Published in final edited form as:

Ann Epidemiol. 2015 July ; 25(7): 499–504.e1. doi:10.1016/j.annepidem.2015.02.004.

Characteristics and prognosis of acute myocardial infarction by discharge diagnosis: the REasons for Geographic And Racial Differences in Stroke study

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Abstract

Purpose—To compare the characteristics and prognosis of acute myocardial infarctions (AMIs) that were not the primary reason for hospitalization, and thus not primary discharge diagnosis, to AMIs that were the primary reason for hospitalization.

Methods—Primary discharge diagnoses for REasons for Geographic And Racial Differences in Stroke (REGARDS) participants (black and white men and women age ≥ 45 years) with adjudicated AMIs were categorized as “AMI” or “other”. Cox models were used to compare mortality up to 5 years post-AMI between primary discharge diagnoses of AMI and other.

Results—Of 871 AMIs, primary discharge diagnosis was not AMI in 550 (63%). When primary discharge diagnosis was not AMI, average troponin elevations were smaller and heart failure was more common. Adjusted for participant and hospitalization characteristics, all-cause, coronary heart disease, and cardiovascular disease mortality following AMI were similar between groups (hazard ratios, 95% confidence intervals 1.08, 0.80–1.47; 1.29, 0.76–2.18; and 0.86, 0.58–1.27; respectively).

Conclusions—Studies limited to individuals with primary discharge diagnosis of AMI may underestimate the burden of AMI and exclude a group with elevated risk of all-cause, coronary heart disease, and cardiovascular disease mortality.

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Keywords

mortality; myocardial infarction; prognosis

INTRODUCTION

A substantial proportion of acute myocardial infarctions (AMIs) occur during hospitalization for other acute illness, surgery, or trauma [1–5]. Because billing rules require that the primary hospital discharge diagnosis represent the principal reason for hospitalization, these individuals have primary discharge diagnoses other than AMI. Many studies of AMI incidence, characteristics, and prognosis, particularly those using insurance claims data, include only events with AMI as a primary hospital discharge diagnosis. Thus, relatively little has been reported about AMIs that were not the primary reason for admission.

There are limited data comparing the risk factor profiles and clinical characteristics of individuals who have AMIs listed as the primary hospital discharge diagnosis to individuals with AMI but other primary discharge diagnoses. A small number of studies, each of which were conducted in select populations, suggest that participants whose AMIs were not the primary cause of hospitalization had worse in-hospital and short-term mortality rates than participants with AMI as the primary cause of hospitalization [1–3]. However, the association with longer-term mortality and with coronary heart disease (CHD) and cardiovascular disease (CVD) mortality is not clear. We therefore examined the risk factor profiles, clinical characteristics, and all-cause, CHD, CVD, and non-CVD mortality by hospital discharge diagnosis (primary discharge diagnosis of AMI or other primary discharge diagnosis) among participants of the REasons for Geographic And Racial Differences in Stroke (REGARDS) study who had expert-adjudicated AMI.

METHODS**Study population**

REGARDS is a prospective cohort study of 30,239 black and white adults ≥45 years of age residing in the 48 contiguous United States and Washington, DC, recruited between 2003 and 2007 [6]. The study was designed to recruit equal numbers of black and white and male and female participants and 20% of participants from the Stroke Buckle (coastal North Carolina, South Carolina, and Georgia), 30% from the Stroke Belt (remaining areas of North Carolina, South Carolina, and Georgia and Tennessee, Mississippi, Alabama, Louisiana, and Arkansas), and 50% from remaining 48 contiguous United States [6]. Participants completed a baseline computer-assisted telephone interview and in-home study visit. During follow-up telephone interviews conducted every 6 months, participants or their proxies were asked to report hospitalizations and reasons for hospitalization. Of relevance to the current study, medical records were retrieved and adjudicated for hospitalizations judged by the REGARDS study team to be heart-related (e.g., self-reported hospitalization for “heart attack” or “stents”) [7]. For this investigation, we included REGARDS participants with adjudicated AMIs through December 31, 2010 who had documentation of the discharge diagnoses in the retrieved medical records. For participants with multiple AMIs, we

included only the first event. REGARDS was approved by the institutional review boards of the participating institutions, and participants provided written informed consent.

