

Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization

Evidence: Summary of the Empirical Data

COPD is a priority condition for outcomes measure development because it is a leading cause of morbidity and mortality. Although overall COPD prevalence has declined over the last decade (Biener et al., 2019), COPD continues to affect tens of millions of individuals in the United States and is the nation's fourth leading cause of death (National Heart, Lung, and Blood Institute, 2020; CDC, 2020; Wier et al., 2011; CDC, 2013; American Lung Association, 2015). Studies report that in-hospital mortality rates for patients hospitalized for exacerbations of COPD range from 2-5% (AHRQ, National Statistics on All Stays; Patil et al., 2009; Tabak et al., 2009; Lindenauer et al., 2006; Dransfield et al., 2008) and 30-day mortality rates range from 3-9% (Faustini et al., 2008; Fruchter et al., 2008; Lindenauer et al., 2013). 30-day mortality rates following COPD discharge are also high and variable across hospitals; for the time of July 2015-June 2018, publicly reported 30-day risk-standardized mortality rates among Medicare FFS patients ranged from 4.9% to 14.3% for patients admitted with COPD (Wallace et al., 2019).

Figure 1. COPD Mortality Logic Model



The goal of this measure is to directly affect patient outcomes by measuring risk-standardized rates of mortality. Measurement of patient outcomes, including mortality, allows for a broad view of quality of care that encompasses more than what can be captured by individual process-of-care measures. As described below, mortality is likely to be influenced by a broad range of clinical activities such as the prevention of complications and the provision of evidenced-based care.

In 2011 COPD was one of the top 20 most expensive conditions treated in U.S. hospitals (AHRQ, 2011). It was also one of the top 20 most expensive conditions billed to Medicare, accounting for nearly \$4,074,000 of total hospital charges billed to Medicare (AHRQ, 2011). Some estimated project total costs of COPD treatment to increase to almost \$50 billion dollars by 2020, primarily driven by disease complexity, lengthy hospital admissions, and increased prevalence of comorbid conditions (Lin et al., 2020; Guarascio et al., 2013; Huber et al., 2015).

Many current hospital processes have been associated with lower mortality rates within 30 days of hospital admission (Jha et al., 2007; Wright et al., 2019). In COPD in particular, supplemental oxygen and the use of noninvasive ventilation in carefully selected patients has been shown to improve both short- and long-term survival. Current process-based performance measures, however, cannot capture all the ways that care within the hospital might influence outcomes. Measurement of patient outcomes, such as mortality, allows for a comprehensive view of quality of care that reflects complex aspects of care such as communication between providers and coordinated transitions to the outpatient environment. These aspects are critical to patient outcomes and are broader than what can be captured by individual process-of-care measures.

The diagram above indicates some of the many care processes that can influence mortality risk. Numerous studies have demonstrated that appropriate (guideline recommended care) and timely treatment for COPD patients can reduce the risk of mortality within 30 days of hospital admission (Krumholz et al., 2007; Williams et al., 2012; Ram et al., 2004; Austin et al., 2010; Ntoumenopoulos, 2011). For instance, Wake Forest Baptist Medical Center showed promising reductions in readmissions and mortality after implementing a comprehensive care plan focused on transitions of care, treatment of comorbidities, and appropriate and timely hospice and palliative care services for COPD patients (Ohar et al., 2018).

The COPD mortality 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. As a result, many stakeholders, including patient organizations, are interested in outcomes measures that allow patients and providers to assess relative outcomes performance for hospitals (Krumholz et al., 2007).

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