

Risk Factors for Persistent Frequent Emergency Department Use in Medicare Beneficiaries

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Study objective: We examine factors associated with persistent frequent emergency department (ED) use during a 2-year period among Medicare beneficiaries.

Methods: We conducted a retrospective, claims-based analysis of fee-for-service Medicare beneficiaries, using the Chronic Condition Data Warehouse's random 20% sample files. We used multinomial logistic regression models to compare frequent ED use (defined as 4 or more ED visits per year) with infrequent use (1 to 3 visits per year), non-ED use, and death in 2010 as a function of sociodemographic, primary care, clinical characteristics, and 2009 ED use.

Results: Approximately 1.1% of Medicare beneficiaries were persistent frequent ED users, defined as experiencing frequent ED use in 2009 and 2010 consecutively. Of the 3.3% of Medicare beneficiaries who were frequent ED users in 2009, 34.3% were frequent ED users, 19.4% were non-ED users, 39.0% were infrequent ED users, and 7.4% died in 2010. Frequent ED use in 2009 was highly associated with frequent ED use in 2010 (relative risk ratio 35.2; 95% confidence interval 34.5 to 35.8). Younger age, Medicaid status, and mental illness were also strong predictors of frequent ED use. The probability of frequent ED use in 2010 was 3.4% for the total sample, but was 19.4% for beneficiaries who were frequent users in 2009 and 49.0% for beneficiaries in the youngest age group who had mental illness, Medicaid, and frequent ED use in 2009.

Conclusion: Efforts to curtail frequent ED use in Medicare should focus on disabled, socially vulnerable beneficiaries. [Ann Emerg Med. 2016;67:721-729.]

Please see page 722 for the Editor's Capsule Summary of this article.

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INTRODUCTION

Background

The issue of high-cost health care users, particularly frequent emergency department (ED) users, is of great practical and policy significance. Despite representing only 8% of ED patients, people who use the ED 4 or more times annually (frequent ED users) are estimated to account for 28% of all ED visits in the United States.^{1,2} Frequent ED users also tend to incur more resource-intensive ED visits.^{1,3,4} Frequent ED use is of particular consequence in the Medicare population because Medicare beneficiaries are nearly twice as likely as privately insured individuals to be frequent ED users.²

Importance

Although frequent ED use has been widely studied, little is known about whether the frequent ED users in one year tend to remain frequent ED users in the subsequent year. Studies of single EDs have observed that ED use among frequent ED

users in one year is lower in the following year but are methodologically limited by the inability to ascertain ED use at other institutions.⁴⁻⁶ Given the disproportionate risk of frequent ED use among Medicare beneficiaries and widespread delivery reform efforts now being undertaken by the Centers for Medicare & Medicaid Services (CMS) to decrease costs and improve quality of care, understanding the prevalence of persistent frequent ED use and characteristics of beneficiaries who are most likely to remain frequent ED users could be timely and valuable to policy intervention. To our knowledge, no studies to date have used nationally representative, population-based data to examine how frequent ED use changes over time.

Cross-sectional studies in the general population consistently find that sociodemographic, clinical, and health-system-level factors contribute to frequent ED use. More specifically, minority race, low educational attainment, low income, public insurance, a usual source of outpatient medical care (other than the ED), high use of

Editor's Capsule Summary*What is already known on this topic*

Frequent emergency department (ED) users represent a small proportion of all patients but account for a substantial number of visits.

What question this study addressed

What are the features of patients with higher ED use in the Medicare population?

What this study adds to our knowledge

Having used the ED frequently in the previous year, qualifying for Medicare at a young age, having mental illness, and using Medicaid were the strongest predictors of using the ED 4 times or more per year.

How this is relevant to clinical practice

Resources to decrease frequent ED use in the Medicare population should target patients with these risk factors.

outpatient health care resources, and poor physical and mental health have all been linked with greater odds of frequent ED use.^{2-4,6-12} The Andersen model posits that an individual's use of health services is a function of his or her predisposition to seek care (eg, demographic characteristics, social structure, beliefs), factors that affect access to care (eg, availability of health insurance that would enable or impede use), and underlying clinical needs (eg, chronic medical conditions, mental health, cognitive function) that precipitate an encounter with the health care system.¹³ We use the Anderson model to assess the combined influence of broad categories of predisposing, enabling, and clinical need to guide our analysis and the selection of measures.

Goals of This Investigation

This study examines the phenomenon of frequent ED use among Medicare beneficiaries, focusing specifically on stability of frequent ED use in 2009 and 2010 and individual factors associated with persistent ED use. Our goals were (1) to estimate the probability of transitioning into and out of frequent ED use during 2 consecutive years; (2) to understand what sociodemographic, primary care, and clinical characteristics correlate with persistent frequent ED use during 2 years; and (3) to describe differences in characteristics among patients who were persistent frequent ED users versus less frequent and nonusers and those who died in 2010. To our knowledge, this study provides the first estimates of the prevalence of

persistent frequent ED use among Medicare beneficiaries and distinguishes risk factors that can be potentially addressed through interventions.

MATERIALS AND METHODS**Study Design and Setting**

We conducted a retrospective analysis of secondary data from the Medicare program and other linked sources. We used 3 databases, including the Chronic Condition Data Warehouse, hierarchic categorical condition scores, and timeline files. The Chronic Condition Data Warehouse includes fee-for-service billing history for services reimbursed under Medicare Parts A, B, and D, as well as data about beneficiary demographic characteristics, linked at the beneficiary level with a unique identification number.¹⁴ The Chronic Condition Data Warehouse contains data for all Medicare beneficiaries, but also provides 20% and 5% random sample files for research purposes. Hierarchic categorical condition scores are measures of predicted use used by the CMS to risk-adjust reimbursement to managed care plans.¹⁵ The timeline file is an internal CMS database that lists the type of residence of a beneficiary on each day of a calendar year, including community, inpatient hospital, skilled nursing facility, or residential nursing facility. Beneficiaries with 3 or more months of nursing home stays are assigned an institutional flag that is used to calculate their hierarchic categorical condition score. We used the same standard to indicate institutionalized beneficiaries.

Selection of Participants

We started with a random 20% sample of beneficiaries enrolled in Medicare throughout 2009 and 2010 (n=9,820,215). For our final analytic sample, we included all beneficiaries in the random sample who were alive through 2009, lived in the community, and were continuously enrolled in Medicare fee-for-service Parts A and B throughout 2009 and 2010, as well as beneficiaries who met enrollment criteria in 2009 and died in 2010. We excluded beneficiaries who died in 2009 and those enrolled in Medicare Advantage managed care plans. Our final study sample consisted of 5,400,237 Medicare beneficiaries, which represented 55% of the random 20% sample.

Methods of Measurement

We examined beneficiary age, sex, race, and Medicaid eligibility. We categorized beneficiary age at the end of 2009 as 18 to 34 years and in 10-year increments from aged 35 to 85 years and older. We used the Research Triangle Institute race code because previous research has demonstrated that it captures more beneficiaries of

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