NATIONAL QUALITY FORUM

Memo

June 5, 2019

To: Consensus Standards Approval Committee (CSAC)

From: Cost and Efficiency Project Team

Re: Cost and Efficiency, fall 2018 measure review cycle

CSAC Action Required

The CSAC will review recommendations from the Cost and Efficiency Standing Committee at its June 5-6, 2019 meeting and vote on whether to uphold the recommendations from the Committee.

This memo includes a summary of the project and the measure recommendation. NQF did not receive public comments following the Committee's evaluation of the measure. Additionally, **NQF members did not express their support ("support" or "do not support") for the measure submitted for endorsement consideration.** The following documents accompany this memo:

- **Cost and Efficiency, fall 2018 cycle draft report**. The complete draft report is also available on the project webpage, along with supplemental materials.

Background

The Cost and Efficiency Standing Committee oversees NQF's portfolio of cost and resource use measures. NQF defines efficiency as the resource use or cost associated with a specific level of performance with respect to the other five Institute of Medicine (IOM) aims of quality: safety, timeliness, effectiveness, equity, and patient-centeredness. There are currently no endorsed efficiency measures.

Draft Report

The Cost and Efficiency fall 2018 cycle draft report presents the results of the evaluation of the measure considered under the Consensus Development Process (CDP). The measure was recommended for endorsement.

The measure was evaluated against the Cost and Resource Use Measure Evaluation Criteria.

	Maintenance	New	Total
Measures under consideration	0	1	1
Measure recommended for endorsement	0	1	1

CSAC Action Required

Pursuant to the CDP, the CSAC is asked to consider endorsement of one candidate consensus measure.

Measure Recommended for Endorsement

- 3474 Hospital-Level, Risk-Standardized Payment Associated with a 9-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA) (CMS/Yale CORE)

Overall Suitability for Endorsement: Yes-17; No-0

Appendix A: CSAC Checklist

The table below lists the key considerations to inform the CSAC's review of the measure submitted for endorsement consideration.

Key Consideration	Yes/No	Notes
Were there any process concerns raised during the CDP project? If so, briefly explain.	No	
Did the Standing Committee receive requests for reconsideration? If so, briefly explain.	No	
Did the Standing Committee overturn any of the Scientific Methods Panel's ratings of Scientific Acceptability? If so, state the measure and why the measure was overturned.	No	
If a recommended measure is a related and/or competing measure, was a rationale provided for the Standing Committee's recommendation? If not, briefly explain.	N/A	
Were any measurement gap areas addressed? If so, identify the areas.	Yes	There are currently no endorsed cost measures that focus on hip and knee arthroplasty
Are there additional concerns that require CSAC discussion? If so, briefly explain.	No	

Appendix B: Details of Measure Evaluation

Rating Scale: H=High; **M**=Moderate; **L**=Low; **I**=Insufficient; **NA**=Not Applicable

Measure Recommended

3474 Hospital-Level, Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA)

Submission

Description: This measure estimates hospital-level, risk-standardized payments for an elective primary total THA/TKA episode of care, starting with an inpatient admission to a short-term acute care facility and extending 90 days post admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older.

Risk Adjustment: Statistical Risk Model

Resource Use Measure Type: Per Episode

Level of Analysis: Facility

Costing Method: Standardized Pricing [Risk standardized pricing (RSP)]

Target Population: Medicare Beneficiaries 65 years and older

Data Source: Claims, Other

Measure Steward: Centers for Medicare & Medicaid Services (CMS)

STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. High Impact or High Resource Use, 1b. Variation in cost or resource use; Disparities across populations)

Important to Measure and Report: **H-4**; **M-11**; **L-2**; **I-0;**

Rationale:

- The developer provided data demonstrating variation in terms of risk standardized payment across providers. In the 2012-2013 period, payment ranged from $16,421 to $35,123 with the median payment of $23,120. This range of performance was similar or greater across the other years in the data sample.
- Of the 3,481 hospitals in the developer cohort, ~21 % of the hospitals had a payment “greater than the national payment”; ~32 % had a payment “no difference from the national payment”; ~28% had a payment “less than the national payment”. ~20% of hospitals had too few cases to reliably estimate the hospital risk standardized price.
- The Committee noted there was wide variation between the minimum to maximum risk standardized payments, but little difference in the interquartile range. They agreed that there is variation in payments, but there were differences in opinion among Committee members on whether the developers demonstrated there is significant enough variation to warrant a measure.

- The developer demonstrated in the submission that hospitals with a low proportion of dual eligible patients (3.8%) had lower median risk standardized payments ($21,925) compared to hospitals with a high proportion (11.5%) of dual eligible patients ($23,974). Similarly, hospitals with a low proportion of patients below the AHRQ SDS index score of 42.7 had lower median risk standardized payments ($22,110) compared to hospitals with a high proportion of patients below the AHRQ SDS index score of 42.7 ($23,501).
- Some Committee members expressed concern that while the data demonstrated differences in payments to hospitals based upon the proportion of duals served, it was unclear whether this indicates there are disparities in care. Because the variation in payments is predominantly in the post-acute phase, these higher or lower payments could be driven by social factors that increase the need for more post-acute services. Based on their analysis, the developer suggests that the difference in dual eligible RSP is driven both by patient-level and facility level factors.
- Ultimately, the Committee agreed that this is a high impact procedure affecting large numbers of people and that the developer demonstrated enough variation in payments to warrant measurement.