Baseline participant characteristics

During the baseline computer-assisted telephone interview, participants were asked to self-report age, sex, race, income, educational attainment, cigarette smoking, self-rated health, use of antihypertensive medications, and history of AMI, coronary revascularization, and diabetes. As part of the home visit, height, weight, and blood pressure were measured, an electrocardiogram was conducted, blood and urine samples were collected, and a pill bottle inventory was conducted. Baseline use of statins was assessed through the pill bottle inventory. History of CHD was defined as self-report of AMI or revascularization or evidence of CHD on electrocardiogram. History of diabetes was defined as self-reported diabetes or elevated blood glucose. Body mass index was calculated as weight in kg divided by height in m². Total and high density lipoprotein (HDL) cholesterol and triglycerides were measured in the blood samples, and low density lipoprotein (LDL) cholesterol was calculated using the Friedewald equation [8]. Serum creatinine was measured, and estimated glomerular filtration rate was calculated using the Chronic Kidney Disease Epidemiology Collaboration equation [9]. Urinary albumin and creatinine were measured, and their ratio was calculated. Some participants were recruited before measurement of kidney markers was added to the protocol. Among participants without a history of CHD, the 10-year Framingham CHD risk score was calculated [10].

Adjudication of AMI

Adjudication of AMI was based on published guidelines [11]. Medical records were reviewed by trained clinician-investigators for signs and symptoms of ischemia, rising and/or falling patterns of cardiac troponin or creatine kinase-MB with a peak more than two times the upper limit of normal over a period of at least 6 hours, and electrocardiogram findings consistent with ischemia [7]. Each potential AMI case was reviewed by 2 adjudicators and disagreements were resolved by committee. Only events classified as definite or probable AMIs were included in this analysis.

Identification of hospital discharge diagnosis

The primary discharge diagnosis was classified as AMI or other primary discharge diagnosis; information on discharge diagnoses other than AMI was not collected. The primary hospital discharge diagnosis was determined through review of the hospital discharge coding sheet. For participants without a discharge coding sheet available, the hospital discharge summary was used to assign the primary discharge diagnosis. The hospital discharge coding sheet is prepared by medical coders based on medical records with standardized diagnosis codes for billing purposes. The discharge summary is a description of the individual's health and hospital stay written and approved by the treating physicians.

Hospitalization characteristics

Age at AMI was calculated based on the self-reported birthdate. Maximum troponin level, electrocardiogram evidence of ischemia guided by the Minnesota code (positive or evolving

diagnostic, non-specific, or none) [12], chest pain, ischemic signs and symptoms, evidence of heart failure during hospitalization (excluding iatrogenic heart failure), revascularization during hospitalization, and evidence that the AMI was caused by a revascularization procedure were recorded from the medical records as part of the adjudication process. Microsize AMIs, very small non-ST segment elevation myocardial infarction AMIs, were defined as those with a maximum troponin $<0.5 \mu\text{g/L}$ that nevertheless met the adjudication criteria for AMI [7].

Mortality follow-up

Participants were followed from the date of their AMI until the earliest of the following: death, 5 years post-AMI, December 31, 2010, loss to follow-up, or withdrawal from REGARDS. Deaths were detected through contact with participant proxies and searches of the National Death Index and Social Security Administration's Master Death File. The main underlying cause of death was adjudicated by expert reviewers using death certificates, hospital records, autopsy findings, and interviews with proxies.

Statistical analysis

We calculated baseline and hospitalization characteristics for participants with and without AMI in the primary hospital discharge diagnosis position using means and standard deviations, medians and interquartile ranges, or counts and percentages, as appropriate. Tests of statistical significance were performed using analysis of variance when comparing means, Wilcoxon rank-sums test when comparing medians, and chi-square tests when comparing categorical variables. Additionally, we calculated weighted means, medians, and percentages accounting for the REGARDS sampling strategy. The weights were calculated using the post-stratification technique and population data from the 2000 US census and provide estimates for white and black US adults.

