



Association Between Quality Measures and Mortality in Individuals With Co-Occurring Mental Health and Substance Use Disorders[☆]



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ABSTRACT

Importance: Individuals with co-occurring mental and substance use disorders have increased rates of mortality relative to the general population. The relationship between measures of treatment quality and mortality for these individuals is unknown.

Objective: To examine the association between 5 quality measures and 12- and 24-month mortality.

Design, setting and participants: Retrospective cohort study of patients with co-occurring mental illness (schizophrenia, bipolar disorder, post-traumatic stress disorder and major depression) and substance use disorders who received care for these disorders paid for by the Veterans Administration between October 2006 and September 2007. Logistic regression models were used to examine the association between 12 and 24-month mortality and 5 patient-level quality measures, while risk-adjusting for patient characteristics. Quality measures included receipt of psychosocial treatment, receipt of psychotherapy, treatment initiation and engagement, and a measure of continuity of care. We also examined the relationship between number of diagnosis-related outpatient visits and mortality, and conducted sensitivity analyses to examine the robustness of our findings to an unobserved confounder.

Main outcomes measure: Mortality 12 and 24 months after the end of the observation period.

Results: All measures except for treatment engagement at 24 months were significantly associated with lower mortality at both 12 and 24 months. At 12 months, receiving any psychosocial treatment was associated with a 21% decrease in mortality; psychotherapy, a 22% decrease; treatment initiation, a 15% decrease, treatment engagement, a 31% decrease; and quarterly, diagnosis-related visits a 28% decrease. Increasing numbers of visits were associated with decreasing mortality. Sensitivity analyses indicated that the difference in the prevalence of an unobserved confounder would have to be unrealistically large given the observed data, or there would need to be a large effect of an unobserved confounder, to render these findings non-significant.

Conclusions and relevance: This is the first study to show an association between process-based quality measures and mortality in patients with co-occurring mental and substance use disorders, and provides initial support for the predictive validity of the measures. By devising strategies to improve performance on these measures, health care systems may be able to decrease the mortality of this vulnerable population.

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[☆] Conflicts of interest: none

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1. Introduction

Mental and substance use disorders are leading causes of preventable deaths (Centers for Disease Control and Prevention, 2014; National Institute on Drug Abuse, 2012; Walker, McGee, & Druss, 2015). Compared to the general population, individuals with mental disorders, substance use disorders and co-occurring mental and substance use disorders have increased mortality rates, with the highest rates found in clinical samples and among individuals with co-occurring psychosis and substance use disorders (Degenhardt, Bucello, et al.,

2011; Degenhardt, Singleton, et al., 2011; Dickey, Dembling, Azeni, & Normand, 2004; Mathers et al., 2013; Muhuri & Gfroerer, 2011; Roerecke & Rehm, 2013; Rosen, Kuhn, Greenbaum, & Drescher, 2008; Singleton et al., 2009; Walker et al., 2015). Reducing the premature mortality associated with mental and substance use disorders is an ongoing public health challenge and an important goal for health care systems. While health care systems have little influence over some causes of premature mortality, such as accidents and homicides, they do have control over the quality of the care they deliver, which may also influence mortality, through earlier recognition of worsening physical health symptoms or by influencing patients' risk behaviors by providing effective treatment. If health care systems are to play a role in reducing premature deaths among persons with co-occurring disorders, then it is important to know whether or not a relationship exists between quality of care and mortality. However, it is unknown whether and how the quality of healthcare impacts mortality for individuals with co-occurring disorders.

Understanding the link between healthcare quality and mortality requires scientifically rigorous and valid measures. Valid measures are also essential for quality improvement efforts. Quality of care is typically measured using either measures of process, which assess what is happening in the healthcare setting, or outcomes, which assess the impact of the care on the patient's symptoms or functioning. While improved patient outcomes is the gold standard for measuring quality, using outcome-based quality measures is potentially problematic for at least three reasons. Obtaining outcome data can be expensive and difficult to collect; outcome data cannot be used to identify which care processes need to be improved, and outcome measures require risk adjustment for illness severity. Process-based measures, which can be operationalized using readily-available administrative data, are an important source of information about where performance falls short and quality improvement efforts should be targeted. Process-based measures can also be reported in real-time, allowing health care systems to take timely corrective action.