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2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: **H-3**; **M-14**; **L-0**; **I-0** 2b. Validity: **H-2**; **M-12**; **L-2**; **I-0**

<u>Rationale</u>:

Reliability:

- The Committee expressed few concerns with reliability; they had no concerns with the reliability of the specifications.
- The developer submitted score-level reliability testing using signal-to-noise analysis. This analysis was deemed acceptable by the Committee as the results indicated high reliability and that the measure is sufficiently able to discriminate differences in performance among hospitals. Hospitals with less than 25 cases are excluded from reliability assessment. Rates for these “small volume” hospitals are reported separately.
- Reliability of measure scores across hospitals was tested using the split sample test-retest method and interclass correlation coefficient (ICC) to determine the agreement of samples. The agreement between the two independent assessments of each hospital was 0.931. When 3 years of data are used the median reliability score is 0.938.
- One Committee member questioned whether the developer examined the frequency and reliability of the use of the present on admission codes and propensity to report secondary conditions that are used to determine comorbidities and risk profiles. The developer responded that this was examined and found that the majority of hospitals who report this measure, capture this report, with the exception of critical access hospitals report it less frequently and consistency. The developer continues to study the reliability of the coding and use of secondary diagnoses.

Validity

- Validity was demonstrated with a systematic assessment of face validity.

- This measure is attributed to the hospital. Analysis indicates most variation in payments occur after hospitalization, in post-acute settings. This attribution approach was selected in order to drive hospitals to facilitate care coordination, assess referral practices, and understand their role in post-acute costs and resource use. The Committee generally agreed, that although the attribution approach is aspirational, it is a valid approach to driving behavior change for hospitals and encourage hospitals to examine their processes for transitioning patients out of the acute care setting. There was some concern that hospitals may be challenged to improve on this measure if they are unable to determine which types of post-acute services are appropriate for elective THA/TKA patients due to lack of data to guide these practices.
- One Committee member expressed concern that as hip and knee joint replacements are increasingly performed in outpatient settings that the hospital setting focus of this measure may narrow the measure population over time and result in a large proportion of patients not being captured by this measure.
- This measure was designed to be used with harmonized complications and readmissions measures. One Committee member commented that using these measures together can enable beneficiaries to shop around for facilities that provide high value care.
- The Committee questioned whether there is data to demonstrate how much of the variation in payments is in the post-acute phase. The developer confirmed there is very little variation in the hospital payments as this is generally a short visit and a relatively standard encounter.
- The Committee questioned whether variation in the different segments of the post-acute phase have been examined (i.e., discharge to 30 days and 31-90 days). The developer responded that most of the complications and payments occur in the first 30 days, more proximal to surgery, and are usually due to infection and sequelae of blood clots. In the 30-90 day post-discharge phase, most of the complications are mechanical relating to the function of the joint. The complications for which payments are included for this measure aligns with the harmonized complications outcome measure.
- The TEP expressed concerns about the clinical sites from which costs are captured in the measure. The TEP specifically questioned the inclusion of birthing centers in the list of included clinical sites as this does not seem relevant for this population (ages >65). There were also concerns with including costs of various other facilities as it may capture costs that are unrelated to the procedure as these patients will likely be high cost.
    - *Developer response*: Patients in the settings listed are not *a priori* included in the denominator unless they are subsequently admitted to an inpatient acute care facility for an elective TKA/THA procedure. The developer explained that the conditions that may be associated with the setting (e.g., psychiatric conditions for patients admitted from a psych facility) are included in the risk model in order to adjust at the patient-level for co-occurring conditions that may impact outcomes. The measure design is Intended to enable capture of complications that may occur in those settings after discharge from the acute care facility. The developer pointed out that the range of settings and type of costs captured in the measure narrows during the episode. All costs are captured in all post-acute settings in the first 30 days after discharge. Costs captured during days 31-90

are for a narrowed list of settings and events that defined as being related to TKA/THA procedures.

- The TEP sought clarity on the inclusion of readmissions in the measure and ED costs during the episode.
    - *Developer response*: All costs are captured in the first 30 days (this would include a pulmonary embolism (PE) or deep vein thrombosis (DVT)). After 30 days, only complications related to wound infection, surgical site infection, bleeding or mechanical issues are captured. This is in alignment with a harmonized THA/TKA complications readmissions measure and requires both diagnostic and procedure codes for the costs to be counted in the measure.
- The TEP stated specific concerns about including costs of homeless shelters and prisons in the first 30 days as these settings are often associated with costs to managing health issues related to sequelae of complex social issues that are often unrelated to the procedure itself. There are concerns that the social factors related to these types of patients are not accounted for in the risk model.
    - *Developer response:* The costs that are captured for patients to are in prison in the 30 days after discharge are limited to physician costs, and do not include the cost of prison itself. The developer stated that these patients would only account for a small percentage of the population included in the measure and would have little impact on overall hospital performance.
- The TEP expressed concerns that Medicare patients less than 65 not included in the measure. Disabled patients and those with ESRD are eligible for Medicare before the age of 65.
    - *Developer Response*: There are separate measurement programs for ESRD patients under the age of 65 so they are excluded. They are excluded due to the difficulty in capturing baseline functional status prior to elective procedure using administrative data. It is also very difficult to capture and accommodate these varying levels of functional status and levels of disability in the risk model. This approach is consistent with other CMS measures.
- The TEP sought clarity on how pathological fractures were handled in order to determine whether the patient should be excluded from the measure or if the fracture was related to the current episode. The developer clarified that present on admission code modifiers are used to discern whether the fracture was acquired before or during admission. There was some discussion as to whether this modifier is consistently used and can be relied upon as an accurate method for identifying these patients, but it was ultimately deemed satisfactory by the TEP.
- The conceptual analysis of social risk factors assessed for consideration of inclusion in the risk model revealed that the impact of SES for hip and knee arthroplasty patients found that non-home discharge destinations are associated with higher costs. The literature also indicated those with social risk factors demonstrate longer lengths of stay and higher rates of readmissions.
- Two variables were used as proxies for SES in the analysis of the risk model: Dual Eligible status and AHRQ-validated SES index score. Each of these SDS factors remained statistically significant in the multivariate models (1.12 for dual-eligibility and 1.04 for

the AHRQ SDS index). Given the variation in post-acute spending for the different subgroups and the results of their empirical analysis, the developer included the dual eligibility in the risk model.

