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Outcomes and palliative care utilization in patients with dementia and acute abdominal emergency: opportunities for surgical quality improvement

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ABSTRACT

Background. When patients with dementia develop acute surgical abdomen, patients, surrogates, and surgeons need accurate prognostic information to facilitate goal-concordant decision making. Palliative care can assist with communication, symptom management, and family and caregiver support in this population. We aimed to characterize outcomes and patterns of palliative care utilization among patients with dementia, presenting with abdominal surgical emergency.

Method. We retrospectively queried the National Inpatient Sample for patients aged >50 years with dementia and acute abdominal emergency who were admitted nonelectively 2009–2013, utilizing ICD-9-CM codes for dementia and surgical indication. We characterized outcomes and identified predictors of palliative care utilization.

Results. Among 15,209 patients, in-hospital mortality was 10.2%, the nonroutine discharge rate was 67.2%, and 7.5% received palliative care. Patients treated operatively were less likely to receive palliative care than those who did not undergo operation (adjusted OR = 0.50; 95% CI 0.41–0.62). Only 6.4% of patients discharged nonroutinely received palliative care.

Conclusion. Patients with dementia and acute abdominal emergency have considerable in-hospital mortality, a high frequency of nonroutine discharge, and low palliative care utilization. In this group, we discovered a large gap in palliative care utilization, particularly among those treated operatively and those who are discharged nonroutinely.

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Introduction

The prevalence of cognitive impairment in older acute general surgery patients is high.¹ Hospitalized patients with dementia are at increased risk of severe sepsis and acute organ dysfunction.² Among elderly patients admitted to a hospital with an acute injury or illness, such as hip fractures or pneumonia, those with end-stage dementia have been shown to be at higher risk of mortality regardless of intensity of care, compared with cognitively intact patients.³ Furthermore, among older patients undergoing emergency laparotomy,

dementia has been found to be predictive of higher mortality.⁴ Accurate prognostication about outcomes—not only mortality but also patient-centered outcomes such as functional status—assists patients, their surrogates, and their physicians in making treatment decisions and in identifying appropriate candidates for palliative care.

The role of palliative care in patients with serious or life-limiting illnesses is well studied. Palliative care, an interdisciplinary medical specialty focused on reducing suffering and improving quality of life for patients with serious illness and their families,⁵ has been linked to improved patient satisfaction, treatments better aligned with patients' wishes, and overall reduced healthcare costs.^{6,7} For patients with dementia and critical illness, it has been shown to be associated with better end-of-life care and decreased use of resources.⁸ In surgical patients, palliative care is associated with improved symptom management and decreased cost.⁹ However, currently little is known about palliative care utilization among patients with dementia in possible need of surgical intervention. This raises the question of whether the acute surgical emergency represents an appropriate episode during which to introduce palliative care for patients with dementia.

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The purpose of this study is two-fold: (1) to define palliative care needs, based on the outcomes, of patients with dementia who develop acute abdominal emergency and (2) to describe the extent and landscape of unmet palliative care need by identifying specific patient and hospital characteristics associated with particular discrepancy between palliative care need and utilization in this population. We hypothesized that patients with dementia who develop acute abdomen frequently have adverse outcomes, yet rarely receive palliative care support.

Methods

Data source

We retrospectively queried the National Inpatient Sample (NIS) database between the years 2009–2013. NIS is a 20% stratified sample of all nonfederal hospital discharges in the United States and contains data on patient characteristics, diagnoses and procedure codes, comorbidity, duration of stay, charges, and discharge disposition.^{10,11} It is one of the largest all-payer inpatient databases with close to 7 million discharge records per year. This study was deemed exempt from review by the Institutional Review Board of Rutgers New Jersey Medical School as the NIS is a large deidentified administrative dataset.

