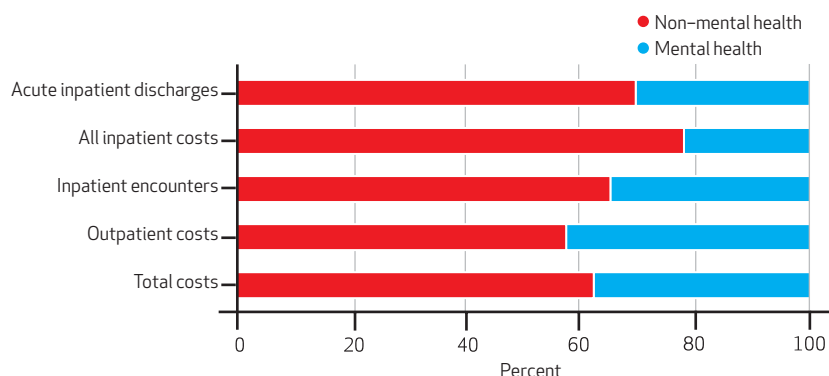
EXHIBIT 1

Use Of Health Services And Health Care Costs As A Proportion Of Total Health Service Use And Health Care Costs, For Veterans With One Of Five Psychiatric Diagnoses Who Received Treatment From The Veterans Health Administration, Fiscal Year 2007

Mental Health And Non–Mental Health Service Use And Costs By Veterans With One Of Five Psychiatric Diagnoses Who Received Treatment From The Veterans Health Administration, Fiscal Year 2007

● Non–mental health
● Mental health

SOURCE See Exhibit 1 source. NOTE All veterans represented in these data received diagnoses of schizophrenia, bipolar disorder, post-traumatic stress disorder, major depression, or substance use disorders.

Demographic Characteristics And Treatment From The Veterans Health Administration For Veterans With One Of Five Psychiatric Diagnoses, Fiscal Year 2007

Study population	Number	Percent
All	836,699	100
AGE (YEARS)		
18–34	53,902	6
35–44	68,796	8
45–54	176,584	21
55–64	378,491	45
65+	158,925	19
DIAGNOSTIC COHORT		
Bipolar	61,578	7
Major depressive disorder	135,387	16
Post-traumatic stress disorder	357,289	43
Schizophrenia	81,624	10
Substance use disorder without a co-occurring mental health disorder	200,821	24
Substance use disorder with a co-occurring mental health disorder	144,045	17
Female	55,860	7
Any psychiatric medication[a] during study period	603,943	72
Any psychosocial visits[b] during study period	591,533	71
Any psychotherapy visits[c] during study period	334549	40
Began new treatment episode for mental or substance use disorder during study period[d]	239,108	28
Hospitalized during study period[e]	164,534	20

SOURCE See Exhibit 1 source. NOTE All veterans represented in these data received diagnoses of schizophrenia, bipolar disorder, post-traumatic stress disorder, major depression, or substance use disorders. [a]Defined as at least one thirty-day supply of a mood stabilizer, antidepressant, or antipsychotic medication. [b]Includes any individual or group, outpatient or residential, diagnosis-related psychosocial visits. [c]Includes any individual or group, diagnosis-related psychotherapy visits of at least thirty minutes. [d]See text for definition of a *new treatment episode*. [e]Includes nonresidential inpatient discharges, regardless of diagnosis.

who used VHA services in that fiscal year. However, they accounted for 32.9 percent of VHA health care costs as a result of much higher use of both inpatient and outpatient physical and mental health care services (Exhibit 1). In fiscal year 2007, study veterans had 4.2 times as many acute inpatient discharges as nonstudy veterans and 3.3 times as many outpatient encounters. The average cost per study veteran was $12,337, while the average cost of each nonstudy veteran was $4,579—thus, study veterans were 2.7 times as expensive as nonstudy veterans.

Exhibit 2 shows the distribution of use of mental and physical health services and costs. The majority of use and costs were not attributable to services associated with these veterans' mental or substance use disorders, but rather were attributable to these veterans' non–mental health primary diagnoses. The most common of these were essential hypertension (32 percent) and diabetes mellitus (19 percent).

Exhibit 3 shows study veterans' demographic characteristics and use of mental health treatment. The largest diagnostic groups were veterans with PTSD and substance use disorders. Four percent of the study veterans had served in Iraq or Afghanistan, and 20 percent had an acute inpatient discharge. *Psychosocial visits* were defined broadly as any non-medication-related individual or group visits; psychotherapy visits could be group or individual visits lasting at least thirty minutes. Fifty percent of the veterans in the population had at least one serious physical health comorbidity, and 21 percent had two or more. Of those with a mental illness, 23 percent had a co-occurring substance use disorder.