- The TEP expressed concerns with using the cost measure as a proxy for complications and emphasized that complications are not the only sequalae of these procedures; functional status, and patient reported outcomes should also be examined. The TEP questioned whether using claims data for hip and knee arthroplasty patients to determine risk profile for the risk model has it been validated in this population.
    - *Developer response*: CMS in the process of working on measures related to functional status and patient reported outcomes for this population. There are also hip/knee complications readmission measures that are endorsed, harmonized and in use. To date, they have not received any feedback on similar measures related to the validity of the risk adjustment approach. Face validity was sought from a clinical TEP consulted during the development of the measure. The developers acknowledged that administrative claims are not a proxy for clinical data, but when aggregated at the hospital level can be used to predict risk.

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3. Feasibility: H-14; M-3; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- The Committee had no concerns with the feasibility of this measure given that all data elements are in defined fields and administrative claims data can be accessed electronically.

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4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-17; No Pass-0** *4b. Usability:* **H-2; M-14; L-1; I-0**

Rationale:

- This measure has been reported in the Inpatient Quality Reporting (IQR) Program since 2017.
- The Measure Application Partnership (MAP) reviewed this measure for the Hospital Value-Based Purchasing (VBP) program in the 2015-2016 cycle. MAP did not support the measure at that time because they believed it should first be implemented in IQR and hospital compare for a year before it was included in the VBP program.
- One Committee member questioned whether there has been any feedback provided to the developer regarding implementation of the measure since it has been in use in the IQR. Specifically, one Committee member questioned whether any hospitals had issues with the inclusion of ESRD costs (although included in the risk adjustment). The

developer stated they have not received any comments of note on these issues; questions about risk modeling, specifications, implementation, exclusions are addressed through technical assistance from the developer.

- Committee members questioned whether the developers could show that hospitals have been able to demonstrate improvement on this measure since its use began in the IQR in 2017. The developer responded that because it has only been in use for a short time, there is not yet enough data to demonstrate a trend in performance since they only have two data points; they anticipate there will be enough data to show any improvements when the measure undergoes maintenance review.
- One Committee member questioned the developer on the intended role of family practices (with risk bearing contracts) or family physicians who manage these patients post-operatively. Many practices work with managed care plans and are independent of hospitals and may work with multiple hospitals. There was concern that this measure may not be useful for these providers in making referrals for post- acute services even though they may see a large number of these patients.
- There was also concern that the usability of the measure may be limited if hospitals were unable to see exactly where payments were made in the post-acute phase (e.g., SNFs, LTACs or home health agencies). The Developer explained that hospitals are provided with hospital-specific reports that include details on how payments were allocated to each setting or provider; however, these are private results and not shared publicly beyond the hospitals that are being measured.
- This measure is reported along with harmonized complications and readmission measures. The Committee agreed that the utility of this measure is improved by reporting this measure with quality measures that have aligned specifications.

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5. Related and Competing Measures

This measure is related to two quality measures which have been harmonized for use together:

- 1550: Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)
- 1551: Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

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6. Standing Committee Recommendation for Endorsement: **Yes-17**; **No-0**

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7. Public and Member Comment

NQF did not receive any comments following the Committee's evaluation of the measure.

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8. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X

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9. Appeals

NATIONAL QUALITY FORUM

Cost and Efficiency
Fall 2018 Review Cycle

CSAC Review and Endorsement

June 5-6, 2019

Standing Committee's Recommendations

- **1 new measure recommended for endorsement**
  - 3474 Hospital-Level, Risk-Standardized Payment Associated with a 9-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA) (CMS/Yale-CORE)
- Measure reviewed by the SMP

Measure Review Challenges

3474 Hospital-level, risk-standardized payment associated with a 90-day episode of care for elective primary total hip and/or total knee arthroplasty (THA/TKA)

- There were no significant challenges identified in the review of the measure.

Overarching Issue

Linking Cost and Quality

- The Committee questioned whether the developer was able to show whether the hospitals being measured could demonstrate improvements in costs (i.e., risk-standardized payment) while ensuring similar or higher levels of quality.
- NQF does not currently require that developers demonstrate a link between the cost measure and a harmonized quality measure.
- There are 2 endorsed (harmonized) quality measures that could be used with this measure:
  - 1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)
  - 1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Public and NQF Member Comments & Member Expression of Support

- No NQF member and public comments were received during the comment period
- No expressions of support were received

Timeline and Next Steps

Process Step	Timeline
Appeals Period	June 10 - July 9, 2019
Adjudication of Appeals	July 10 - August 6, 2019
Final Report	September 2019

Questions?

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https://www.qualityforum.org/Cost_and_Efficiency.aspx

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Cost and Efficiency, Fall 2018 Review Cycle: CDP Report

DRAFT REPORT FOR CSAC REVIEW

June 5, 2019

NATIONAL QUALITY FORUM

This report is funded by the Department of Health and Human Services under contract HHSM-500-2017-00060I Task Order HHSM-500-T0001.