Kaplan-Meier cumulative incidence curves for all-cause, CHD, CVD, and non-CVD mortality by primary hospital discharge diagnosis, AMI or other, were constructed, with log-rank tests to test for statistically significant differences. We used Cox proportional hazards models to calculate hazard ratios. Initial models were adjusted for age at AMI, race, and sex. We then additionally adjusted for baseline characteristics that differed substantially between those with AMI as the primary discharge diagnoses and those with other primary discharge diagnoses: history of diabetes, history of CHD, and self-rated health (fair/poor or excellent/very good/good). Finally, we added hospitalization characteristics which included proxies for the severity of illness and may partially mediate the association between discharge diagnosis and mortality: microsize AMI, electrocardiogram evidence of ischemia, ischemic signs and symptoms, heart failure during hospitalization, and revascularization during hospitalization. We tested whether the association between discharge diagnosis and mortality varied by race and sex by including cross-product terms in the models; we did not find evidence for interactions (all p-values > 0.30). Tests for proportional hazards were conducted by including an interaction term between the hospital discharge diagnosis variable and the natural logarithm of follow-up time. We found evidence for violation of the proportional hazards assumption for non-CVD mortality. We therefore calculated hazard ratios for non-CVD mortality for <2.5 years and 2.5–5 years of follow-up. Because of

clinical diagnostic uncertainty surrounding events with very low troponin elevations, we conducted sensitivity analyses excluding participants with microsize AMIs (maximum troponin <0.5 µg/L).

SAS version 9.3 (Carey, NC) and Stata version 12 (College Station, TX) was used for statistical analysis. Two-sided p-values < 0.05 were considered statistically significant.

RESULTS

Discharge diagnoses of AMI cases

Of 1,003 REGARDS participants with adjudicated AMI, hospital discharge coding sheets were available for 352, and hospital discharge summaries were available for 519 of the remaining participants (Figure 1). These 871 REGARDS participants formed the study population. Participants without available hospital discharge coding sheets or hospital discharge summaries (n = 132) were excluded.

Overall, 321 REGARDS participants with adjudicated AMI (37%) had a primary hospital discharge diagnosis of AMI and 550 (63%) had primary hospital discharge diagnoses other than AMI. The proportion with a primary discharge diagnosis other than AMI was similar when abstracted from hospital discharge coding sheets (59%) and hospital discharge summaries (66%).

Baseline participant characteristics by discharge diagnosis

Compared to participants with AMI as the primary discharge diagnosis, those with primary discharge diagnoses other than AMI were more likely to be black and college graduates and had a higher average body mass index and systolic blood pressure, were more likely to have a history of CHD and diabetes, had lower LDL cholesterol, were more likely to take antihypertensive medications, and had worse self-rated health at entry into the REGARDS cohort (Table 1). Other baseline characteristics, including age, sex, income, cigarette smoking, and statin use were similar for participants with and without AMI as a primary discharge diagnosis. After weighting to the US population, differences between the groups with and without AMI as the primary discharge diagnosis persisted and individuals with primary discharge diagnoses other than AMI were more likely to use statins and have income <\$75,000 per year (Supplemental Table 1).

Hospitalization characteristics by discharge diagnosis

At the time of the AMI, participants with primary discharge diagnoses other than AMI had lower maximum troponin levels, were more likely to have microsize AMIs, and were less likely to have electrocardiogram evidence of ischemia, ischemic signs and symptoms including chest pain, and revascularization during hospitalization compared to participants who received a primary discharge diagnosis of AMI (Table 2). Participants with a primary discharge diagnosis other than AMI were more likely to have evidence of heart failure and more likely to die during their hospitalization. In weighted analyses, the pattern of differences in hospitalization characteristics across primary discharge diagnosis groups was similar (Supplemental Table 2).

