



Younger Adults Initiating Hemodialysis: Antidepressant Use for Depression Associated With Higher Health Care Utilization

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Abstract

Objective: To examine associations between antidepressant use and health care utilization in young adults beginning maintenance hemodialysis (HD) therapy.

Patients and Methods: Antidepressant use, hospitalizations, and emergency department (ED) visits were examined in young adults (N=130; age, 18-44 years) initiating HD (from January 1, 2001, through December 31, 2013) at a midwestern US institution. Primary outcomes included hospitalizations and ED visits during the first year.

Results: Depression diagnosis was common (47; 36.2%) at HD initiation, yet only 28 patients (21.5%) in the cohort were receiving antidepressant therapy. The antidepressant use group was more likely to have diabetes mellitus (18 [64.3%] vs 33 [32.4%]), coronary artery disease (8 [28.6%] vs 12 [11.8%]), and heart failure (9 [32.1%] vs 15 [14.7%]) ($P < .05$ for all) than the untreated group. Overall, 68 (52.3%) had 1 or more hospitalizations and 33 (25.4%) had 1 or more ED visits in the first year. The risk of hospitalization during the first year was higher in the antidepressant use group (hazard ratio, 2.35; 95% CI, 1.39-3.96; $P = .001$), which persisted after adjustment for diabetes, coronary artery disease, and heart failure (hazard ratio, 1.94; 95% CI, 1.22-3.10; $P = .006$). Emergency department visit rates were similar between the groups.

Conclusion: Depression and antidepressant use for mood indication are common in young adult incident patients initiating HD and are associated with higher hospitalization rates during the first year. Further research should determine whether antidepressants are a marker for other comorbidities or whether treated depression affects the increased health care use in these individuals.

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In 2014, approximately 120,000 individuals developed end-stage renal disease in the United States.¹ Among this cohort was a small minority (13,630; 11%) of young adults aged 22 to 44 years who faced especially unique challenges because of this new reality. The first several months after dialysis initiation represents a difficult transition time marked by hospitalizations, emergency department (ED) visits, hospital readmissions, and premature deaths.²⁻⁴ Young adult patients may be particularly susceptible during this time, given the recent transition from pediatric to adult medical care,⁵ abrupt alteration in health and/or social status, potential onset of

major mental disorders in late teen/early adult years,^{6,7} and recent completion of neuromaturation during their early to mid-20s.⁸⁻¹⁰ Hence, despite having fewer medical comorbidities than older patients initiating dialysis, young adults had high rates of hospitalizations^{2,3} and an exceptionally high 30-day readmission rate (>40%).¹⁻³

The reason for increased health care use in young adults initiating maintenance hemodialysis (HD) is unclear. It is known that (1) psychosocial factors affect resource use as patients transition from pediatric to adult care teams^{11,12} and (2) depression, common in patients initiating dialysis,¹³⁻¹⁵ may be associated with



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increased morbidity.¹⁵⁻²⁴ Hence, given that dialysis dependency is a risk factor for depression and/or antidepressant use, we hypothesized that antidepressant use for depression may be a marker for the increased psychosocial distress that contributes to increased health care utilization in this otherwise “healthy” cohort of younger patients with HD.

In this study, we examined the association between antidepressant use, hospitalizations, and ED visits within the first year of HD initiation in young incident patients initiating HD. Identifying markers of psychosocial burden, such as depression, anxiety, and antidepressant pharmacotherapy, in incident patients may allow the development of interventions to reduce health care use and costs while improving quality of life.

PATIENTS AND METHODS

Cohort Selection

The Mayo Clinic Health System (MCHS) provides health care to nearly 400,000 residents in southeast Minnesota, northern Iowa, and southwest Wisconsin. The Mayo Clinic Dialysis Services (MCDS) provides all inpatient and outpatient HD in the MCHS. The study included all young adult patients (age, 18-44 years at initiation; n=161) initiating HD from January 1, 2001, through December 31, 2013, with Minnesota Research Authorization. Patients were excluded for lack of in-center maintenance dialysis therapy at MCDS beyond 30 days (n=31), leaving a final study cohort of 130 patients. The Mayo Clinic Institutional Review Board approved this study.

Data Collection

Patient demographic characteristics, comorbidities, and cause of kidney failure were obtained by electronic medical record review.²⁵⁻²⁷ Psychiatric history, substance use history, and patient-reported suicide attempts were obtained by review of clinical notes, patient-completed medical history forms, and outside medical records from institutions beyond MCHS. Records were also reviewed for physician diagnoses of depressive disorders using *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* terms of *depression* and *depressive disorder* with any modifiers, as well as *dysthymic disorder*. The same method

was implemented for diagnoses of other psychiatric conditions. Psychiatric diagnoses contained in *DSM-IV*, except substance abuse disorders, were categorized into anxiety, bipolar, psychotic, adjustment, personality, and other disorders. Substance use history included tobacco use, alcohol abuse/dependence, and illicit substance abuse/dependence within 6 months before dialysis initiation. Illicit substances were classified as cannabis, heroin/cocaine, methamphetamines, nonopioid prescription pills, opioid (inappropriate use or not taken as prescribed), and other substances (including “street drugs” or psilocybin mushrooms). Alcohol abuse/dependence was based on *DSM-IV* criteria or clinical documentation of “excessive” alcohol use, “abuse,” or previous involvement in an alcohol rehabilitation program.

Antidepressant Therapy

Antidepressant medication use was chosen as the marker for depression, as it reflects a depressive disorder of sufficient severity to justify pharmacotherapy. An electronic medical record review of medication lists and clinical notes was used to identify antidepressant pharmacotherapy at dialysis initiation. *Antidepressant therapy use at HD initiation* was defined as (1) active use of antidepressant medication and confirmed by (2) documented indication of treatment of a depressive disorder. Antidepressants taken for a nondepressive disorder were recorded, but patients were not classified in the antidepressant use group. Pharmacotherapy for depression was categorized as selective serotonin reuptake inhibitor, serotonin-norepinephrine reuptake inhibitor, tricyclic antidepressant, bupropion, or other (such as monoamine oxidase inhibitors or neuroleptic agents with a primary indication of mood disorder treatment). The untreated group at baseline was also followed for identification of antidepressant therapy initiation during the study period.

Outcomes

The 2 primary outcomes included hospitalizations and ED visits (without subsequent hospitalization) within the first year of HD initiation. Patients were followed for 1 year, starting on the date of HD initiation and censored at death, voluntary withdrawal of

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