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Cost and Efficiency, Fall 2018 Review Cycle

DRAFT REPORT FOR CSAC REVIEW

Executive Summary

In 2016, healthcare spending in the United States reached $3.3 trillion or approximately $10,348 per person.[1] This represented a 4.3 percent increase over 2015 spending levels.[2] Despite this high level of spending, the U.S. continues to rank below other developed countries for health outcomes including lower life expectancy and greater prevalence of chronic diseases.[3] Given this persistent trend, cost measurement continues to be a critical component of assessing the efficiency of the healthcare system. Cost measures are the building blocks to efficiency and value. When NQF launched its first effort to endorse cost and resource use measures in 2009, one of the foundational principles recognized that cost and resource use measures should be used in the context of and reported with quality measures. NQF, with the guidance and support of the Cost and Efficiency Standing Committee, continues to explore approaches and best practices for evaluating efficiency constructs.

The Cost and Efficiency Standing Committee (see Appendix C) oversees NQF's portfolio of six cost and resource use measures. For this project, the Standing Committee evaluated one newly submitted measure against NQF's cost and resource use evaluation criteria. The Standing Committee recommended the measure for endorsement: 3474 *Hospital-Level, Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA)*. A detailed summary of the Committee's discussion and ratings of the criteria for the measure are in Appendix A.

Introduction

In 2016, healthcare spending in the United States reached $3.3 trillion or approximately $10,348 per person.[4] This represented a 4.3 percent increase over 2015 spending levels.[5] Despite this high level of spending, the U.S. continues to rank below other developed countries for health outcomes including lower life expectancy and greater prevalence of chronic diseases.[6] Recent research suggests that U.S. healthcare spending is roughly twice that of other high-income countries, accounting for almost 18 percent of GDP.[7] These concerning trends have been attributed to a wide variety of causes, including high costs for drugs, procedures, and administrative services, as well as poor coordination and overutilization of health services. Given this persistent trend, cost measurement continues to be a critical component to assess the efficiency of the healthcare system.

Improving efficiency has the potential to simultaneously reduce the rate of cost growth and improve the quality of care provided. Cost measures are the building blocks to efficiency and value. When NQF launched its first effort to endorse cost and resource use measures in 2009, one of the foundational principles recognized that cost and resource use measures should be used in the context of and reported with quality measures. NQF, with the guidance and support of the Cost and Efficiency Committee, continues to explore approaches and best practices for evaluating efficiency constructs.

As part of NQF's redesign of the Consensus Development Process in 2017, the Cost and Resource Use Standing Committee expanded its charge to assess efficiency more broadly, including measures assessing the efficiency of healthcare delivery. As such, the Cost and Resource Use Standing Committee was renamed the Cost and Efficiency Standing Committee. The new scope allows the Committee to take a more holistic view of drivers of healthcare spending and identify sources of inefficiency and waste across the system. In this project, the Cost and Efficiency Standing Committee reviewed one measure of hospital and post-acute care payments for Medicare patients who undergo elective hip or knee arthroplasty: 3474 *Hospital-Level, Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA)*. The Committee's evaluation of this measure was supported with inputs from both the Scientific Methods Panel as well as an Orthopedic Surgery Technical Expert Panel. This measure is constructed similarly to other endorsed measures in the portfolio and would become the only procedure-based cost measure in the portfolio. The Committee recommended this measure for endorsement.

NQF Portfolio of Performance Measures for Cost and Efficiency

The Cost and Efficiency Standing Committee (see Appendix C) oversees NQF's portfolio of cost and efficiency measures (see Appendix B). This portfolio contains six cost and resource use measures (see Table 1 below).

Table 1. Cost and Efficiency Measure Portfolio

NQF #	Title	Category
1598	Total Resource Use Population-Based PMPM Index	Noncondition-specific per capita resource use measure
1604	Total Cost of Care Population-Based PMPM Index	Noncondition-specific per capita resource use measure
2431	Hospital-Level, Risk-Standardized Payment Associated with a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)	Condition-specific, episode-based resource use measure
2436	Hospital-Level, Risk-Standardized Payment Associated with a 30-Day Episode of Care for Heart Failure	Condition-specific, episode-based resource use measure
2579	Hospital-Level, Risk-Standardized Payment Associated with a 30-Day Episode of Care for Pneumonia	Condition-specific, episode-based resource use measure
2158	Medicare Spending Per Beneficiary	Noncondition-specific, episode-based resource use measure

Cost and Efficiency Measure Evaluation

This measure was reviewed on January 11, 2019 by a Technical Expert Panel (TEP) consisting of orthopedic surgery clinical experts who were charged with providing the Cost and Efficiency Standing Committee a qualitative evaluation of the measure's clinical specifications. On February 12, 2019 the Cost and Efficiency Standing Committee evaluated one new measure against NQF's Cost and Resource Use Evaluation Criteria.

Table 2. Cost and Efficiency Measure Evaluation Summary

	Maintenance	New	Total
Measures under consideration	0	1	1
Measures recommended for endorsement	0	1	1

Comments Received Prior to Committee Evaluation

NQF solicits comments on endorsed measures on an ongoing basis through the Quality Positioning System (QPS). In addition, NQF solicits comments for a continuous 16-week period during each evaluation cycle via an online tool located on the project webpage. For this evaluation cycle, the commenting period opened on December 11, 2018 and will close on April 19, 2019. As of January 30, 2019, no comments were submitted.

Comments Received After Committee Evaluation

The continuous 16-week public commenting period with NQF member support closed on April 19, 2019. Following the Committee's evaluation of the measures under consideration, NQF received no comments from organizations or individuals pertaining to the draft report or to the measure under consideration.