Exhibit 4 shows the proportion of veterans meeting the performance indicators as measured by administrative data and medical record review. The proportion of veterans receiving recommended care varied widely, from a high of 82 percent (assessed for suicide ideation) to a low of 1.9 percent (family psychoeducation). Exhibit 4 shows a subset of indicators. The full list can be found in the online Appendix.[23]

Exhibit 5 shows variations in performance indicators, by Veterans Integrated Service Network. Each square represents a single network. The greatest variation is seen in rates of assessment for housing and employment assistance (twenty-six percentage points). Supported employment and family psychoeducation show the least variation; however, only 2 percent of the veterans received these interventions.

Discussion

There is a large and growing population of veterans with severe and complex general medical,

EXHIBIT 4

Proportion Of Study Veterans Meeting Performance Indicators, Veterans Health Administration (VHA) National Average, Fiscal Year 2007

Indicator	Description	VHA national average (95% CI)	Denominator	Number
PERFORMANCE INDICATORS USING ADMINISTRATIVE DATA				
Antidepressants, 12-week supply	Proportion of study veterans with at least one filled prescription for an antidepressant who filled prescriptions for a 12-week supply of an antidepressant	60.2%	Study veterans in the major depressive disorder cohort and with at least one filled prescription for an antidepressant	29,819
Intensive case management	Proportion of study veterans using any intensive case management	23.3%	Study veterans with at least three inpatient discharges or 30 cumulative inpatient days during the study period	7,876
Supported employment	Proportion of study veterans using supported employment during the study period	2.0%	Study veterans in the schizophrenia or bipolar disorder cohort or with psychosis	153,423
Family psycho-education	Proportion of study veterans using any family psychoeducation in the study period	1.9%	Study veterans in the schizophrenia or bipolar disorder cohorts	143,202
PERFORMANCE INDICATORS USING MEDICAL RECORD DATA				
Suicide	Proportion of study veterans assessed for suicide ideation	81.8% (81.1, 82.4)	All study veterans	7,069
Housing and employment	Proportion of study veterans assessed for housing and employment needs	44.0% (42.0, 46.0)	Study veterans in a new treatment episode	1,126
Response to medication	Proportion of study veterans who were assessed for response to medication	54.9% (51.8, 57.9)	Study veterans in the major depressive disorder cohort on medication	320
Response to psychotherapy	Proportion of study veterans who were assessed for response to psychotherapy	23.0% (18.9, 27.1)	Study veterans in the major depressive disorder cohort receiving psychotherapy	118
Maintenance treatment with antipsychotics	Proportion of study veterans in the schizophrenia cohort with continuous use of antipsychotic medication during the study period	30.6% (29.3, 32.0)	Study veterans in the schizophrenia cohort	1,398
Maintenance treatment with mood stabilizers	Proportion of study veterans in the bipolar disorder cohort with continuous use of a mood stabilizer during the study period	31.3% (30.0, 32.5)	Study veterans in the bipolar disorder cohort	1,541
Cognitive behavioral therapy for PTSD	Proportion of study veterans with documented receipt of cognitive behavioral therapy	19.9% (18.0, 21.8)	Study veterans in the PTSD cohort receiving any psychotherapy	530
Pharmacotherapy for alcohol dependence	Proportion of study veterans who received pharmacotherapy for alcohol dependence	16.4% (13.1, 19.8)	Study veterans with alcohol dependence in a new treatment episode	204

SOURCE See Exhibit 1 source. **NOTES** CI is confidence interval. PTSD is post-traumatic stress disorder.

mental, and substance use disorders including schizophrenia, bipolar I disorder, PTSD, and major depression. Substance use disorders may occur alone or in combination with any of these other diagnoses. Over the five-year study period, the population of veterans with mental and substance use disorders grew by 38.5 percent, with the largest growth occurring in veterans receiving care for PTSD. Half of the veterans with mental and substance use disorders also had a serious medical disorder. Study veterans also accounted for a much larger proportion of health care use and costs than their representation among all veterans receiving VA health care.

In fiscal year 2007, veterans with serious mental illnesses accounted for nearly half of the acute inpatient discharges and outpatient encounters, and the total costs of their care exceeded $10 billion. The high burden and costs of general medical problems in addition to mental illnesses underscores the need for coordinated, patient-centered care across all providers and conditions.