Mortality following AMI

The cumulative incidence of all-cause and non-CVD mortality following an adjudicated AMI was higher among participants with primary discharge diagnoses other than AMI compared to participants with AMI as a primary discharge diagnosis ($p < 0.001$) (Figure 2). After adjusting for baseline characteristics and characteristics of the hospitalization, the hazard ratios comparing primary diagnosis other than AMI to primary diagnosis of AMI were 1.08 (95% CI 0.80–1.47) for all-cause and 1.71 (95% CI 1.00–2.95) for non-CVD mortality (Table 3). The hazard ratio for non-CVD mortality was higher soon after AMI than later in follow-up (hazard ratio 2.07 [95% CI 1.10–3.90] <2.5 years after AMI and 0.89 [95% CI 0.29–2.75] 2.5–5 years after AMI).

The cumulative incidence of CHD and CVD mortality was similar across primary discharge diagnosis groups. Hazard ratio comparing participants with and without a primary discharge diagnosis of AMI were not significantly different than 1 after adjusting for participant and hospitalization characteristics (hazard ratio for CHD mortality 1.29 [95% CI 0.76–2.18] and CVD mortality 0.86 [95% CI 0.59–1.27]).

Excluding participants with microsize AMIs, 295 individuals with adjudicated AMIs had a primary discharge diagnosis of AMI and 286 had other primary discharge diagnoses. In this population with maximum troponin $< 0.5 \mu\text{g/L}$, the hazard ratios adjusted for age, race, and sex comparing participants without to participants with a primary discharge diagnosis of AMI were 1.70 (95% CI 1.26–2.30), 1.60 (95% CI 0.97–2.63), and 1.30 (95% CI 0.90–1.90) for all-cause, CHD, and CVD mortality, respectively, and fully adjusted hazard ratios were 1.14 (95% CI 0.81–1.61), 1.27 (95% CI 0.74–2.20), and 0.92 (95% CI 0.61–1.41) for all-cause, CHD, and CVD mortality, respectively.

DISCUSSION

In this population of 871 black and white adults from the United States with expert-adjudicated AMI, more than half had a primary discharge diagnosis other than AMI. The unadjusted cumulative incidence of all-cause and non-CVD mortality following AMI was higher and CHD and CVD mortality was similar in individuals with primary hospital discharge diagnosis other than AMI compared to individuals with AMI as the primary discharge diagnosis. After adjusting for participant and hospitalization characteristics, participants with AMIs and a primary discharge diagnosis other than AMI had comparable risks of all-cause, CHD, and CVD mortality as participants with AMIs as the primary discharge diagnosis. The results were consistent when we excluded individuals with microsize AMIs (very small NSTEMIs). This suggests that AMIs occurring in the context of other illnesses are a common and potentially clinically important occurrence.

Many studies, particularly those which use insurance claims data to identify AMIs, are limited to individuals with AMI as the primary hospital discharge diagnosis [13–15]. Although this approach may result in a more homogenous study population, it could also produce a study that does not reflect the characteristics of all individuals with AMI. In prior studies, individuals who had AMIs while hospitalized for another cause had a higher risk of short-term mortality [1–3, 16]. For example, in the Veterans Health Administration system,

individuals experiencing in-hospital AMI had a 2-fold higher odds of death within 30 days compared to individuals who presented to the hospital with an AMI [1]. Individuals experiencing in-hospital AMIs also had longer hospital stays and more in-hospital cardiogenic shock and cardiac arrest [1]. Longer-term outcomes have not previously been well-described among individuals with AMI in the context of other illnesses.

Many AMIs are caused by disruption of atherosclerotic plaques in the coronary arteries leading to clots and ischemia (type 1 AMIs according to the Universal Definition of Myocardial Infarction) [17]. The higher prevalence of heart failure and procedure-related events among individuals in this study with primary discharge diagnoses other than AMI suggest that these events may be involve demand ischemia (type 2 AMIs) or related to revascularization procedures (type 4 and 5 AMIs) [17]. The incidence and prognosis of Type 2, 4 and 5 AMIs are not well described, and the appropriate secondary prevention treatment is unclear [5]. However, in the TRITON-TIMI 38 Trial all types of AMI were associated with a substantially increased risk of CVD death despite differences in the mechanism of ischemia [18]. The classification of MI into subtypes was beyond the scope of the current study.