Throughout the 16-week continuous public commenting period, NQF members had the opportunity to express their support ('support' or 'do not support') for each measure submitted for endorsement consideration to inform the Committee's recommendations. No NQF members provided their expression of support.

Overarching Issue

During the Standing Committee's discussion of the measure, one overarching issue was identified that applied to this measure, and future candidate measure evaluations.

Linking Cost and Quality Measures

Cost measures are the building blocks to efficiency and value. When, NQF launched its first effort to endorse cost and resource use measures in 2009, one of the foundational principles recognized that cost and resource use measures should be used in the context of and reported with quality measures. This remains an important principle guiding the Cost and Efficiency Standing Committee. Reporting a cost or resource use measure in the absence of a quality signal does not provide patients or consumers with any indication as to what should be considered as high or low cost and whether care was delivered efficiently. In an effort to better understand the relationship between cost and quality measures and how they can be used together to understand efficiency and value, NQF produced a report exploring the link between cost and quality measures. This report described the landscape of efficiency and value and explored ways in which these measures' constructs can be reported together. More recently, NQF drafted a report to explore the importance of exploring the science of how measures are grouped together to form measure sets or systems of measures. While these bodies of work provide guidance for framing these measurement approaches, there remains a gap in guidance or criteria for how to systematically evaluate the link between cost and quality measures.

During the evaluation of this measure, the Committee questioned whether the developer was able to demonstrate that the hospitals being measured could demonstrate improvements in costs (i.e., risk standardized payment) while ensuring similar or higher levels of quality. Specifically, the Committee was interested in the relationship between performance on the cost and quality measures. Some members expressed concerns about possible tradeoffs between performing well on the risk-standardized cost measures at the expense of lower quality performance. While the developers reported that they have performed some analysis in response to this question, it is not currently requested as part of the NQF submission process.

While NQF aims to incorporate an evaluation of the link between cost and quality measures in future measure reviews, additional work is needed to establish criteria. These criteria will be built using the aforementioned work on measure sets and systems and the methodology report on linking cost and quality measures. However, until this guidance can be established and implemented, the Cost and Efficiency Standing Committee will seek specifications and information on quality measures in the NQF portfolio that could be used in combination with the cost measures under review. For this effort, the Committee was provided with information on harmonized complications and readmissions measures for Medicare patients who received elective total hip or knee arthroplasty. Additionally, NQF will explore the feasibility of aligning the review of harmonized cost and quality measures as a precursor to assessing

efficiency constructs. Efforts to facilitate the evaluation of efficiency constructs will focus on the nature of the information that should be solicited in the measure submission form to help the Committee understand the link between the selected cost and quality measures and criteria upon which to base an evaluation.

Summary of Measure Evaluation

The following brief summary of the measure evaluation highlights the major issues that the Committee considered. Details of the TEP's feedback and the Committee's discussion and ratings of the criteria for the measure are included in Appendix A.

3474 Hospital-Level, Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA) CMS/Yale CORE: Recommended

Description: This measure estimates hospital-level, risk-standardized payments for an elective primary total THA/TKA episode of care, starting with an inpatient admission to a short-term acute care facility and extending 90 days post admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older; **Measure Type:** Cost/Resource Use; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital ; **Data Source**: Claims

The Committee agreed that the measure focuses on a high-impact area of healthcare and that risk standardized payments varied. The Committee was concerned that the variation in payments was smaller than expected and questioned where in the 90-day episode the variation was concentrated. Although the developer did not submit these data, they reported that most of the post-acute payment variation was clustered in the first 30 days after hospitalization. Based on its assessment of the reliability and validity testing, the Scientific Methods Panel (SMP) voted to pass the measure on scientific acceptability. However, given the additional subcriteria within reliability and validity that were not fully assessed by the SMP, the Standing Committee discussed and voted on both criteria. The Committee expressed few concerns with reliability. The signal-to-noise testing analysis was deemed acceptable by the Committee as the results indicated a high reliability, sufficiently able to discriminate differences in performance among hospitals. The Committee had few concerns with the validity of the measure and agreed that the measure as specified aligns with the intent of the measure to drive hospitals to improve the selection of post-acute care services and discharge planning. The Committee agreed that the measure is feasible, as all data elements are available electronically, and the SAS code to implement the measure is publicly available. The Committee also expressed no major concerns regarding the use and usability of the measure. The measure is currently publicly reported and part of the Hospital Inpatient Quality Reporting (IQR) program. Committee members questioned whether hospitals have been able to demonstrate improvement on this measure since its use began in the IQR in 2017. Since the measure has only been in use for a short time, the developer reported that there are not yet enough data to demonstrate a trend as they only have two data points from prior years. Overall, the Committee agreed that the measure is usable and implementation with complications and readmissions measures better supports its usability. The Standing Committee recommended the measure for NQF endorsement.

References

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[5] Centers for Medicare & Medicaid Services. National Health Expenditure Data Fact Sheet. https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet.html.

[6] Squires D, Anderson C. *U.S. Health Care from a Global Perspective: Spending, Use of Services, Prices, and Health in 13 Countries. Issues in International Health Policy*. New York: The Commonwealth Fund; 2015. http://www.commonwealthfund.org/~/media/files/publications/issue-brief/2015/oct/1819_squires_us_hlt_care_global_perspective_oecd_intl_brief_v3.pdf. Last accessed March 2017.

[7] Davis K, Stremikis K, Squires D, et al. *Mirror, Mirror on the Wall, How the Performance of the U.S. Health Care System Compares Internationally.* New York: The Commonwealth Fund; 2014. http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/jun/1755_davis_mirror_mirror_2014.pdf. Last accessed March 2017.