There are no reliable and valid process-based, quality measures that have been developed and tested for individuals with co-occurring disorders (Dausey, Pincus, & Herrell, 2009). Thus, although care for individuals with mental and/or substance use disorders varies across treatment systems (Watkins, Pincus, et al., 2011; Watkins et al., 2015), and settings (Charbonneau et al., 2003; Harris et al., 2009; Kilbourne et al., 2010; Lee et al., 2014), differences in the process of care have not been linked to differences in patient outcomes, and there are no process-based quality measures that predict improved outcomes. Thus it is unknown whether improvements in treatment process would lead to improvements in patient outcomes. Existing process-based behavioral health quality measures focus on either mental or substance use disorders and have not been validated in a population with comorbid disorders (Harris, Gupta, et al., 2015). Unless process measures are associated with clinically meaningful outcomes, using them to monitor and improve performance will not result in the expected improvements in outcomes.

Given the importance of mortality as a clinical outcome and the need for validated quality measures applicable to this population, we examined the association of 5 potential quality measures with one- and two-year mortality among persons with co-occurring disorders. If these process-based quality measures are associated with decreased mortality, it suggests that health care systems could devise specific strategies to improve performance on these measures and, by doing so, have some assurance that the care they are providing is linked to improvements in this essential patient outcome. It would also provide initial evidence for the predictive validity of the measures.

2. Methods

2.1. Overview

This study was approved by the Institutional Review Boards of the Central Arkansas Veterans Healthcare Center and the University of

Arkansas for Medical Sciences. The boards waived the requirement for participant informed consent as it was a minimal risk study, using previously collected data. Administrative data were obtained from the Veterans Administration (VA) Medical SAS data sets, and included demographic information, claims, diagnoses, dates and types of services, admissions, and discharges. Mortality through September 30, 2009 was obtained from the VA Vital Status Mini File.

2.2. Study population

We identified all veterans who received care from or paid for by the VA in FY2007 using the International Classification of Diseases (ICD)-9 codes for schizophrenia (295.0–295.9), bipolar I disorder (296.0–296.7), major depression (296.2–296.3), post-traumatic stress disorder (309.81) and substance use disorder (303.9–305.7; 305.9). Veterans were included in the study population if within FY2007 their utilization records contained diagnosis codes for one of the four mental disorders and a substance use disorder, and if they had at least one inpatient episode or two outpatient encounters, one of which was related to a study diagnosis, to show active engagement with VA care.

2.3. Quality measures

We used a multi-step process developed by Mittman and colleagues (Mittman, Hilborne, & Brook, 1994) to identify the 5 process-based quality measures. We started with a comprehensive literature review and then used the nominal group/Delphi method to abstract discreet treatment recommendations from clinical practice guidelines. The set of recommendations were reviewed by a panel of internal and external technical experts, and iteratively revised and winnowed down until a final set of measures of acceptable face validity and feasibility was produced with all necessary technical specifications (Watkins, Horvitz-Lennon, et al., 2011; Watkins, Smith, et al., 2011). We focused on process measures because they are the most readily available across a range of settings, are easier to collect than outcome measures, and provide actionable information about the types of care associated with improved patient outcomes. Because of the low prevalence of mortality as an outcome, we only examined measures that were applicable across diagnoses to the population of individuals with co-occurring mental and substance use disorders. Receipt of any psychosocial treatment was defined as receiving at least one diagnosis-related psychosocial treatment visit for a mental or substance use disorder in the observation year, including individual and group psychotherapy, family interventions, supported employment, skills training and intensive case management. Receipt of any psychotherapy included only diagnosis-related visits with an associated group or individual psychotherapy current procedural terminology (CPT) code in the observation year. Two of the measures, treatment initiation and treatment engagement, were developed by the Washington Circle for substance use disorders and are Healthcare Effectiveness Data and Information Set (HEDIS) measures (Garnick et al., 2002; National Committee for Quality Assurance, 2013). Both measures apply only to individuals beginning a new treatment episode; new treatment episodes begin with an index visit for a substance use disorder. Treatment initiation was defined as at least one substance use disorder-related treatment visit within 14 days of the index visit, and treatment engagement was defined as receiving an additional two substance use disorder-related treatment visits within 30 days after the initiation visit, among those who had initiated. Unlike the HEDIS specifications, for the index visit we required a period of 5 months rather than 60 days without any substance use disorder-related visits prior to the index visit (Harris, Ellerbe, et al., 2015). We tested an alternative specification for the treatment initiation and engagement measures where we allowed the index visit and the follow-up visits to be for either the mental health or substance use disorder. Since the relationships observed were similar to the original specifications, we present data only from the original specifications, which

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