ORIGINAL RESEARCH

Magnitude and Characteristics of Patients Who Survived an Acute Myocardial Infarction

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***Background*—**The purpose of this study was to describe the magnitude and characteristics of patients who did not experience any significant major adverse cardiovascular event early (within 6 weeks) and late (during the first year) after hospital discharge for an acute myocardial infarction (AMI).

***Methods and Results*—**Data from 12 243 patients discharged after an AMI from 233 sites across the United States in the TRANSLATE-ACS (Treatment With ADP Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events After Acute Coronary Syndrome) study were analyzed. Multivariable adjusted regression analyses modeled factors associated with 6-week and 1-year survivors who did not experience a recurrent AMI, stroke, unplanned coronary revascularization, or rehospitalization for unstable angina/chest pain during these time periods. The average age of this study population was 60.0 years, 72.0% were men, and 87.9% were white. In this population, 92.4% were classified as early low-risk survivors and 76.3% were classified as late low-risk survivors of an AMI. Factors associated with being an early and late postdischarge survivor included being male and having single-vessel coronary artery disease at the patient's index hospitalization. Patients who were not first seen with any chronic health condition, had an index hospital stay of ≤3 days, and had high baseline quality-of-life scores were more likely to be late low-risk survivors.

***Conclusions*—**Identifying low-risk survivors of an AMI may permit healthcare providers to focus more intensive efforts and interventions on those at higher risk of experiencing adverse cardiovascular events during the postdischarge transition period.

***Clinical Trial Registration*—**URL: http://www.clinicaltrials.gov. Unique identifier: NCT01088503. **(*J Am Heart Assoc*. 2017;6: e006373. DOI: 10.1161/JAHA.117.006373.)**

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As the number of Americans who survive an acute myocardial infarction (AMI) increases,[1] it is of considerable clinical and public health importance to obtain contemporary information about who represents a "low-risk" AMI survivor and the magnitude of this patient population. In the context of limited healthcare resources, the goal would be to focus resources on patients who need more intensive treatment and surveillance efforts, including those who have survived a recent acute coronary event. Much of the current literature that has examined the characteristics of those who survived a recent AMI has focused on the impact of conventional risk and prognostic factors, such as cigarette smoking, obesity, physical inactivity, and elevated blood pressure, on in-hospital and postdischarge survival.[2–6] Few contemporary studies have, however, described the characteristics and role of other risk factors for major adverse cardiovascular events, including depression, functional status, or quality of transitional care after hospital discharge for an AMI, in relation to postdischarge prognosis, overall or at varying time points.[7–11] Many psychosocial, cognitive, or functional status indicators are not reported in clinical trials or observational studies of patients with acute coronary disease. Inasmuch, their association with clinically relevant outcomes, such as death, recurrent AMI, stroke, an unplanned coronary revascularization, and/or readmission to the hospital because

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Clinical Perspective

What Is New?

- This study includes a large number of patients hospitalized with confirmed acute myocardial infarction and collected relatively novel data on psychosocial factors and indicators of quality of life.

What Are the Clinical Implications?

- Identifying early and late low-risk survivors who were discharged from the hospital after an acute myocardial infarction may help hospital systems and clinicians identify individuals at different levels of risk for major adverse clinical events and develop more patient-centered interventions.

of chest pain/unstable angina, has seldom been explored.[12] The TRANSLATE-ACS (Treatment With Adenosine Diphosphate (ADP) Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events After Acute Coronary Syndrome) study[13] is a large observational investigation of patients hospitalized with AMI who underwent a percutaneous coronary intervention at >200 medical centers throughout the United States. The study collected information on a broad array of sociodemographic, clinical, and psychosocial factors in this patient population. In this article, we describe the likelihood and characteristics of patients in this study who did not experience any significant major adverse cardiovascular event within the first 6 weeks (early period) and during the first year (late period) after hospital discharge for an AMI.