Appendix A: Details of Measure Evaluation

Rating Scale: H=High; **M**=Moderate; **L**=Low; **I**=Insufficient; **NA**=Not Applicable

Measure Recommended

3474 Hospital-Level, Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA)

Submission | Specifications

Description: This measure estimates hospital-level, risk-standardized payments for an elective primary total THA/TKA episode of care, starting with an inpatient admission to a short-term acute care facility and extending 90 days post admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older.

Risk Adjustment: Statistical Risk Model

Resource Use Measure Type: Per Episode

Level of Analysis: Facility

Costing Method: Standardized Pricing [Risk standardized pricing (RSP)]

Target Population: Medicare Beneficiaries 65 years and older

Data Source: Claims, Other

Measure Steward: Centers for Medicare & Medicaid Services (CMS)

STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. High Impact or High Resource Use, 1b. Variation in cost or resource use; Disparities across populations)

Important to Measure and Report: **H-4**; **M-11**; **L-2**; **I-0;**

Rationale:

- The developer provided data demonstrating variation in terms of risk standardized payment across providers. In the 2012-2013 period, payment ranged from $16,421 to $35,123 with the median payment of $23,120. This range of performance was similar or greater across the other years in the data sample.
- Of the 3,481 hospitals in the developer cohort, ~21 % of the hospitals had a payment “greater than the national payment”; ~32 % had a payment “no difference from the national payment”; ~28% had a payment “less than the national payment”. ~20% of hospitals had too few cases to reliably estimate the hospital risk standardized price.
- The Committee noted there was wide variation between the minimum to maximum risk standardized payments, but little difference in the interquartile range. They agreed that there is variation in payments, but there were differences in opinion among Committee members on whether the developers demonstrated there is significant enough variation to warrant a measure.

- The developer demonstrated in the submission that hospitals with a low proportion of dual eligible patients (3.8%) had lower median risk standardized payments ($21,925) compared to hospitals with a high proportion (11.5%) of dual eligible patients ($23,974). Similarly, hospitals with a low proportion of patients below the AHRQ SDS index score of 42.7 had lower median risk standardized payments ($22,110) compared to hospitals with a high proportion of patients below the AHRQ SDS index score of 42.7 ($23,501).
- Some Committee members expressed concern that while the data demonstrated differences in payments to hospitals based upon the proportion of duals served, it was unclear whether this indicates there are disparities in care. Because the variation in payments is predominantly in the post-acute phase, these higher or lower payments could be driven by social factors that increase the need for more post-acute services. Based on their analysis, the developer suggests that the difference in dual eligible RSP is driven both by patient-level and facility level factors.
- Ultimately, the Committee agreed that this is a high impact procedure affecting large numbers of people and that the developer demonstrated enough variation in payments to warrant measurement.

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2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: **H-3**; **M-14**; **L-0**; **I-0** 2b. Validity: **H-2**; **M-12**; **L-2**; **I-0**

<u>Rationale</u>:

Reliability:

- The Committee expressed few concerns with reliability; they had no concerns with the reliability of the specifications.
- The developer submitted score-level reliability testing using signal-to-noise analysis. This analysis was deemed acceptable by the Committee as the results indicated high reliability and that the measure is sufficiently able to discriminate differences in performance among hospitals. Hospitals with less than 25 cases are excluded from reliability assessment. Rates for these "small volume" hospitals are reported separately.
- Reliability of measure scores across hospitals was tested using the split sample test-retest method and interclass correlation coefficient (ICC) to determine the agreement of samples. The agreement between the two independent assessments of each hospital was 0.931. When 3 years of data are used the median reliability score is 0.938.
- One Committee member questioned whether the developer examined the frequency and reliability of the use of the present on admission codes and propensity to report secondary conditions that are used to determine comorbidities and risk profiles. The developer responded that this was examined and found that the majority of hospitals who report this measure, capture this report, with the exception of critical access hospitals report it less frequently and consistency. The developer continues to study the reliability of the coding and use of secondary diagnoses.

Validity

- Validity was demonstrated with a systematic assessment of face validity.
- This measure is attributed to the hospital. Analysis indicates most variation in payments occur after hospitalization, in post-acute settings. This attribution approach was selected in order to drive hospitals to facilitate care coordination, assess referral practices, and understand their role

in post-acute costs and resource use. The Committee generally agreed, that although the attribution approach is aspirational, it is a valid approach to driving behavior change for hospitals and encourage hospitals to examine their processes for transitioning patients out of the acute care setting. There was some concern that hospitals may be challenged to improve on this measure if they are unable to determine which types of post-acute services are appropriate for elective THA/TKA patients due to lack of data to guide these practices.

