



## Perceiving one's heart condition to be cured following hospitalization for acute coronary syndromes: Implications for patient-provider communication



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### ABSTRACT

**Objective:** We examined the proportion of patients perceiving their heart condition to be cured following hospitalization for ACS and identified characteristics associated with these perceptions.

**Methods:** We conducted a prospective cohort study of adults hospitalized with ACS ( $N = 396$ ). Patient interviews during hospitalization and one week post-discharge provided demographic and psychosocial characteristics. Medical records provided clinical characteristics. At one week, patients who rated “My heart condition is cured” as “definitely true” or “mostly true” were considered to perceive their heart condition cured.

**Results:** Participants were aged 60.7 (SD:11.0) years, 26.5% female, and 89.0% non-Hispanic white; 16.7% had unstable angina, 59.6% NSTEMI, and 23.7% STEMI. One week post-discharge, 30.3% perceived their heart condition to be cured. Characteristics associated with cure perceptions were older age (OR = 2.2; 95% CI: 1.2–4.0 for  $\geq 65$  years vs  $< 55$  years), male sex (OR = 2.4; 95% CI: 1.3–4.2), history of hypertension (OR = 1.8; 95% CI: 1.1–3.1), history of stroke (OR = 4.2; 95% CI: 1.1–16.7), no history of CHD (OR = 2.8; 95% CI: 1.6–4.9), and receipt of CABG during hospitalization (OR = 4.8, 95% CI: 1.9–12.0 vs medical management).

**Conclusion:** One week post-discharge, 3 in 10 patients perceived their heart condition to be cured.

**Practice Implications:** Conversations with patients should frame ACS as a chronic disease and dispel cure perceptions.

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## 1. Introduction

Half of men and a third of women in the United States develop coronary heart disease (CHD) in their lifetime, and CHD is an underlying cause in one in six deaths in the United States [1]. Despite improvements in hospital survival following acute coronary syndromes (ACS), the acute form of CHD, mortality remains elevated for years following hospitalization [1,2]. One-quarter to one-third of patients hospitalized with ACS experience a recurrent event, and repeat hospitalization is common [3]. Evidence-based interventions for ACS – such as smoking cessation, management of blood pressure and lipids, weight control, and taking heart-related medications – are often not adopted by

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patients post-discharge [4]. Low engagement in these secondary prevention strategies may be due to unrealistic patient perceptions about the severity of their condition and their prognosis. Short hospital stays and receipt of coronary revascularization during hospitalization may leave patients with the perception that their heart condition has been “cured” or “fixed” [5–7]. Little is known about these cure perceptions and which patients hold them. The purpose of this study was to describe the proportion of patients who perceived their heart condition to be cured one week following hospitalization for ACS and to examine participant characteristics associated with these perceptions.

## 2. Materials and methods

We used data from TRACE-CARE, an ancillary study to the Transitions, Risks, and Actions in Coronary Events: Center for Outcomes Research and Education (TRACE-CORE) study. The design and methods of TRACE-CORE are described in detail elsewhere [8]. Briefly, TRACE-CORE enrolled a prospective cohort of 2187 adults hospitalized with ACS at six hospitals in Massachusetts and Georgia. Potentially eligible participants admitted to study hospitals were identified by daily screening of ACS-related ICD-9 codes from computerized admission logs and lists for cardiac catheterization, percutaneous coronary intervention (PCI), and coronary artery bypass graft (CABG) procedures, and lists of patients with elevated troponin levels. Eligibility criteria included diagnosis of ACS consistent with the American College of Cardiology and American Heart Association criteria [9,10], aged 21 years or older, able to communicate in English or Spanish, and discharged alive from the index hospitalization. Patients were excluded if they developed ACS secondary to another acute condition, screened positive for delirium by the Confusion Assessment Method [11], had documented dementia or severe cognitive impairment that would prevent them from completing an in-person interview, were pregnant, imprisoned, expected to move out of the area within 18 months, or admission for palliative care only. Data were collected through an in-person interview during hospitalization and abstraction of medical records for the index hospitalization. Institutional Review Boards at each study site approved this study. Participants provided written informed consent.