The proportion of veterans receiving recommended care ranged widely. Of the twenty-three indicators included in this study, three had rates above 75 percent, and nine were below 25 percent. For example, among the assessment indica-

Proportion Of Veterans Meeting Performance Indicators, By Veterans Integrated Service Network, Fiscal Year 2007
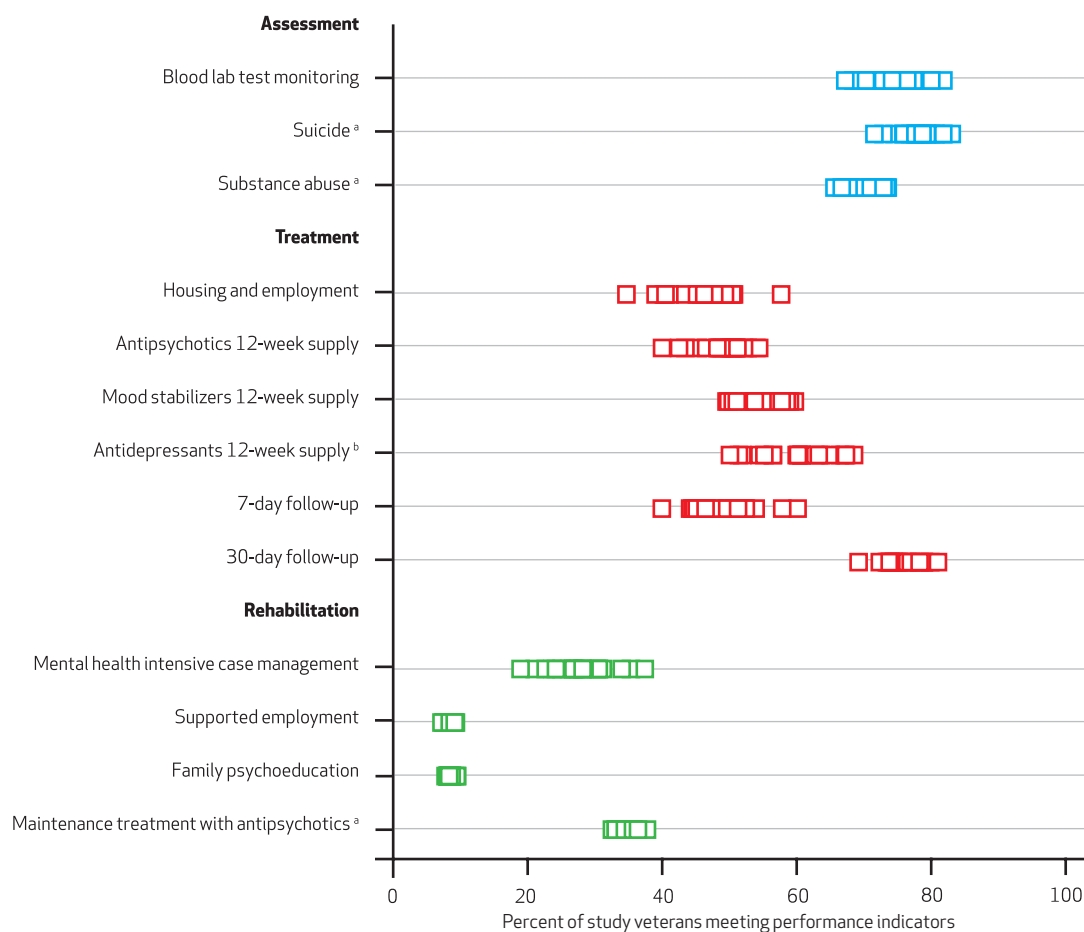
SOURCE See Exhibit 1 source. NOTE Each square in the exhibit represents a Veterans Integrated Service Network. [a]Derived from medical record data; all other indicators came from administrative data. [b]A Healthcare Effectiveness Data and Information Set indicator.

tors, performance ranged from 82 percent for proportion assessed for suicide ideation to 23 percent for proportion assessed for response to psychotherapy. Use of medication varied from a high of 60 percent for the acute treatment of depression to a low of 16 percent for pharmacotherapy for alcohol dependence.