Study population

We identified patients aged older than 50 years with dementia and acute abdomen who were admitted nonelectively, utilizing In-

ternational Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) primary and secondary diagnosis codes for dementia and surgical diagnosis, respectively (Fig). Modeling our approach on that of previously published work,⁶ we restricted surgical diagnoses to those most closely associated with peritonitis and likely to warrant surgical intervention: gastrointestinal obstruction, ischemia, and perforation, as defined by the primary and secondary ICD-9-CM diagnosis codes listed in [Appendix S1](#).

Study variables

Patient characteristics included surgical indications, age (categorized into the categories 51–60 years, 61–70 years, 71–80 years, 81–89 years, and 90 years or older), sex, race (White, Black, Hispanic, Asian/Pacific Islander, Other, and Unknown), payer status (Medicare or non-Medicare), median household income quartiles for patient's ZIP code, Elixhauser Comorbidity Count (1, 2, 3, 4, or more), and Elixhauser Comorbidity Score.^{12–14} When counting comorbidities, we excluded neurological chronic comorbidity (CM-Neuro) from the list of Elixhauser comorbidities available in the NIS Severity Files. Elixhauser comorbidity score was calculated by assigning weights to the comorbidity indicator variables. Hospital characteristics included bed size (small, medium, and large), location/teaching status (rural, urban/non-teaching, and urban/teaching), and region (Northeast, Midwest, West, and South). Outcome measures included in-hospital mortality, discharge disposition (as a surrogate for functional status), duration of stay, total charges, surgical management strategy (as defined by the ICD-9-CM primary and secondary procedure codes in [Appendix S1](#)), encounter for palliative

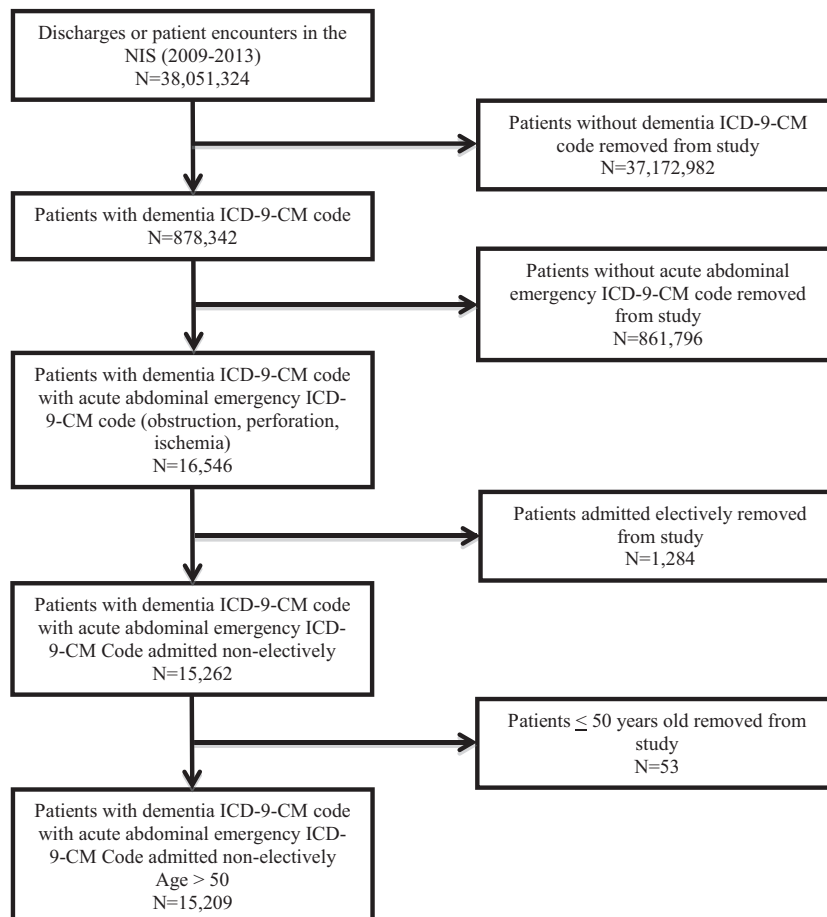


Fig. Schema for patient identification.

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