At two of the study hospitals in Worcester, MA, TRACE-CORE participants from September 2011 to May 2013 were invited to participate in an ancillary study, TRACE-CARE, to further examine the role of psychosocial factors and caregiving support on outcomes following hospitalization for ACS. Consecutive TRACE-CORE participants were approached for enrollment in TRACE-CARE (96% enrollment). Exclusion criteria included re-hospitalization in the week following discharge and delirium at the one-week post-discharge contact. Of eligible and consenting patients, 127 could not be reached one week post-discharge, 32 refused to participate, and 3 completed only part of the interview; 72% (423/585) completed a 30-min follow-up telephone interview one week post-discharge (range: 5–10 days). This structured interview was conducted by trained study staff and focused on psychosocial and physical functioning and caregiving support, and included a question about cure perceptions.

During the interview one week post-discharge, participants were asked, “How true or false is this statement for you: My heart condition is cured. Would you say that this is definitely true, mostly true, neutral/don’t know, mostly false, or definitely false?” Participants responding “definitely true” or “mostly true” were considered to perceive that their heart condition was cured.

We examined the association between several classes of participant characteristics and cure perceptions: demographic, variables related to a participant’s ability to process and

understand health information, underlying clinical characteristics, and variables related to the clinical presentation of ACS and receipt of treatment during hospitalization. As little quantitative research has been done examining cure perceptions in adults with coronary heart disease, we focused on categories of variables found to be associated with perceptions of the timeline or permanence of illness among patients with coronary heart disease in previous studies [12,13].

Participants self-reported demographics, including their race, ethnicity, and marital status. Age and sex were abstracted from medical records. Participants reported their education and other characteristics related to their ability to process and understand health information. Participants were asked, “How confident are you in filling out medical forms by yourself?” and categorized as having impaired health literacy (“not at all confident”, “a little confident”, and “somewhat confident”) or adequate health literacy (“quite a bit confident” and “extremely confident”)[14]. Participants were categorized as having impaired health numeracy if they did not answer “Which of the following numbers represents the biggest risk of getting a disease?” correctly with both of two response option sets (“1 in 100”, “1 in 1000”, and “1 in 10” and then “1%”, “10%”, and “5%”) [15]. Participants completed a 5-item scale measuring trust in physicians (range: 0–25, with higher scores indicating higher trust) [16] which was categorized as low (0–15), medium (16–20), and high trust (21–25).

Data on the underlying clinical characteristics of participants were derived both from the baseline interview and from medical record abstractions and included both physical and emotion conditions. Participants completed the Telephone Interview for Cognitive Status (TICS; range: 0–41)[17]; cognitive impairment was indicated by a score of  $\leq 28$  [18,19]. Participants completed the 9-item Patient Health Questionnaire (PHQ-9; range: 0–27) [20] and the 7-item Generalized Anxiety Disorder (GAD7; range: 0–21) [21]; scores  $\geq 10$  indicated probable depression and generalized anxiety disorder, respectively [21]. Participants also reported smoking status. Body mass index (BMI;  $\text{kg}/\text{m}^2$ ) was calculated from height and weight recorded in the medical record at admission, and categorized as underweight ( $\text{BMI} < 18.5 \text{ kg}/\text{m}^2$ ), normal weight ( $18.5 \leq \text{BMI} < 25 \text{ kg}/\text{m}^2$ ), overweight ( $25 \leq \text{BMI} < 30 \text{ kg}/\text{m}^2$ ), and obese ( $\text{BMI} \geq 30 \text{ kg}/\text{m}^2$ ) [22]. Documented comorbidities were abstracted. Participants with documentation of CABG, PCI, MI, CHD, stent restenosis, and/or stent thrombosis prior to the index hospitalization were considered to have a history of CHD. History of CHD in a first-degree relative was also abstracted.

Finally, medical record abstraction provided variables related to the clinical presentation of ACS and receipt of treatment during hospitalization. ACS type (ST-elevation myocardial infarction [STEMI], non-ST-elevation myocardial infarction [NSTEMI], or unstable angina) was determined by medical record review of ECG readings, Troponin-I or Troponin-T values, and chief complaint on admission. Receipt of coronary revascularization during hospitalization was categorized as CABG, PCI, or neither. Length of stay was categorized as discharged the same or next day, 2–3 days, or hospitalized for  $\geq 4$  days. We calculated the GRACE risk score for 6-month post-discharge mortality [23,24], and categorized risk as low, intermediate, or high [25].

### 2.1. Statistical analysis

We compared the percentage of patients perceiving their heart condition to be cured by participant characteristics using chi-squared tests for categorical variables and tests for trend for ordinal variables (age, education, trust in physicians, weight status, length of stay, and GRACE risk score). We calculated odds ratios (ORs) and 95% confidence intervals (CIs) to estimate multivariable correlates of cure perception using logistic regression models. We

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