# THA TKA Complication Attachment 1: Summary of Empirical Evidence

In 2010, there were 168,000 THAs and 385,000 TKAs performed on Medicare beneficiaries 65 years and older (National Center for Health Statistics, 2010). There is an increasing trend in both of these procedures, with some projecting that annual TKA and THA volume will reach more than 3 million and 500,000 by 2030 respectively (Kurtz et al., 2007; Kurtz et al., 2014). Although these procedures dramatically improve quality of life, they are costly. In 2005, annual hospital charges totaled $3.95 billion and $7.42 billion for primary THA and TKA, respectively (Kurtz et al., 2007). These costs are projected to increase significantly for both THAs and TKAs by 2020 (Kurtz et al., 2014). Medicare is the single largest payer for these procedures, covering approximately two-thirds of all THAs and TKAs performed in the US (Ong et al., 2006). Combined, THA and TKA procedures account for the largest procedural cost in the Medicare budget (Bozic et al., 2008).

Since THAs and TKAs are commonly performed and costly procedures, it is imperative to address quality of care. Complications increase costs associated with THA and TKA and affect the quality, and potentially quantity, of life for patients. Although complications following elective THA and TKA are rare, the results can be devastating. Rates for periprosthetic joint infection following THA and TKA range from 1.6% to 2.3%, depending upon the population (Bongartz et al., 2008; Kurtz et al., 2010). Reported 90-day death rates following THA range from 0.7% (Soohoo et al., 2010) to 2.7% (Cram et al., 2007). Rates for pulmonary embolism following TKA range from 0.5% to 0.9% (Cram et al., 2007; Mahomed et al., 2003; Khatod et al., 2008; Solomon et al., 2006; Bozic et al., 2014). Rates for wound infection in Medicare population-based studies vary between 0.3% and 1.0% (Cram et al., 2007; Mahomed et al., 2003; Solomon et al., 2006; Bozic et al., 2014). Rates for septicemia range from 0.1%, during the index admission (Browne et al., 2010) to 0.3%, 90 days following discharge for primary TKA (Cram et al., 2007; Bozic et al., 2014). Rates for bleeding and hematoma following TKA range from 0.9% (Browne et al., 2010; Bozic et al., 2014) to 1.7% (Huddleston et al., 2009).

The variation in complication rates across hospitals indicates there is room for quality improvement and targeted efforts to reduce these complications could result in better patient care and potential cost savings (Navathe et al, 2017; Cyriac et al., 2016; Borza et al., 2019). Measurement of patient outcomes 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 THA/TKA hospital-specific risk-standardized complication rate (RSCR) 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.

## Figure 1. THA/TKA Complications Logic Model



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