Methods

TRANSLATE-ACS is a longitudinal observational study of patients with AMI who were treated with a percutaneous coronary intervention and antiplatelet therapy at 233 participating medical centers between April 2010 and May 2012. The design and conduct of this clinical/epidemiologic study, including a detailed description of patient follow-up and data collection activities, have been previously described.[13] In brief, this study included patients who were hospitalized with either an ST-segment elevation myocardial infarction (STEMI) or a non-STEMI, treated with a percutaneous coronary intervention, and started to receive an ADP receptor inhibitor during their index hospitalization. The institutional review board of each enrolling hospital approved participation in TRANSLATE-ACS, and all data were collected prospectively. Subjects gave informed consent.

Participating hospitals collected information on patient's baseline demographic and clinical characteristics, processes of care, and in-hospital outcomes using a standardized set of data elements and definitions, aligned with those used by the National Cardiovascular Data Registry.[13] Postdischarge study follow-up was conducted via centralized telephone interviews at 6 weeks, 6 months, and 12 months by trained personnel at the Duke Clinical Research Institute (Durham, North Carolina). At each interview, patients were asked to report any hospitalizations since their index hospital discharge or last telephone interview. All self-reported rehospitalizations were verified by the collection of hospital bills and medical records. As a safeguard against underreporting, all enrolling hospitals were queried at 12 months for any rehospitalizations that may not have been reported by the patient. In addition, information on medication use, self-reported financial hardship with medications, quality of life, and follow-up care was collected during telephone interviews using a standardized questionnaire.[13] We assessed functional status at baseline using the validated EuroQol-5 Dimensions score,[14] whereas symptoms of depression were assessed using the Patient Health Questionnaire-2.[15]

We created a cumulative primary study end point aggregating the following 5 individual postdischarge outcomes: death, recurrent AMI, stroke, an unplanned coronary revascularization, and readmission to the hospital because of chest pain/unstable angina. End points were assessed early (within the first 6 weeks) and later (within 1 year) after discharge for an AMI. Our 4 comparison groups are as follows: group 1 (early risk), survivors at hospital discharge (n=12 243) further categorized into either (1) early low-risk survivors without any of the adverse event end points within 6 weeks of discharge (n=11 313) and (2) those who developed any of the adverse event end points within 6 weeks of discharge (n=930). Group 2 (late risk) consists of those who survived the short-term hospitalization without developing any of the examined end points at 6 weeks (n=11 313) after hospital discharge, further categorized into either (1) late low-risk survivors who did not develop any of the adverse events examined between 6 weeks and 1 year (n=9158) or (2) those who developed any study-related end point between 6 weeks and 1 year (n=1920). We compared patient characteristics and risk factors of being an early and late low-risk survivor (those without any of the 5 individual study end points) with patients who developed any of these end points.

We examined the role of traditional risk factors, such as age, sex, race, and previously diagnosed chronic conditions, as well as other less conventional risk factors, including depressive symptoms, functional status, and transition-of-care processes. Categorical variables were presented as frequencies, and differences between the respective comparison groups were assessed using the χ^2 test. Continuous variables were presented as medians and were compared using the Wilcoxon rank-sum test. To avoid misclassification because of being unavailable for follow-up, event-free patients

whose last known date to be alive was <365 days after discharge were excluded from the 1-year analyses (n=235).

Generalized estimating equation models to account for within-hospital clustering were performed to examine the association between various demographic and clinical factors with being a low-risk survivor at the 6-week and 1-year follow-up periods. The following covariates were included in these models: age; sex; race (black and other versus white); marital status; diagnosis of STEMI versus non-STEMI; previously diagnosed AMI; cerebrovascular disease; peripheral artery disease; heart failure; atrial fibrillation/flutter; diabetes mellitus; hypertension, dyslipidemia, or chronic lung disease; receipt of a prior percutaneous coronary intervention or coronary artery bypass graft surgery; current smoker; bleeding within the past 6 months; presence of multivessel coronary artery disease, as determined at cardiac catheterization during the index hospitalization; transfer in from another short-term care facility; Patient Health Questionnaire-2 score; EuroQol-5 Dimensions individual components (no problems versus otherwise); health insurance status; processes of care (number of discharge medications, cardiac rehabilitation referral, and financial hardship with medications); and length of stay during the patient's index hospitalization for AMI.

