



# Thirty-day Hospital Readmissions in Patients with Non-ST-segment Elevation Acute Myocardial Infarction

Mayra Tisminetzky, MD, PhD,<sup>a</sup> David D. McManus, MD, ScM,<sup>a,b</sup> Nathaniel Erskine, BA,<sup>a</sup> Jane S. Saczynski, PhD,<sup>a,c,d</sup> Jorge Yarzebski, MD, MPH,<sup>a</sup> Edgard Granillo, MD,<sup>a</sup> Joel Gore, MD,<sup>a,b</sup> Robert J. Goldberg, PhD<sup>a,c</sup>

<sup>a</sup>Department of Quantitative Health Sciences, <sup>b</sup>Division of Cardiovascular Medicine, Department of Medicine, <sup>c</sup>Meyers Primary Care Institute, <sup>d</sup>Division of Geriatric Medicine, Department of Medicine, University of Massachusetts Medical School, Worcester.

## ABSTRACT

**BACKGROUND:** Limited data exist about relatively recent trends in the magnitude and characteristics of patients who are rehospitalized shortly after admission for a non-ST-segment elevation acute myocardial infarction (NSTEMI). This observational study describes decade-long trends (1999-2009) in the magnitude and characteristics of patients readmitted to the hospital within 30 days of hospitalization for an incident (initial) episode of NSTEMI.

**METHODS:** We reviewed the medical records of 2249 residents of the Worcester (Mass) metropolitan area who were hospitalized for an initial NSTEMI in 6 biennial periods between 1999 and 2009 at 3 central Massachusetts medical centers.

**RESULTS:** The average age of our study population was 72 years, 90% were white, and 46% were women. The proportion of patients who were readmitted to the hospital for any cause within 30 days after discharge for an NSTEMI remained unchanged between 1999 and 2009 (approximately 15%) in both crude and multivariable adjusted analyses. Slight declines were observed for cardiovascular disease-related 30-day readmissions over the 10-year study period. Women, elderly patients, those with multiple chronic comorbidities or a prolonged index hospitalization, and patients who developed heart failure during their index hospitalization were at higher risk for being readmitted within 30 days than respective comparison groups.

**CONCLUSION:** Thirty-day hospital readmission rates after hospital discharge for a first NSTEMI remained stable between 1999 and 2009. We identified several groups at higher risk for hospital readmission; further surveillance efforts and/or tailored educational and treatment approaches remain needed for these groups.  
© 2015 Elsevier Inc. All rights reserved. • *The American Journal of Medicine* (2015) 128, 760-765

**KEYWORDS:** Hospital readmissions; non-ST-segment elevation acute myocardial infarction

**Funding:** Supported by National Institutes of Health grant RO1 HL35434. MT is funded by Diversity Supplement R01 HL35434-29. Partial salary support is additionally provided to RG, JSS, and JG by National Institutes of Health grant U01HL105268-01. DDM is supported by award number KL2RR031981 funded through the National, Heart, Lung, and Blood Institute. JSS is supported by award number K01AG033643 from the National Institute on Aging.

**Conflicts of Interest:** None.

**Authorship:** All authors had access to the data and had a role in writing the manuscript.

Requests for reprints should be addressed to Robert J. Goldberg, PhD, University of Massachusetts Medical School, Department of Quantitative Health Sciences, Division of Epidemiology of Chronic Diseases and Vulnerable Populations, 368 Plantation Street, Worcester, MA 01605.

E-mail address: [Robert.Goldberg@umassmed.edu](mailto:Robert.Goldberg@umassmed.edu)

Coronary heart disease is a leading cause of morbidity, mortality, and functional disability in American adults.<sup>1-3</sup> However, rapid and impactful management strategies have reshaped the contemporary epidemiology of patients admitted with an acute coronary event, with an increasing proportion of patients surviving their index hospitalization.<sup>2,3</sup> As such, insurance payers, physicians, and patients are focusing on a number of important postdischarge outcomes, most notably the risk of rehospitalization.<sup>4,5</sup> Rehospitalization after an index coronary event has garnered increased scrutiny during recent years because it is both common (1 in 5 Medicare beneficiaries is readmitted to the hospital within 30 days of being discharged for an

acute myocardial infarction [AMI]) and costly with estimated annual excess costs of \$17 billion in the United States.<sup>4-8</sup>