- One Committee member expressed concern that as hip and knee joint replacements are increasingly performed in outpatient settings that the hospital setting focus of this measure may narrow the measure population over time and result in a large proportion of patients not being captured by this measure.
- This measure was designed to be used with harmonized complications and readmissions measures. One Committee member commented that using these measures together can enable beneficiaries to shop around for facilities that provide high value care.
- The Committee questioned whether there is data to demonstrate how much of the variation in payments is in the post-acute phase. The developer confirmed there is very little variation in the hospital payments as this is generally a short visit and a relatively standard encounter.
- The Committee questioned whether variation in the different segments of the post-acute phase have been examined (i.e., discharge to 30 days and 31-90 days). The developer responded that most of the complications and payments occur in the first 30 days, more proximal to surgery, and are usually due to infection and sequelae of blood clots. In the 30-90 day post-discharge phase, most of the complications are mechanical relating to the function of the joint. The complications for which payments are included for this measure aligns with the harmonized complications outcome measure.
- The TEP expressed concerns about the clinical sites from which costs are captured in the measure. The TEP specifically questioned the inclusion of birthing centers in the list of included clinical sites as this does not seem relevant for this population (ages >65). There were also concerns with including costs of various other facilities as it may capture costs that are unrelated to the procedure as these patients will likely be high cost.
    - *Developer response*: Patients in the settings listed are not *a priori* included in the denominator unless they are subsequently admitted to an inpatient acute care facility for an elective TKA/THA procedure. The developer explained that the conditions that may be associated with the setting (e.g., psychiatric conditions for patients admitted from a psych facility) are included in the risk model in order to adjust at the patient-level for co-occurring conditions that may impact outcomes. The measure design is Intended to enable capture of complications that may occur in those settings after discharge from the acute care facility. The developer pointed out that the range of settings and type of costs captured in the measure narrows during the episode. All costs are captured in all post-acute settings in the first 30 days after discharge. Costs captured during days 31-90 are for a narrowed list of settings and events that defined as being related to TKA/THA procedures.
- The TEP sought clarity on the inclusion of readmissions in the measure and ED costs during the episode.
    - *Developer response*: All costs are captured in the first 30 days (this would include a pulmonary embolism (PE) or deep vein thrombosis (DVT)). After 30 days, only complications related to wound infection, surgical site infection, bleeding or mechanical issues are captured. This is in alignment with a harmonized THA/TKA complications

readmissions measure and requires both diagnostic and procedure codes for the costs to be counted in the measure.

- The TEP stated specific concerns about including costs of homeless shelters and prisons in the first 30 days as these settings are often associated with costs to managing health issues related to sequelae of complex social issues that are often unrelated to the procedure itself. There are concerns that the social factors related to these types of patients are not accounted for in the risk model.
    - *Developer response:* The costs that are captured for patients to are in prison in the 30 days after discharge are limited to physician costs, and do not include the cost of prison itself. The developer stated that these patients would only account for a small percentage of the population included in the measure and would have little impact on overall hospital performance.
- The TEP expressed concerns that Medicare patients less than 65 not included in the measure. Disabled patients and those with ESRD are eligible for Medicare before the age of 65.
    - *Developer Response*: There are separate measurement programs for ESRD patients under the age of 65 so they are excluded. They are excluded due to the difficulty in capturing baseline functional status prior to elective procedure using administrative data. It is also very difficult to capture and accommodate these varying levels of functional status and levels of disability in the risk model. This approach is consistent with other CMS measures.
- The TEP sought clarity on how pathological fractures were handled in order to determine whether the patient should be excluded from the measure or if the fracture was related to the current episode. The developer clarified that present on admission code modifiers are used to discern whether the fracture was acquired before or during admission. There was some discussion as to whether this modifier is consistently used and can be relied upon as an accurate method for identifying these patients, but it was ultimately deemed satisfactory by the TEP.
- The conceptual analysis of social risk factors assessed for consideration of inclusion in the risk model revealed that the impact of SES for hip and knee arthroplasty patients found that non-home discharge destinations are associated with higher costs. The literature also indicated those with social risk factors demonstrate longer lengths of stay and higher rates of readmissions.
- Two variables were used as proxies for SES in the analysis of the risk model: Dual Eligible status and AHRQ-validated SES index score. Each of these SDS factors remained statistically significant in the multivariate models (1.12 for dual-eligibility and 1.04 for the AHRQ SDS index). Given the variation in post-acute spending for the different subgroups and the results of their empirical analysis, the developer included the dual eligibility in the risk model.
- The TEP expressed concerns with using the cost measure as a proxy for complications and emphasized that complications are not the only sequalae of these procedures; functional status, and patient reported outcomes should also be examined. The TEP questioned whether using claims data for hip and knee arthroplasty patients to determine risk profile for the risk model has it been validated in this population.
    - *Developer response*: CMS in the process of working on measures related to functional status and patient reported outcomes for this population. There are also hip/knee complications readmission measures that are endorsed, harmonized and in use. To date, they have not received any feedback on similar measures related to the validity of the

risk adjustment approach. Face validity was sought from a clinical TEP consulted during the development of the measure. The developers acknowledged that administrative claims are not a proxy for clinical data, but when aggregated at the hospital level can be used to predict risk.

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3. Feasibility: H-14; M-3; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- The Committee had no concerns with the feasibility of this measure given that all data elements are in defined fields and administrative claims data can be accessed electronically.

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4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-17; No Pass-0** *4b. Usability:* **H-2; M-14; L-1; I-0**

Rationale:

- This measure has been reported in the Inpatient Quality Reporting (IQR) Program since 2017.
- The Measure Application Partnership (MAP) reviewed this measure for the Hospital Value-Based Purchasing (VBP) program in the 2015-2016 cycle. MAP did not support the measure at that time because they believed it should first be implemented in IQR and hospital compare for a year before it was included in the VBP program.
- One Committee member questioned whether there has been any feedback provided to the developer regarding implementation of the measure since it has been in use in the IQR. Specifically, one Committee member questioned whether any hospitals had issues with the inclusion of ESRD costs (although included in the risk adjustment). The developer stated they have not received any comments of note on these issues; questions about risk modeling, specifications, implementation, exclusions are addressed through technical assistance from the developer.
- Committee members questioned whether the developes could show that hospitals have been able to demonstrate improvement on this measure since its use began in the IQR in 2017. The developer responded that because it has only been in use for a short time, there is not yet enough data to demonstrate a trend in performance since they only have two data points; they anticipate there will be enough data to show any improvements when the measure undergoes maintenance review.
- One Committee member questioned the developer on the intended role of family practices (with risk bearing contracts) or family physicians who manage these patients post-operatively. Many practices work with managed care plans and are independent of hospitals and may work with multiple hospitals. There was concern that this measure may not be useful for these providers in making referrals for post- acute services even though they may see a large number of these patients.
- There was also concern that the usability of the measure may be limited if hospitals were unable to see exactly where payments were made in the post-acute phase (e.g., SNFs, LTACs or home

health agencies). The Developer explained that hospitals are provided with hospital-specific reports that include details on how payments were allocated to each setting or provider; however, these are private results and not shared publicly beyond the hospitals that are being measured.