Results

The study population consisted of 12 243 patients enrolled in TRANSLATE-ACS from 233 US hospitals between April 2010 and May 2012, who completed the follow-up interviews at 6 weeks and 12 months. Of these patients, 92.4% were classified as early low-risk survivors (survived for 6 weeks and were free from reinfarction, stroke, unplanned coronary revascularization, or rehospitalization for unstable angina within 6 weeks after hospital discharge) and 81.0% were classified as being late low-risk survivors (those who survived without any end points at 6 weeks and were free from reinfarction, stroke, unplanned coronary revascularization, or rehospitalization for unstable angina at the 1-year follow-up visit after hospital discharge).

Those remaining free from complications at 6 weeks after discharge included a greater proportion of men, those who were married, and those who were less likely to be first seen with a medical history of either diabetes mellitus or stroke than patients experiencing a composite major adverse cardiac event (Table 1). Early low-risk survivors were less likely to have reported mobility or self-care problems, limitations in usual activities, pain or discomfort, or anxiety/depression compared with those who developed any of the aggregated end points examined during this period (Table 1). There were no differences in the likelihood of developing any of the examined in-hospital complications between the early low-risk survivors and the respective comparison group (Table 2). Early low-risk survivors were significantly less likely to have multivessel coronary artery disease and to have any financial hardships with paying for their cardiac medications (Table 3).

Those remaining free of any of the 5 study end points at 1 year included a greater proportion of men, those who were married, a lower proportion of blacks, patients who were more likely to have a job, and those diagnosed as having an STEMI during their index hospitalization (Table 1). Late low-risk survivors were less likely to have been previously diagnosed as having any of the comorbidities examined, with the exception of bleeding within the past 6 months, and to be a current smoker. Late low-risk survivors were first seen with higher average glomerular filtration rate findings and were significantly less likely to have been seen with any of the limitations or functional impairments examined on the quality-of-life scale (Table 1). In examining the development of important in-hospital complications during the patient's index hospital admission, similar patterns were observed in both early and late low-risk survivors (Table 2).

Late low-risk survivors were significantly less likely to have multivessel coronary artery disease and were more likely to have undergone a percutaneous coronary intervention for STEMI during their short-term hospitalization. The low-risk survivors were significantly less likely to have any financial hardship with their purchasing of medications compared with those who developed any of our late study end points (Table 3).

In a multivariable model examining factors of prognostic importance, some similarities and important differences were found between early and late low-risk survivors. Patients who were male and who were not first seen with symptoms of anxiety and depression were more likely to be low-risk survivors at 6 weeks or 1 year than the respective comparison groups (Table 4).

On the other hand, several important risk factors were associated with being a late low-risk survivor. These factors included not having been previously diagnosed as having most of the chronic conditions examined, being transferred from another short-term care facility, having a hospital stay of ≤3 days during the index hospitalization, and not being seen with any self-care problems or pain/discomfort during the short-term hospitalization, as assessed by the EuroQol-5 Dimensions (Table 4).

Discussion

The results of this large, multisite, observational study provide insights into the proportion of patients discharged from the hospital after an AMI who could be considered to be at low

Table 1. Patient Characteristics According to the Development of Study End Points During the First 6 Weeks or 1 Year After Hospital Discharge for an AMI