Fewer than one-third of the veterans identified with schizophrenia or bipolar disorder received continuous maintenance treatment with antipsychotics or mood stabilizers. This gap in medication is important, because patients with intermittent medication usage have a much higher likelihood of relapse and rehospitalization compared to patients who use medication regularly.[24] Although 54.9 percent of veterans receiving medication for major depression were assessed for treatment response, the same was true for only 23 percent of those receiving psychotherapy. Assessing response to treatment, including symptom change, side effects, and ad-

herence, is a critical component of treatment, because patients who are not responding may need to have their treatment changed. Moreover, systematically conducting longitudinal structured assessments and adapting treatments based on these assessments is an important component of chronic care management.[25]

Where comparable data are available, the VA performs as well as or better than private plans, Medicare, or Medicaid. For example, among study veterans who were hospitalized for a psychiatric condition, 47.7 percent received outpatient follow-up within seven days of their discharge, and 78.2 percent received follow-up within thirty days. The Healthcare Effectiveness Data and Information Set reports seven-day follow-up rates of 37.0 percent, 42.5 percent, and 55.6 percent for Medicare, Medicaid, and commercial plans, respectively, and thirty-day follow-up rates of 54.4 percent, 61 percent, and 74 percent.

Among veterans with a diagnosis of depression and at least one filled prescription for an antidepressant, 60 percent received a twelve-week supply within twelve weeks. This is comparable to the 62.9 percent rate observed for commercial plans and is better than the 42.8 percent rate for Medicaid populations.[26] These results are consistent with a recent review comparing the quality of care for medical disorders in VA and non-VA settings.[8]

Although no Veterans Integrated Service Network stood out as consistently performing above or below the network average, the observed variations suggest that networks with lower performance can improve. Indicators with the largest variation by network were housing and employment assessment (twenty-six percentage points, from 32 percent to 58 percent), intensive case management (twenty-one percentage points, from 14 percent to 35 percent), and seven-day follow-up after inpatient hospitalization (twenty-three percentage points, from 37.7 percent to 60.7 percent). Although the quality of documentation may vary by patient and provider characteristics, variation in rates of documentation is unlikely to fully explain the observed differences. This variation warrants further action, first to gain a better understanding of what underlies these differences and second to implement strategies to address them.

Improving performance has important health and economic consequences. Other research on veterans with depression has found the risk of a suicide attempt by patients treated with anti-depressant medication to be 37 percent of that for patients receiving no antidepressant.[27] Therefore, improving the rate at which veterans fill prescriptions for antidepressants could greatly reduce suicide risk.

In addition, research has shown that veterans with depression have a nearly 10 percent lower likelihood of working and that, for those who are working, their hourly wages are lower.[28] Therefore treatment that reduces the burden of depression and helps veterans obtain and hold jobs stands to improve their economic outcomes significantly.

These findings also have important clinical and policy implications. The size of the veteran population with mental and substance use disorders is likely to continue to increase, as military operations in Iraq and Afghanistan decrease in size and service members leave the armed forces. Given the clinical complexity and health care costs associated with these disorders, identifying ways to increase efficiency while improving quality is critical.

The quality of VA care is as good as or better than that reported for patients with comparable diagnoses who received care through private insurers, Medicare, or Medicaid. However, the variation in performance across networks and the low rate of delivery for some evidence-based practices suggest that performance can and should improve. The VA has recently undertaken several mental health–specific initiatives that may increase the proportion of veterans receiving evidence-based treatments.[29]

Finally, our results suggest that if there is variation within the VA—an organizationally and financially integrated system of care—there is probably greater variation outside of the VA, where many different systems provide care. And, as a corollary, given its organizational integration, the VA is in a position to serve as a leader for other health systems for improving the quality of mental health and substance use care. ∎

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23 To access the Appendix, click on the Appendix link in the box to the right of the article online.

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In this month's *Health Affairs*, Katherine Watkins and coauthors from the RAND Corporation write about the evaluation they performed of mental health and substance abuse treatment at the Department of Veterans Affairs (VA). They found that veterans with mental and substance abuse disorders constituted almost one in seven of the veterans using the VA's health services in 2007 but accounted for nearly one-third of system costs—mostly for non–mental health conditions. The quality of care was deemed "comparable to or better than" the care given to comparable privately insured patients, or those enrolled in Medicare or Medicaid, but was still variable—and in some areas needed real improvement.

Overall, the authors say that they were surprised with "how well the VA is doing, despite the negative press" the VA has often received

about its treatment of veterans with mental health and substance abuse issues. But at the same time, Watkins says, they were also surprised by the lack of explicit performance expectations for many routine treatments.

For example, when medication treatment is prescribed for bipolar disorder or schizophrenia, the VA does not have performance expectations for determining what proportion of patients should be receiving such treatment, especially given that some patients will refuse it. "For many of our performance indicators it was difficult to judge whether performance was 'good' or 'bad' because there were no explicit standards," she continues.

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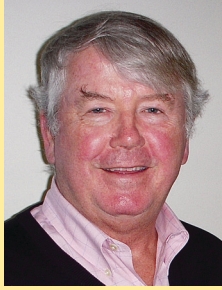
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