Individuals with secondary diagnosis of AMI may have competing treatment priorities. The condition that triggered the hospitalization may appropriately be the focus of medical and surgical care during the hospitalization. In some studies, individuals with AMI as a secondary diagnosis received less intensive in-hospital CHD treatment than individuals with MI as a primary diagnosis [1–4, 16]. In the Veterans Health Administration, individuals with in-hospital AMIs were less likely to be under the care of a cardiologist and were less likely to receive percutaneous coronary intervention within 12 hours of symptom onset and to receive percutaneous coronary intervention or coronary artery bypass grafting in the 30 days following hospitalization [1]. In contrast, use of in-hospital reperfusion therapy was similar between AMI as the primary and secondary diagnosis in a study from Germany [3].

Although there are few data on secondary prevention measures following an AMI with a different primary discharge diagnosis, guidelines for the secondary prevention of CHD do not distinguish between AMI as a primary or secondary diagnosis [5, 19]. For individuals with recent AMIs, guidelines recommend statins, antiplatelet agents, angiotensin converting enzyme inhibitors or angiotensin receptor blockers, beta-blockers, influenza vaccination, and cardiac rehabilitation, unless contraindicated [19].

Strengths of this study include the large study population with national reach and unselected hospitals, expert adjudication of AMI and cause of death, and review of medical records for hospital discharge diagnoses. There are also limitations worth noting. For 13% of participants with AMIs, no hospital discharge summary or coding sheet was available for review. The group with adjudicated AMI and a primary discharge diagnosis other than AMI is likely to be heterogeneous. Recording the specific discharge diagnoses other than AMI was beyond the scope of this study, and thus specific discharge diagnoses could not be examined. In addition, discharge diagnoses reflect the information recorded in the hospitalization records and billing rules and practices which may vary across institutes and time periods. The adjudication of electrocardiograms was focused on whether there was

evidence for ischemia; ST-segment elevation AMIs could not be distinguished from other AMIs with positive or evolving diagnostic evidence of ischemia. Information on comorbidities was collected at baseline, and there may be residual confounding by comorbidities that developed after baseline or that were not assessed. Last, we caution that the REGARDS event detection system relied on self- or proxy-report of hospitalization and records were retrieved based on a reported heart-related reason for the hospitalization. The REGARDS participants may not be generalizable to the entire United States population. Future research should examine whether AMI characteristics and prognosis vary by the specific primary discharge diagnosis and by the mechanism of ischemia, and studies of consecutive hospitalizations may shed light on the generalizability of our findings.

CONCLUSIONS

In summary, a large proportion of individuals with adjudicated AMI had a primary hospital discharge diagnosis other than AMI. These individuals tended to have smaller enzyme elevations, less electrocardiogram evidence of ischemia, and more heart failure, but their mortality, including CHD and CVD mortality, following AMI was high. These data indicate that studies limited AMI as a primary discharge diagnosis will underestimate the burden of AMI and may exclude individuals with elevated risk of all-cause, CHD, and CVD mortality.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This research project is supported by a cooperative agreement U01 NS041588 from the National Institute of Neurological Disorders and Stroke, National Institutes of Health, Department of Health and Human Service. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Neurological Disorders and Stroke or the National Institutes of Health. Representatives of the funding agency have been involved in the review of the manuscript but not directly involved in the collection, management, analysis or interpretation of the data. The authors thank the other investigators, the staff, and the participants of the REGARDS study for their valuable contributions. A full list of participating REGARDS investigators and institutions can be found at <http://www.regardsstudy.org>. Additional support was provided by grants from the National Heart, Lung, and Blood Institute at the National Institutes of Health (K24 HL111154 to M.M.S and R01 HL080477).