Characteristics	Early Low-Risk Survivors		Late Low Risk-Survivors	
	No End Point Development in 6 Weeks (n=11 313)	Any End Point Development in 6 Weeks (n=930)	No End Point Development in 1 Year (n=9158)	Any End Point Development in 1 Year (n=1920)
Age, y				
Median	60.0	59.3*	60.0	60.0
<65	66.5	67.7	67.0	65.4
65–74	21.8	20.9	21.7	21.6
75–84	10.0	9.3	9.6	10.9
≥85	1.8	2.2	1.7	2.1
Male sex	72.4	66.9†	73.8	65.7†
Race				
White	88.0	87.4	88.4	85.4†
Black	8.8	10.2	8.2	12.1†
Other	3.2	1.4	3.4	2.5
Hispanic or Latino ethnicity	3.4	3.6	3.6	2.7
No health insurance	14.9	13.3	15.3	12.8*
Married	62.9	59.4	63.8	59.1†
Employed	50.3	48.8	52.4	40.8†
Body mass index, median, kg/m^2	29.3	29.5	29.3	29.4
ST-segment elevation myocardial infarction	51.8	53.1	53.3	45.3†
Medical history				
Atrial fibrillation	4.6	5.7	4.2	6.1†
Bleeding within past 6 mo	1.1	1.2	1.0	1.4
Coronary bypass surgery	9.1	9.6	7.6	14.0†
Chronic lung disease	9.7	10.4	8.6	15.0†
Current smoker	38.5	36.3	38.4	38.0
Diabetes mellitus	26.1	30.8*	23.9	35.7†
Heart failure	5.8	7.2	4.5	11.5†
Hypertension	66.7	68.7	64.6	76.4†
Hyperlipidemia	65.5	65.6	64.0	72.1†
Myocardial infarction	19.7	18.0	17.9	27.9†
Peripheral artery disease	6.3	6.7	5.3	11.2†
Stroke	5.3	7.3*	4.9	7.2†
Physiologic variables at admission				
Blood pressure, median, mm Hg				
Systolic	140.0	138.0	140.0	140.0
Diastolic	81.0	80.0	81.0	80.0*
Glomerular filtration rate, median, mL/min per 1.73 m^2	78.3	76.6	79.0	75.6†
Hemoglobin A1C, median, g/dL	6.1	6.2	6.0	6.3†
Low-density lipoprotein, median, mg/dL	102.0	101.0	103.0	98.0*

Continued

Table 1. Continued

Characteristics	Early Low-Risk Survivors		Late Low Risk-Survivors	
	No End Point Development in 6 Weeks (n=11 313)	Any End Point Development in 6 Weeks (n=930)	No End Point Development in 1 Year (n=9158)	Any End Point Development in 1 Year (n=1920)
Quality of life (EuroQoL)				
Mobility, no problems	78.0	74.1*	80.0	68.9†
Self-care, no problems	91.9	89.0	92.9	87.2†
Usual activities, no problems	74.2	68.8†	76.0	66.3†
No pain or discomfort	66.1	61.2*	68.1	57.3†
No anxiety/depression	72.5	66.3†	74.0	65.2†
Total score, median	75.0	70.0†	75.0	70.0†
Depression (PHQ-2>3)	7.8	10.8*	7.0	11.5†
Transfer from another short-term care facility	39.6	38.0	40.6	35.4†

Data are given as percentage of each group unless otherwise indicated. AMI indicates acute myocardial infarction; EuroQoL, European quality-of-life scale; PHQ-2, Patient Health Questionnaire-2.
*Significant at $P<0.05$.
†Significant at $P<0.001$.

risk for subsequent adverse events at 2 important time points after hospital discharge. Insights into the sociodemographic, psychosocial, and clinical characteristics of those remaining free from the clinically relevant adverse events we examined are also provided. Our results may help hospital systems and clinicians identify individuals at low short- and long-term risk for major adverse clinical events.

A significant proportion of patients were classified as being either an early (92%) or late (81%) low-risk survivor in the present study of >12 000 patients hospitalized with AMI at 233 US medical centers. Few studies have examined the magnitude of low-risk survivors after hospital discharge for an AMI, and these studies used different working definitions of what constituted a low-risk postdischarge survivor and their respective follow-up periods.[16,17] In a nationwide study of relatively young (aged <50 years) patients hospitalized with AMI at all hospitals in Denmark between 1980 and 2009, early low-risk survivors were defined as patients who survived at least 30 days after discharge, whereas long-term low-risk survivors were defined as patients who survived at least 1 month to 1 year after the patient's index admission.[16] The proportion of low-risk survivors of an AMI increased from 88% to 97% within 30 days, and from 95% to 98% between 31 and 365 days after being discharged from the hospital during the years under study. On the other hand, in a study of 144 patients hospitalized with AMI at the University of Pittsburgh

Table 2. In-Hospital Complications According to the Development of Study End Points During the First 6 Weeks or 1 Year After Hospital Discharge for an AMI

