

Effect of Depression Care on Outcomes in COPD Patients With Depression*

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Background: Although depression among COPD patients is a common problem with important consequences for the management of COPD and overall outcomes, the proportion of those who receive guideline-concordant depression care is low. Guideline-concordant depression care is associated with fewer depressive symptoms and lower risk for psychiatric hospitalization; however, it is unknown whether guideline-concordant depression care favorably impacts COPD-related outcomes for patients with both conditions.

Methods: This retrospective cohort study investigated 5,517 veterans with COPD who experienced a new treatment episode for depression. Guideline-concordant depression care was defined as having an adequate supply of antidepressant medication and sufficient follow-up care. Multivariate methods were used to examine the relationship between the receipt of guideline-concordant depression care and (1) COPD-related hospitalization and (2) all-cause mortality 2 years after the depression episode, while controlling for care setting and other covariates.

Results: There was no association between the receipt of guideline-concordant depression care and COPD-related hospitalization (odds ratio [OR], 0.98) or all-cause mortality (OR, 0.95). However, patients seen in mental health settings during their depressive episode had 30% lower odds of 2-year mortality than patients seen in primary care.

Conclusions: For patients with COPD and depression, interacting with a mental health professional may be an important intervention. However, receiving guideline-concordant depression care, as outlined in common quality monitors, was not significantly associated with decreased hospitalization or mortality. These findings suggest that more referrals to specialty care or better care coordination with mental health specialty care may lead to a significant reduction in mortality risk for these patients.

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Key words: COPD; depression; evidence-based treatment; mortality

Abbreviations: CI = confidence interval; ICD-9 = *International Classification of Diseases*, ninth revision; OR = odds ratio; VA = Department of Veterans Affairs; VISN = Veterans Affairs Integrated Service Network

Depression among COPD patients is a common problem with important consequences for health outcomes. The prevalence of depressive

symptoms among COPD patients has been estimated to be 40 to 50%.^{1–3} In COPD patients, depression is a strong predictor of COPD treatment failure,⁴ diminished functioning,^{5,6} quality of life,^{7–9} and mortality.^{7,10,11} Therapy with antidepressant medications has been shown¹² to be effective for

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treating depression among patients with comorbid medical conditions. The effect of antidepressant treatment on COPD outcomes for persons with both depression and COPD is less clear.¹³⁻¹⁸

A related issue here is the emphasis over the past few years on improving the quality of depression care, particularly for patients with comorbid medical conditions. Evidence-based, practice guidelines^{19,20} for depression care are associated with fewer depressive symptoms and a lower risk for psychiatric hospitalization. What is unclear from these studies is how evidence-based depression care impacts outcomes for persons with depression and a medical comorbidity in clinical settings. There is limited evidence that antidepressant medication adherence is associated with better adherence to comorbid disease medication,²¹ but the relationship between antidepressant medication adherence and comorbid treatment adherence has not been examined in patients with depression and COPD. Several investigators have reported poor acceptance of therapy with antidepressants by depressed patients with COPD,^{15,22} as well as lower adequacy of acute phase antidepressant treatment in depressed veterans with COPD.²³ However, patients who receive guideline-concordant depression care may more successfully manage their COPD in the near term, reducing their risk of hospitalization and mortality. The objective of the present study was to assess the impact of short-term, evidence-based depression care on hospitalization and mortality outcomes in the 2-year period following depression treatment for a large cohort of individuals with COPD and depression.

MATERIALS AND METHODS

This study examines a retrospective cohort of veterans with COPD and depression; full details regarding the study design have been described previously.²⁴ Briefly, Department of Veterans Affairs (VA) administrative data were used to identify patients who received a diagnosis of COPD (*International Classification of Diseases*, ninth revision [ICD-9] codes 491.x, 492.x, and 496) any time between October 1, 1997, and September 30, 1998. Among these patients, we identified those who had experienced a new treatment episode for depression (*ie*, the treatment period following a new depression diagnosis) based on whether they had the following: (1) an eligible depression diagnosis between February 1, 1999, and September 30, 2002, following 120 days without a depression diagnosis; (2) an index antidepressant prescription either 30 days before or 14 days after this depression diagnosis; and (3) did not have a concurrent diagnosis of schizophrenia or bipolar disorder. Patients could not have filled a prescription for an antidepressant in the 90 days before their index antidepressant prescription. The Institutional Review Board at the Hines VA Hospital approved the study, and the need for written informed consent was waived.

Guideline-Concordant Depression Care as a Predictor of Outcomes

Guideline-concordant care for patients with new treatment episodes of major depression was defined according to the VA performance criteria (modified from the Healthcare Effectiveness Data and Information Set) and consists of two separate criteria, a medication criterion and a follow-up visits criterion. To meet the medication criteria, patients had to have an adequate supply of antidepressants to cover at least 84 days of the 114 days following the day of the first antidepressant prescription associated with the qualifying depression event (*ie*, the index date). To meet the criteria for follow-up visits, patients had to have at least three qualifying follow-up visits during the 84-day period following their diagnosis (*ie*, the acute phase), where one of the qualifying visits could be a telephone contact. We determined whether patients met the medication criteria and follow-up criteria separately and whether patients met both criteria.

Care Setting as a Predictor of Outcomes

The care setting was defined as the sector or location of care (primary care, mental health specialty, pulmonary medicine, or other specialty) where patients received outpatient treatment. Looking at all outpatient visits, we identified whether patients were not seen in a mental health setting prior to their treatment episode but received mental health specialty care during their treatment episode. We also identified the care sectors in which patients had been seen 12 months prior to their depression treatment episode, using the following six mutually exclusive groups to describe the combinations of where care had been received: (1) primary care only; (2) mental health only (for patients with psychiatric diagnoses other than depression); (3) primary care and mental health; (4) primary care and pulmonary care; (5) primary care, mental health, and pulmonary care; or (6) other.

Outcomes: COPD Hospitalization and All-Cause Mortality

For each patient, we identified all hospitalizations that had occurred during the 2-year period immediately following the acute phase of the patient's depressive episode. We used ICD-9 diagnosis codes to determine which hospitalizations were related to the patient's COPD (67%) and which hospitalizations were related to mental health (32%). We also identified the patients who had died within the 2 years immediately following the acute phase of the patient's depressive episode, regardless of cause. Patients who died during the acute phase were excluded from the study cohort because they had been lost to follow-up. Death data were drawn from the VA Vital Status Master File, a registry containing death dates from all available sources.

Covariates

We used encounter data in the 12-month period preceding the index date to define covariates for age, race, and marital status. We identified individual comorbidities (coronary heart disease, lung cancer, colon cancer, stroke, hypertension, arthritis, diabetes, anxiety disorder, posttraumatic stress disorder, alcohol use disorder, drug use disorder, and dementia) from inpatient and outpatient encounters in the 12-month period prior to the index date using ICD-9 codes and included a count of total comorbid conditions as a covariate. To help characterize the severity of COPD, we determined the number of classes of respiratory medications and whether patients had a COPD-related hospitalization during the 12 months before the index date. We also

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