Abbreviations

AMI	acute myocardial infarction
CHD	coronary heart disease
CI	confidence interval
CVD	cardiovascular disease
HDL	high density lipoprotein
LDL	low density lipoprotein
NSTEMI	non-ST elevation myocardial infarction

REGARDS Reasons for Geographic And Racial Differences in Stroke

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Figure 1.
Hospital Discharge Diagnoses Among REGARDS Participants With Adjudicated Acute Myocardial Infarction

Figure 2. All-Cause, Coronary Heart Disease, Cardiovascular Disease Mortality, and Non-Cardiovascular Disease Mortality Among REGARDS Participants Following Adjudicated AMI by Hospital Discharge Diagnosis

Table 1

Baseline (Pre-AMI) Characteristics of REGARDS Participants With Adjudicated AMI by Hospital Discharge Diagnosis^a

Baseline characteristics	Primary discharge diagnosis		P-value
	AMI (n = 321)	Other (n = 550)	
Age, years	68.4 ± 8.8	69.2 ± 9.0	0.21
Sex, %			0.64
Female	114 (35.5)	204 (37.1)	
Male	207 (64.5)	346 (62.9)	
Race, %			0.03
Black	98 (30.5)	208 (37.8)	
White	223 (69.5)	342 (62.2)	
Region, %			0.48
Stroke Buckle	69 (21.5)	111 (20.2)	
Stroke Belt	110 (34.3)	211 (38.4)	
Non-Belt	142 (44.2)	228 (41.5)	
Income, %			0.57
<\$20,000	70 (21.8)	140 (25.5)	
\$20,000–\$34,999	96 (29.9)	148 (26.9)	
\$35,000–\$74,999	86 (26.8)	153 (27.8)	
\$75,000	37 (11.5)	51 (9.3)	
Refused	32 (10.0)	58 (10.5)	
Education, %			0.05
Less than high school	58 (18.1)	100 (18.2)	
High school	88 (27.5)	161 (29.3)	
Some college	101 (31.6)	130 (23.7)	
College graduate	73 (22.8)	158 (28.8)	
Cigarette smoking, %			0.24
Current	70 (21.9)	100 (18.2)	
Past	141 (44.1)	272 (49.5)	
Never	109 (34.1)	178 (32.4)	
Body mass index, kg/m ²	28.8 ± 5.3	29.8 ± 6.3	0.01
Systolic blood pressure, mmHg	130.3 ± 16.7	134.2 ± 19.3	0.003
Diastolic blood pressure, mmHg	75.8 ± 9.5	76.3 ± 11.0	0.44
History of diabetes, %	109 (34.0)	239 (43.5)	0.006
History of coronary heart disease (MI or revascularization), %	117 (36.4)	244 (44.4)	0.02
Framingham risk score (among those without history of coronary heart disease)			0.32
<10%	67 (34.9)	116 (40.3)	
10%–<20%	70 (36.5)	87 (30.2)	
20%	55 (28.6)	85 (29.5)	
LDL cholesterol, mg/dL	115.6 ± 35.8	107.7 ± 36.7	0.003
HDL cholesterol, mg/dL	45.0 ± 13.9	46.4 ± 14.3	0.16

Baseline characteristics	Primary discharge diagnosis		P-value
	AMI (n = 321)	Other (n = 550)	
Estimated glomerular filtration rate, %			0.11
60 ml/min/1.73 m ²	249 (77.6)	392 (71.3)	
45–59.9 ml/min/1.73 m ²	36 (11.2)	72 (13.1)	
<45 ml/min/1.73 m ²	36 (11.2)	86 (15.6)	
Albumin to creatinine ratio, %			0.27
10–29.9 mg/g	81 (50.9)	141 (44.5)	
30–299.9 mg/g	56 (35.2)	116 (36.6)	
300 mg/g	22 (13.8)	60 (18.9)	
Statin use, %	138 (43.0)	238 (43.3)	0.93
Antihypertensive use, %	177 (56.9)	373 (70.2)	<0.001
Self-rated health, %			<0.001
Excellent/Very good/Good	244 (77.2)	358 (65.2)	
Fair/Poor	72 (22.8)	191 (34.8)	

AMI: acute myocardial infarction; HDL: high density lipoprotein; LDL: low density lipoprotein; REGARDS: REasons for Geographic And Racial Differences in Stroke.

^aNumbers in table are mean ± standard deviation or N(%). Some numbers do not sum to the total because of non-response or recruitment into the study prior to the addition of kidney markers to the protocol. P-values were calculated using chi-squared tests for categorical variables or analysis of variance for continuous variables.