Complications	Early Low-Risk Survivors		Late Low-Risk Survivors	
	No End Point Development in 6 Weeks (n=11 313)	Any End Point Development in 6 Weeks (n=930)	No End Point Development in 1 Year (n=9158)	Any End Point Development in 1 Year (n=1920)
AMI, recurrent	0.6	0.7	0.6	0.7
Cardiogenic shock	1.3	0.7	1.3	1.0
Heart failure	1.6	2.0	1.4	2.2*
Major bleeding episode	3.1	3.4	3.1	3.4
Stroke	0.1	0.1	0.1	0.1
Length of stay, median, d	3.0	3.0†	3.0	3.0

Data are given as percentage of each group unless otherwise indicated. AMI indicates acute myocardial infarction.
*Significant at $P<0.05$.
†Significant at $P<0.001$.

Table 3. Discharge Medications and In-Hospital Cardiac Interventions According to the Development of Study End Points During the First 6 Weeks or 1 Year After Hospital Discharge for an AMI

Medications at Discharge	Early Low-Risk Survivors		Late Low-Risk Survivors	
	No End Point Development in 6 Weeks (n=11 313)	Any End Point Development in 6 Weeks (n=930)	No End Point Development in 1 Year (n=9158)	Any End Point Development in 1 Year (n=1920)
Angiotensin-converting enzyme inhibitor/angiotensin II receptor blockers	74.2	75.2	74.2	74.2
Anticoagulants	5.3	5.5	4.9	7.0*
Aspirin	98.7	97.8†	98.8	98.2†
β Blockers	93.4	94.1	93.5	92.8
Statins	95.5	94.1	96.1	92.9*
No. of evidence-based cardiac medications				
≤2	0.7	1.1	0.5	1.2†
3	5.2	4.7	5.1	6.0
4	28.5	28.4	28.2	29.6
5	65.6	65.8	66.2	63.2
Cardiac interventions and catheterization findings				
Cardiac catheterization				
Multivessel disease	48.5	56.6*	47.3	54.7*
No. of diseased vessels				
1	49.2	41.6*	50.3	42.7*
2	31.3	34.0	31.2	32.0
3	17.2	22.6	16.1	22.7
Coronary bypass surgery	0.3	0.1	0.4	0.2
Multivessel percutaneous coronary intervention	10.9	11.0	10.5	12.1†
Discharge information				
Discharged home	97.9	97.7	98.1	97.3*
Cardiac rehabilitation referral	75.8	75.4	75.9	75.1
Follow-up visit scheduled with cardiologist at discharge	41.8	42.0	41.7	42.5
No financial hardship with paying for medication	39.1	31.6†	40.0	37.0*

Data are given as percentage of each group. AMI indicates acute myocardial infarction.
*Significant at $P<0.001$.
†Significant at $P<0.05$.

(Pittsburgh, Pennsylvania) between 1992 and 2000, 56% of patients who survived the 2-year follow-up period were classified as late low-risk survivors.[17] Irrespective of differences in the frequency of low-risk survivors in these different investigations, which are likely because of the varying follow-up periods, and in sociodemographic and clinical characteristics of the study populations (most notably, age and years under study), further investigation of this important subgroup of patients is warranted. A considerable proportion of patients are considered to be at low risk for major adverse clinical events, during either the short- or longer-term.[18] Less aggressive follow-up plans and clinical care may be needed. Although we believe that all patients should receive high-quality transitional care after hospital discharge for an acute manifestation of a chronic underlying condition, certain interventions that have been shown to be successful are resource intensive and costly.[18] One way to make the best use of these limited resources, in the current healthcare environment, may be to reserve them for patients most likely to benefit from these resources. For example, we suggest a more aggressive follow-up, with more frequent follow-up calls or non–physician providers' visits, to elderly patients with several comorbidities during the high-risk transition period after being released from the hospital after an AMI.

