

## HOSPITAL CHARACTERISTICS

► Trends in mortality rates following isolated coronary artery bypass graft surgery and complication rates following elective primary total hip arthroplasty and/or total knee arthroplasty.

The Centers for Medicare & Medicaid Services (CMS) evaluates the trends in measure results over time in order to monitor patterns, changes, and potential unintended consequences in the measure results. This information allows CMS to better understand the current state of care within U.S. hospitals.

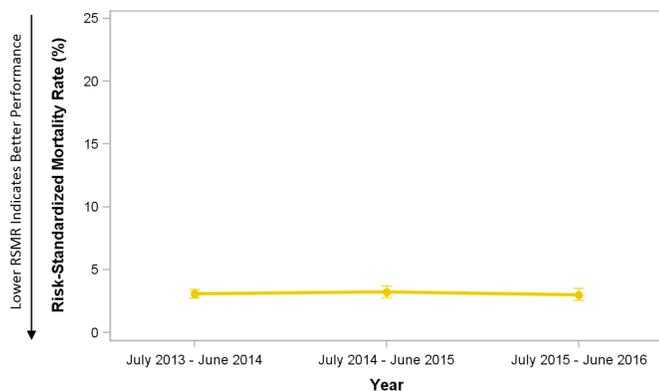
The isolated coronary artery bypass graft (CABG) mortality measure assesses mortality for any reason within 30 days of the procedure date for isolated CABG, regardless of whether the patient dies while still in the hospital or after being discharged from the hospital [1]. “Isolated” CABG procedures are those performed without concomitant high-risk cardiac and non-cardiac procedures, such as valve replacement.

The elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA) complication measure assesses the occurrence of significant medical and/or surgical complications within 7 to 90 days, depending on the complication, from the date of admission for elective primary THA/TKA [2]. Medical and surgical complications include:

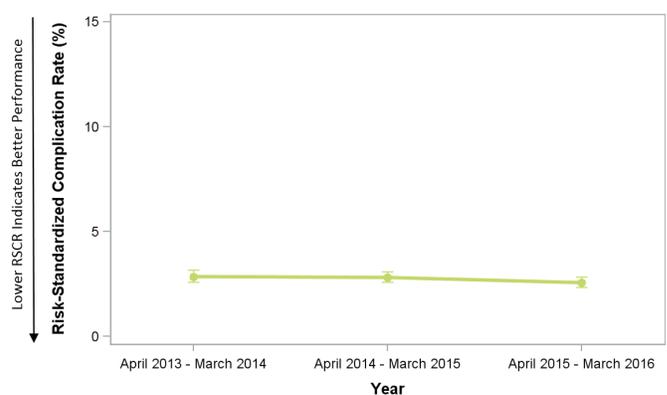
- Acute myocardial infarction (AMI), pneumonia, or sepsis/septicemia during the index admission or within 7 days from the date of admission;
- Surgical site bleeding, pulmonary embolism or death during the index admission or within the 30 days from the date of the index admission; or
- Mechanical complications, periprosthetic joint infection, or wound infection during the index admission or within 90 days from the date of the index admission [2].

The CABG mortality and THA/TKA complication measure includes admissions for Medicare fee-for-service (FFS) beneficiaries aged 65 or older. CMS began publicly reporting risk-standardized complication rates (RSCRs) following elective primary THA/TKA in 2013, and risk-standardized mortality rates (RSMRs) following isolated CABG surgery in 2015 [3]. Publicly reported measure results are updated annually on the [Hospital Compare](#) website. The THA/TKA complication measure and CABG mortality measure will be included in the Hospital Value-Based Purchasing (HVBP) Program beginning in 2019 and 2022, respectively [4, 5].

**FIGURE 1.** Trend in the median hospital RSMR (%) for CABG, July 2013-June 2016.



**FIGURE 2.** Trend in the median hospital RSCR (%) for THA/TKA, April 2013-March 2016.



Examining trends in hospital performance on the procedure-specific mortality and complication measures provides insight into whether hospital quality varies from year to year. To determine the trends in national performance on these measures, we examined hospitals' CABG RSMRs for each year in the July 2013-June 2016 reporting period and THA/TKA RSCRs for each year of the April 2013-March 2016 reporting period. We included hospitals with 25 or more qualifying cases. To ensure accurate assessment of each hospital, the measures use a statistical model to adjust for key differences in patient risk factors that are clinically relevant and that have strong relationships with the mortality and complication outcomes [1, 2].

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**TABLE 1.** Trend in the median hospital RSMR (%) for CABG, July 2013-June 2016.

	Median (IQR) of Hospital RSMRs (%)		
	July 2013-June 2014	July 2014-June 2015	July 2015-June 2016
CABG	3.1 (2.8, 3.4) (666 hospitals)	3.2 (2.8, 3.7) (662 hospitals)	3.0 (2.6, 3.5) (669 hospitals)

**TABLE 2.** Trend in the median hospital RSCR (%) for THA/TKA, April 2013-March 2016.

	Median (IQR) of Hospital RSCRs (%)		
	April 2013-March 2014	April 2014-March 2015	April 2015-March 2016
THA/TKA	2.8 (2.6, 3.2) (2165 hospitals)	2.8 (2.6, 3.1) (2157 hospitals)	2.6 (2.4, 2.8) (2167 hospitals)

The median hospital RSMR following CABG surgery rose by 0.1 percentage points between June 2014 and June 2015 and then declined by 0.2 percentage points by June 2016 (Figure 1 and Table 1). The median hospital RSCR following THA/TKA surgery declined by 0.2 percentage points between March 2014 and March 2016 (Figure 2 and Table 2). The bars on the graphs in Figures 1 and 2 represent the interquartile range (IQR).

Hospital RSMRs following CABG surgery rose by 0.1 percentage points between June 2014 and June 2015 and then declined by 0.2 percentage points by June 2016. Hospital RSCRs following THA/TKA declined by 0.2 percentage points between March 2014 and March 2016.

1. Jaymie Simoes, Jacqueline N. Grady, Jo DeBuhr, et al. 2017 Procedure-Specific Measure Updates and Specifications Report Hospital-Level 30-Day Risk-Standardized Mortality Measure: Isolated Coronary Artery Bypass Graft (CABG) Surgery – Version 4.0. <https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1163010421830>. Available as of April 4, 2017.

2. Jaymie Simoes, Jacqueline N. Grady, Jo DeBuhr, et al. 2017 Procedure-Specific Measure Updates and Specifications Report Hospital-Level Risk-Standardized Complication Measure: Elective Primary Total Hip Arthroplasty (THA) and/or Total Knee Arthroplasty (TKA) – Version 6.0. <https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772782693>. Available as of April 4, 2017.

3. Hospital Inpatient Quality Reporting (IQR) Program Overview. QualityNet website. <https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1138115987129>. Accessed March 1, 2017.

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5. Centers for Medicare and Medicaid Services. Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals, Final Rule Fiscal Year 2017. 81 FR 56761. Federal Register website. <https://www.federalregister.gov/d/2016-18476>. Published August 22, 2016. Effective October 1, 2016. Accessed March 1, 2017.