Given the aging of the US population and increasing use of high-sensitivity biomarkers over the last 15 years, non-ST-segment elevation myocardial infarction (NSTEMI) has become increasingly prevalent.<sup>2,3</sup> Few studies, however, have examined the magnitude, and trends over time therein, of short-term hospital readmissions among patients discharged from the hospital after an NSTEMI.<sup>2,3</sup>

Reductions in hospital readmissions after an AMI will be facilitated by greater understanding of the magnitude, timing, and reasons for these events, as well as by identifying the characteristics of patients at high risk for being rehospitalized.<sup>6-11</sup> Using data from the Worcester Heart Attack Study,<sup>12-14</sup> we examined overall, and decade-long trends (1999-2009), in the magnitude, timing, and reasons for hospital readmission during the first 30 days after hospital discharge for an initial NSTEMI among residents of central Massachusetts.

## METHODS

Data for this study were derived from the Worcester Heart Attack Study.<sup>12-14</sup> This is an ongoing population-based investigation that is examining long-term trends in the incidence rates, hospital, and postdischarge case-fatality rates of AMI among residents of the Worcester (Mass) metropolitan area.

For the present study we restricted our study sample to patients with an NSTEMI, because of the relatively high prevalence of NSTEMI and the lack of published data about the characteristics of patients with NSTEMI readmitted to the hospital after an index hospitalization. A diagnosis of NSTEMI was accepted when elevations in cardiac biomarker assays, including troponin, were accompanied by typical acute clinical symptomatology and ST depression and T inversion on the electrocardiogram.<sup>15,16</sup> We further restricted this patient population to those with an incident NSTEMI, to avoid potential confounding by the patient's prior history of AMI. On the basis of an independent review of previous and current hospital medical records by trained nurse and physician abstractors, patients with a history of AMI were excluded from the present population.<sup>15,16</sup> Only patients who had their index hospitalization for AMI at the 3 largest tertiary care and community medical centers in central Massachusetts, which comprise the vast majority of all hospital admissions for AMI among residents of central Massachusetts, were included in the present study.

## Data Collection

Trained nurses and physicians abstracted demographic and clinical data from hospital medical records. Abstracted information included patient's age, sex, medical history, physiologic factors, laboratory test results, length of hospital stay, and hospital discharge status.<sup>12-14,17</sup> Information about

the hospital use of important cardiac medications, coronary angiography, percutaneous coronary intervention (PCI), and coronary artery bypass graft (CABG) surgery was collected. Development of several significant clinical complications (eg, atrial fibrillation, cardiogenic shock, stroke, heart failure) during the patient's index hospitalization was defined according to standardized criteria.<sup>18-21</sup>

A hospital readmission was defined as the first admission to a

participating study hospital within 30 days of discharge after the patient's index hospitalization for an initial NSTEMI during the years under study. Readmission data were abstracted from the electronic medical records data warehouse at our principal study sites, namely the University of Massachusetts-Memorial Medical Center and Saint Vincent Medical Center. Two investigators adjudicated whether the principal reason for readmission was cardiovascular disease (CVD) or non-CVD related. Indications for CVD-related hospitalizations included conditions such as an acute coronary syndrome, diabetes mellitus, and chronic ischemic heart disease. Examples of non-CVD-related hospitalizations included urinary tract infections and bone fractures. This study was approved by the institutional review board at the University of Massachusetts Medical School.

## Data Analysis

The rates of hospital readmissions during the first 30 days after hospital discharge were calculated in a standard manner. Differences in the characteristics of patients who were readmitted to the hospital during the first 30 days after discharge for an initial NSTEMI were compared with those who were not readmitted, through the use of  $\chi^2$  tests for discrete variables and *t* tests for continuous variables. For ease of analysis and interpretation, trends in 30-day hospital readmissions were examined during the aggregated study years of 1999/2001, 2003/2005, and 2007/2009. Crude and multivariable adjusted logistic regression analyses were used to examine demographic, clinical, and other factors associated with 30-day readmissions in study patients, as well as changes over time in the rates of hospital readmissions.

## RESULTS

A total of 2249 residents of central Massachusetts were hospitalized with a confirmed initial NSTEMI at the 3 major

### CLINICAL SIGNIFICANCE

- Thirty-day hospital readmission rates after NSTEMI remained stable from 1999 to 2009.
- More than half of NSTEMI patients were readmitted for a CVD-related reason.
- The elderly and patients with comorbidities were at greatest risk for readmission.

Download English Version:

<https://daneshyari.com/en/article/2718486>

Download Persian Version:

<https://daneshyari.com/article/2718486>

[Daneshyari.com](https://daneshyari.com)