Table 4. Factors Associated With Not Developing Study End Points at 6 Weeks or 1 Year After Hospital Discharge for an AMI

Factors	OR (95% Confidence Interval)	
	Early Low-Risk Survivors (n=11 313)	Late Low-Risk Survivors (n=9158)
Age, y		
<65 (reference)		
65–74	1.16 (0.93–1.45)	1.17 (1.04–1.33)
75–84	1.29 (1.01–1.64)	1.04 (0.88–1.23)
≥85	1.04 (0.63–1.73)	1.10 (0.72–1.69)
Male sex	1.21 (1.02–1.42)	1.24 (1.13–1.37)
Race		
White (reference)		
Black	0.94 (0.76–1.17)	0.79 (0.67–0.93)
Other	1.47 (0.83–2.61)	1.12 (0.82–1.54)
Hispanic	0.92 (0.63–1.33)	1.47 (1.11–1.93)
Married	1.11 (0.99–1.26)	1.05 (0.94–1.17)
No health insurance vs private	1.19 (0.97–1.46)	1.06 (0.90–1.25)
ST-segment elevation myocardial infarction	0.91 (0.78–1.06)	1.11 (1.00–1.23)
Medical history		
Atrial fibrillation	0.81 (0.59–1.09)	1.00 (0.81–1.23)
Bleeding within past 6 mo	0.96 (0.54–1.70)	0.92 (0.59–1.43)
Coronary bypass surgery	1.07 (0.84–1.36)	0.70 (0.58–0.85)
Chronic lung disease	0.99 (0.77–1.26)	0.80 (0.67–0.95)
Current smoker	1.05 (0.73–1.50)	1.01 (0.89–1.14)
Diabetes mellitus	0.87 (0.76–1.01)	0.80 (0.71–0.90)
Heart failure	0.91 (0.67–1.22)	0.73 (0.60–0.89)
Hypertension	1.00 (0.84–1.19)	0.80 (0.72–0.90)
Hyperlipidemia	1.03 (0.88–1.20)	0.96 (0.84–1.10)
Myocardial infarction	1.15 (0.94–1.41)	1.01 (0.87–1.17)
Percutaneous coronary intervention	1.16 (0.94–1.42)	0.78 (0.67–0.92)
Peripheral artery disease	1.06 (0.78–1.43)	0.74 (0.62–0.89)
No. of evidence-based medications per 1-U increase	1.01 (0.91–1.11)	1.10 (1.01–1.19)
Transfer from another short-term care facility	1.04 (0.90–1.21)	1.19 (1.06–1.34)
Depression (PHQ-2>3)	0.85 (0.67–1.09)	0.92 (0.78–1.08)
Length of stay ≥3 d	0.90 (0.79–1.04)	0.83 (0.75–0.91)
Quality of life		
Limitations/problems (reference)		
Mobility, no problems	0.93 (0.74–1.17)	1.06 (0.92–1.22)
Self-care, no problems	1.09 (0.86–1.38)	1.24 (1.03–1.49)
Usual activities, no problems	1.11 (0.88–1.40)	1.07 (0.94–1.22)
No pain or discomfort	1.09 (0.93–1.26)	1.19 (1.07–1.34)
No anxiety/depression	1.17 (1.03–1.33)	1.20 (1.06–1.36)
Financial hardship paying for medication	0.94 (0.79–1.11)	0.94 (0.82–1.08)

AMI indicates acute myocardial infarction; OR, odds ratio; PHQ-2, Patient Health Questionaire-2.

Several common risk factors were found among the early and late low-risk survivors, including being male, being first seen with single-vessel coronary artery disease, and not having been previously diagnosed as having either diabetes mellitus or symptoms of anxiety or depression at the patient's index hospitalization. Patients who were not first seen with any chronic condition, had an index hospital stay of ≤3 days, and were not seen with self-care problems or discomfort during hospitalization were more likely to be late low-risk survivors than the respective comparison groups.