Table 2

AMI Hospitalization Characteristics of REGARDS Participants With Adjudicated AMI by Hospital Discharge Diagnosis^a

	Primary Discharge Diagnosis		P-value
	AMI (n = 321)	Other (n = 550)	
Age, years	71.3 ± 9.0	72.0 ± 9.3	0.25
Maximum troponin, µg/L	5.7 [1.2, 22.5]	0.5 [0.2, 2.1]	<0.001
Microsize AMI, % ^b	26 (8.4)	264 (48.8)	<0.001
Electrocardiogram evidence of ischemia, %			<0.001
Positive/Evolving diagnostic	136 (42.4)	78 (14.2)	
Non-specific	112 (34.9)	232 (42.2)	
None	73 (22.7)	240 (43.6)	
Chest pain, %	271 (84.4)	270 (49.1)	<0.001
Ischemic signs and symptoms, %	300 (93.5)	326 (59.3)	<0.001
Heart failure, %	64 (19.9)	179 (32.5)	<0.001
Revascularization, %	203 (63.2)	192 (34.9)	<0.001
Revascularization to abort AMI, %	121 (37.7)	54 (9.8)	<0.001
Procedure caused AMI, %	6 (1.9)	72 (13.1)	<0.001
Died during hospitalization, %	22 (5.8)	68 (12.4)	0.006

AMI: acute myocardial infarction; ECG: electrocardiogram; MI: myocardial infarction; REGARDS: REasons for Geographic And Racial Differences in Stroke.

^a Numbers in table are mean ± standard deviation, median [interquartile range], or N(%). Some numbers do not sum to the total because of lack of documentation in the medical records. P-values were calculated using chi-squared tests for categorical variables or ANOVA for continuous variables.

^b Microsize AMIs were defined as those with a maximum troponin <0.5 µg/L that met criteria for AMI.

Table 3

Hazard Ratios for All-Cause, Coronary Heart Disease, Cardiovascular, and Non-Cardiovascular Mortality Among REGARDS Participants Following an Adjudicated AMI

	Primary Discharge Diagnosis	
	AMI (n = 321)	Other (n = 550)
<i>All-cause mortality</i>		
Cases	77	211
Person-years	763	1,191
HR (95% CI) ^a	1 (reference)	1.64 (1.26–2.13)
HR (95% CI) ^b	1 (reference)	1.52 (1.17–1.98)
HR (95% CI) ^c	1 (reference)	1.08 (0.80–1.47)
<i>CHD mortality</i>		
Cases	27	52
Person-years	763	1,191
HR (95% CI) ^a	1 (reference)	1.15 (0.72–1.84)
HR (95% CI) ^b	1 (reference)	1.02 (0.64–1.64)
HR (95% CI) ^c	1 (reference)	1.29 (0.76–2.18)
<i>CVD mortality</i>		
Cases	55	99
Person-years	763	1,191
HR (95% CI) ^a	1 (reference)	1.07 (0.77–1.50)
HR (95% CI) ^b	1 (reference)	0.97 (0.70–1.36)
HR (95% CI) ^c	1 (reference)	0.86 (0.59–1.27)
<i>Non-CVD mortality</i>		
Cases	22	113
Person-years	763	1,191
HR (95% CI) ^a	1 (reference)	3.09 (1.95, 4.88)
HR (95% CI) ^b	1 (reference)	2.93 (1.85, 4.64)
HR (95% CI) ^c	1 (reference)	1.71 (1.00, 2.95)

AMI: acute myocardial infarction; CHD: coronary heart disease; CI: confidence interval; CVD: cardiovascular disease; HR: hazard ratio; REGARDS: Reasons for Geographic And Racial Differences in Stroke

^a Adjusted for age at AMI, race, sex

^b Additionally adjusted for diabetes, history of CHD, self-rated health

^c Additionally adjusted for micro-sized MI, ECG evidence of ischemia, ischemic signs and symptoms, heart failure during hospitalization, revascularization during hospitalization