

Excess Days in Acute Care (EDAC) after Hospitalization for Acute Myocardial Infarction (AMI)

Evidence: Summary of the empirical data

Acute Care (EDAC) after Hospitalization for Acute Myocardial Infarction (AMI) measure evaluates post-discharge acute care utilization within 30 days for Medicare beneficiaries aged 65 and older. It quantifies the total days spent in emergency department treat-and-release visits, observation stays, and unplanned readmissions following an index AMI hospitalization. This outcome measure captures the quality of care transitions by aggregating all of these acute care events into a single metric. Risk adjustment accounts for age and comorbidities, and exposure time is incorporated for patients who do not survive the full 30-day period. The measure is specified at the hospital level using administrative claims data from Medicare Fee-for-Service and Medicare Advantage beneficiaries and is intended to support quality improvement by providing a comprehensive assessment of post-discharge outcomes.

Acute myocardial infarction (AMI) is a serious condition with significant health and cost implications. Between 2012 and 2018, there were over 620,000 AMI hospitalizations annually in the United States, with a mean cost of \$29,500 per case. These resulted in an estimated annual expenditure of \$18.3 billion (Tajeu et al., 2024).

Readmission rates following discharge for AMI are high and variable across hospitals in the United States (Krumholz et al., 2009; Bernheim et al., 2010). For example, for the time period of July 2020-June 2023, publicly reported 30-day risk-standardized readmission rates ranged from 10.7% – 17.1% for patients admitted with AMI (DeBuhr et al., 2024).

Figure 1. AMI EDAC Logic Model



The diagram in Figure 1 indicates some of the many care processes that can influence post-discharge acute care utilization after a hospitalization for AMI. These complex and critical aspects of care – such as communication between providers, patient education, patient safety, and coordinated transitions to the outpatient environment – all contribute to patient outcomes but are difficult to measure by individual process measures. Interventions during and after a hospitalization can be effective in reducing utilization rates in geriatric populations (Zuckerman et al., 2016; Liu et al., 2021; Coleman et al., 2006; Courtney et al., 2009; Koehler et al., 2009) and, particularly, for older patients with AMI (Carroll et al., 2007; Young et al., 2003;; Li et al, 2020; Dunlay et al., 2014; Carlhed et al., 2009). Several randomized

trials have reduced 30-day readmission rates by 20-40% (Jack et al., 2009; Leppin et al., 2014; Courtney et al., 2009; Garasen et al., 2007; Koehler et al., 2009; Mistiaen et al., 2007; Al-Damluji et al., 2015; Weiss et al., 2010; Krumholz et al., 2012; Balaban et al., 2008; Patel et al., 2018). These types of interventions have also been demonstrated to be cost-saving (Liu et al., 2021; Naylor et al., 2004; Koelling et al., 2005; Krumholz et al., 2002; Stauffer et al., 2011). Outside the randomized controlled trial setting, there is also increasing evidence that hospitals and health plans have been able to reduce readmission rates through more generalizable quality improvement initiatives (Gerhardt et al., 2012; Stauffer et al., 2011; Graham et al., 2012; Harrison et al., 2011; Hernandez et al., 2010; Radhakrishnan et al., 2018).

In the case of AMI, specifically, studies suggest that appropriate care for AMI during and after the index hospitalization may reduce the risk of subsequent readmission (Carroll et al., 2007; Young et al., 2003; Li et al., 2020; Dunlay et al., 2014; Carlhed et al., 2009). Studies have also reported reductions in emergency department (ED) visit rates for patients with other conditions after implementation of interventions that focused on the inpatient and outpatient settings (Hsuan et al., 2020).

The current process-based performance measures cannot capture all the ways that care within the hospital might influence outcomes. As a result, many stakeholders, including patient organizations, are interested in outcomes measures that allow patients and providers to assess relative outcomes performance among hospitals (Bratzler et al., 2007). The AMI EDAC measure captures the number of days spent in the ED, in observation, or inpatient settings within 30 days of discharge. Unlike traditional readmission measures that only focus on readmission, EDAC captures all hospital-based unplanned acute care, likely resulting from post-discharge complications and/or inadequate care transitions. The AMI EDAC measure can, therefore, show how well hospitals and systems coordinate post-AMI care and follow-up. From an underlying process perspective, it can reflect the quality of discharge planning, medication reconciliation, and coordination with outpatient care, which have a direct impact on intermediate outcomes, such as an increase in ED visits and repeat hospitalizations; failures in these processes can also contribute to longer-term poor outcomes, such as delayed long-term recovery, increased mortality, and reduced quality of life.

In the context of the Centers for Medicare and Medicaid Services' (CMS's) publicly reported readmission measures, the increasing use of ED visits and observation stays has raised concerns that current readmission measures do not capture the full range of unplanned acute care in the post-discharge period (Vashi et al., 2013; Rising et al., 2012; Feng et al., 2012). Observation stays can occur in many different parts of the hospital, including dedicated treatment rooms, ED, or inpatient units. In particular, there is concern that high use of observation stays could in some cases replace readmissions, and that hospitals with high rates of observation stays in the post-discharge period may therefore have low readmission rates that do not accurately reflect the quality of care (Vashi et al., 2013; Nuckols et al., 2018).

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