# HF Readmission Attachment 1: Summary of Empirical Evidence

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., 2019; 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 readmission rate 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 Logic Model



The diagram above shows some of the many care processes that can influence readmission risk. In general, randomized controlled trials have shown that improvement in the following areas can directly reduce readmission rates: quality of care during the initial admission; improvement in communication with patients, their caregivers, and their clinicians; patient education; pre-discharge assessment; and coordination of care after discharge. Evidence that hospitals have been able to reduce readmission rates through these quality-of-care initiatives illustrates the degree to which hospital practices can affect readmission rates. Successful randomized trials have reduced 30-day readmission rates by 20-40% (Jack et al., 2009; Coleman et al., 2004; Courtney et al., 2009; Garasen et al., 2007; Koehler et al., 2009; Mistiaen et al., 2007; Naylor et al., 1994, 1999; van Walraven et al., 2002; Weiss et al., 2010; Krumholz et al., 2002; Bradley et al., 2013; Radhakrishnan et al., 2018). Perhaps the strongest evidence supporting the efficacy of improved discharge processes and enhanced care at transitions is a randomized controlled trial by the Project RED (Re-Engineered Discharge) intervention, in which a nurse was assigned to each patient as a discharge advocate. As a patient advocate, they were responsible for patient education, follow-up, medication reconciliation, and preparing individualized discharge instructions sent to the patient’s primary care provider (Jack et al., 2009; Patel et al., 2018). There was also a follow-up phone call from a pharmacist within 4 days of discharge. This intervention demonstrated a 30% reduction in 30-day readmissions (Jack et al., 2009). Hospital processes that reflect the quality of inpatient and outpatient care such as discharge planning, medication reconciliation, and coordination of outpatient care have been shown to reduce readmission rates (Nelson et al., 2000). Another study found that transitional care models prioritizing effective collaboration across providers/facilities through follow-up calls, patient tracking through medical charts, and team communication within and across facilities/providers, may reduce readmissions after AMIs and other conditions (Radhakrishnan et al., 2018).

Although readmission rates are also influenced by hospital system characteristics, such as the bed capacity of the local health care system, these hospital characteristics should not influence quality of care (Fisher et al., 1994). Therefore, this measure does not risk adjust for such hospital characteristics.

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