Few studies have described the clinical epidemiological characteristics of, or factors associated with, being a low-risk survivor of an AMI. In the University of Pittsburgh study, patients who were classified as being at low risk for adverse events during the period of follow-up were more likely to have been diagnosed as having an STEMI and were less likely to have been previously diagnosed as having heart failure, diabetes mellitus, hypertension, and chronic obstructive pulmonary disease.[17] Similar findings were reported in an investigation using data from the Worcester Heart Attack Study, with >4200 residents of the Worcester, Massachusetts, metropolitan area discharged after an AMI from 3 central Massachusetts hospitals between 2001 and 2011. The average age of this population was 69 years, 62% were men, and 92% were white. People classified as low-risk survivors were younger (≤65 years) men, were married, did not have multiple chronic conditions, and did not develop in-hospital clinical complications.[19]

Our findings highlight the greater proportion of men without various comorbidities in the early and late low-risk groups. Because patients with greater disease burden are more likely to experience higher hospital readmission and death rates than their healthier counterparts, additional studies focusing on surveillance and treatment approaches for those with multiple comorbidities remain needed.[18]

We found several differences between early and late low-risk survivors and their respective comparison groups on psychosocial factors, functional status, and transitions of care, factors that have not been routinely examined in the prior described studies. Early and late low-risk survivors were less likely to have previously reported mobility or self-care problems, limitations in usual activities, pain or discomfort, or anxiety/depression compared with those who have developed any of the aggregated end points examined during the respective follow-up periods.

In a study of >400 consecutive patients who underwent coronary artery bypass graft surgery between 2008 and 2010 at the University Hospital (Turku, Finland), patients who did not experience cardiac events during a 6-month follow-up had higher scores on the EuroQol-5 Dimensions questionnaires compared with those who experienced a subsequent cardiac event.[20] Other investigators had previously highlighted the importance of assessing functional limitation as a predictor of mortality in the general population.[12] For example, in an analysis of data from the National Health and Retirement Study (n=19 430), as the age of study participants increased, the association of multiple chronic conditions and 1-year mortality was attenuated, whereas the association of functional limitations and mortality remained strong.[12] Future studies should consider the inclusion of measures of functional limitation and quality of life when developing risk-adjustment models and when considering interventions in the clinical management of people of different ages. For patients and their caregivers, this prognostic/risk adjustment information could be used to inform shared clinical decision making.[12]

Recent studies have examined the magnitude of, and factors associated with, various psychosocial factors in patients hospitalized with AMI.[21,22] We found that both early and late low-risk survivors had lower scores on the Patient Health Questionnaire-2 than corresponding comparison groups. An observational study of >1400 patients diagnosed as having heart failure and multiple chronic medical conditions examined the impact of psychological morbidities on the healthcare use practices of this patient population.[21] Patients who had a high prevalence of several psychological morbidities had a significantly greater use of the healthcare system than those without psychological morbidities.[21] Similarly, in a study of >18 000 patients from >40 general practices in Scotland, potentially preventable and unplanned admissions to the hospital were highly associated with increasing severity of physical and psychosocial limitations.[22]

Given the high frequency and associated burden of psychosocial vulnerability demonstrated in our study population, healthcare providers should consider screening for these important psychosocial factors in all patients who develop an AMI. Psychosocial factors have been associated with the failure to understand and adhere to postdischarge medication and lifestyle change instructions and worse long-term outcomes.[21,22] These findings reinforce the importance of assessing the presence of these psychosocial morbidities by providers involved in the in-hospital and postdischarge management of patients with AMI.

The strengths of the present study include the large number of patients hospitalized with confirmed AMI and the collection of relatively novel data on psychosocial factors and indicators of quality of life. On the other hand, we did not have information available on other factors that have previously been associated with an increased risk of readmission or death after an AMI, including patient's adherence to prescribed cardiac medications after hospital discharge or changes in their disease, functional, or cognitive status. Furthermore, because of the characteristics of the study population (namely, patients hospitalized with an AMI who underwent a percutaneous coronary intervention), our findings might not apply to the general population of patients hospitalized with an AMI.

Identifying early and late low-risk survivors who were discharged from the hospital after an AMI may help hospital systems and clinicians identify individuals at different levels of risk for major adverse clinical events and develop more patient-centered interventions. Furthermore, given the high frequency and associated burden of functional limitations and psychosocial vulnerability demonstrated in our study population, healthcare providers should consider screening for these important risk factors in all patients who develop an AMI.

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Disclosures

None.

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