

Excess Days in Acute Care (EDAC) after Hospitalization for Heart Failure (HF)

Evidence: Summary of the empirical data

The incidence rate of heart failure (HF) approaches 10 per 1,000 in patients 65 years and older (NHLBI et al., 2007), and continues to be one of the most common discharge diagnoses among the elderly (Jessup and Brozena et al., 2003). Prevalence of HF in the U.S. is estimated to be more than 6 million cases (Mozaffarian et al., 2015, Lloyd-Jones et al., 2009; Jackson et al., 2018; Benjamin et al., 2020), and is suspected to be the leading cause of death in people over age 65 (Hines et al., 2014). The lifetime risk of HF is estimated at 1 in 5 at 40 years of age, and the prevalence in the aging US population is expected to increase by 46% by 2030 (Heidenreich 2013). Total direct medical costs of HF were estimated at \$30.7 billion in 2012 and are projected to increase by approximately 127% to \$69.7 billion by 2030 (Jackson et al., 2018; Heidenreich et al., 2013).

Clinical experience suggests that the care for these patients is highly variable, and studies indicate there are gaps in the quality of hospital care—particularly in the transition to outpatient care (Albert 2009, Jha 2005; Patel et al., 2018). Moreover, there is substantial inter-hospital variation in the risk of readmission that is not clearly explained by differences in case mix (Lahewala et al., 2019; Lahewala et al., 2020; Roshanghalb et al., 2019). Measurement of patient outcomes allows for a broad view of quality of care that encompasses more than what can be captured by individual process-of-care measures. Complex and critical aspects of care, such as: communication between providers; prevention of, and response to, complications; and patient safety and coordinated transitions to the outpatient environment all contribute to patient outcomes but are difficult to measure by individual process measures.

The HF risk-standardized excess days in acute care measure is thus intended to inform quality-of-care improvement efforts, as individual process-based performance measures cannot encompass all the complex and critical aspects of care within a hospital that contribute to patient outcomes. Many stakeholders, including patient organizations, are interested in outcomes measures that allow patients and providers to assess relative outcomes performance for hospitals.

Figure 1. HF 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 HF. 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 (Carroll et al., 2007; Young et al., 2003; Li et al., 2021; 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 (Al-Damluji et al. 2015; 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 heart failure, specifically, a number of strategies have been shown to reduce re-hospitalization. For example, Al Damluji and colleagues showed that better care coordination at discharge reduced the likelihood of a readmission: discharge summaries that were transmitted to any outpatient clinician were associated with lower odds of readmission, and discharge summaries that included elements related to transitions of care were also associated with lower odds of readmission (Al Damluji et al., 2015). In addition, a meta-analysis found that interventions such as patient education and patient education combined with other interventions were the most beneficial; interventions that included one or more interventions were 1.4 to 6.8 times less likely to be readmitted (Wan et al., 2017). A review article examining effective strategies to prevent hospitalization and rehospitalization found that comprehensive discharge support, including individualized instruction and early post-discharge follow-up (by phone, home visit, or in clinic) in the immediate post-discharge period reduced mortality and/or readmissions in clinical trials (Horwitz and Krumholz, 2019). 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).

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, the 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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