- This measure is reported along with harmonized complications and readmission measures. The Committee agreed that the utility of this measure is improved by reporting this measure with quality measures that have aligned specifications.

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5. Related and Competing Measures

This measure is related to two quality measures which have been harmonized for use together:

- 1550: Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)
- 1551: Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

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6. Standing Committee Recommendation for Endorsement: **Y-17**; **N-0**

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7. Public and Member Comment

NQF did not receive any comments for this measure following the Committee's evaluation.

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8. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X

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9. Appeals

Appendix B: Cost and Efficiency Portfolio—Use in Federal Programs[a]

NQF #	Title	Federal Programs: Finalized or Implemented as of February 22, 2019
1598	Total Resource Use Population-Based PMPM Index	None
1604	Total Cost of Care Population-Based PMPM Index	None
2431	Hospital-Level, Risk-Standardized Payment Associated with a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)	Hospital Inpatient Quality Reporting (Implemented)
2436	Hospital-Level, Risk-Standardized Payment Associated with a 30-Day Episode of Care for Heart Failure	Hospital Compare (Implemented) Hospital Inpatient Quality Reporting (Implemented)
2579	Hospital-Level, Risk-Standardized Payment Associated with a 30-Day Episode of Care for Pneumonia	Hospital Compare (Implemented) Hospital Inpatient Quality Reporting (Implemented)
2158	Medicare Spending Per Beneficiary	Hospital Compare (Implemented) Hospital Inpatient Quality Reporting (Implemented) Hospital Value-Based Purchasing (Implemented)

[a] Per CMS Measures Inventory Tool as of 02/22/2019

Appendix C: Cost and Efficiency Standing Committee, Orthopedic Surgery Technical Expert Panel, and NQF Staff

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Appendix D: Measure Specifications

3474 Hospital-Level, Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA)

STEWARD

Centers for Medicare & Medicaid Services (CMS)

DESCRIPTION

This measure estimates hospital-level, risk standardized payments for an elective primary total THA/TKA episode of care, starting with an inpatient admission to a short-term acute care facility and extending 90 days post admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older.

RESOURCES USE MEASURE TYPE

Per episode

DATA SOURCE

Claims and Other

LEVEL OF ANALYSIS

Facility

CONSTRUCTION LOGIC DESCRIPTION

This measure estimates hospital-level, risk-standardized payments for a 90-day episode of care for an elective primary THA/TKA. To this end, we constructed a cohort of patients who underwent elective primary THA/TKA based on primary discharge diagnosis in administrative claims data. Specifically, we included Medicare FFS patients age 65 or older with a primary discharge diagnosis of elective primary THA/TKA procedure. We then applied six exclusion criteria. Once our cohort was finalized, we examined all payments for these patients (including co-pays, co-insurance, and deductibles) for the first 30 days after admission and THA/TKA-related claims for days 31-90 (Kim et al. 2014). We included payments for all care settings, except Part D. We standardized payments across providers by removing geographic and policy adjustments that are unrelated to clinical care. These standardized payments were then assigned to the initial admitting hospital. As part of our model, we risk adjusted these payments for patient comorbidities identified from outpatient and inpatient claims in the 12 months prior to the index admission as well as from the secondary diagnoses included in the index admission as well as social risk assessed by dual eligibility status. We then used a hierarchical generalized linear regression model to calculate a risk-standardized payment for each hospital included in the measure.

CLINICAL FRAMEWORK DESCRIPTION

We focused on a 90-day episode of care triggered by admission for an elective primary THA/TKA as identified using ICD-9 and ICD-10 procedure codes described in the data dictionary. The measure includes admissions for Medicare FFS beneficiaries aged 65 years and older Not transferred from another acute care facility., undergoing elective primary THA or TKA. The cohort does not include admissions for primary THA or TKA if the patients had fractures, partial

replacements, revisions, resurfacing, mechanical complications, malignant neoplasms, or device removals since procedures with these conditions have distinctly different risks and outcomes.

Elective primary THA/TKA procedures are defined as those THA/TKA procedures without any of the following:

- Fracture of the femur, hip, or pelvic fractures coded in the principal or secondary discharge diagnosis fields of the index admission;
- A concurrent partial hip arthroplasty procedure;
- A concurrent revision procedure;
- A concurrent resurfacing procedure;
- Mechanical complication coded in the principal discharge diagnosis field of the index admission; or,
- Malignant neoplasm of the pelvis, sacrum, coccyx, lower limbs, or bone/bone marrow or a disseminated malignant neoplasm coded in the principal discharge diagnosis field;
- Removal of implanted devices/prostheses.
- Transfer from another acute care facility for the THA/TKA.

COSTING METHOD

Standardized Pricing [Risk standardized pricing (RSP)]

TARGET POPULATION

Medicare Beneficiaries 65 years of age and older

RESOURCE USE SERVICE CATEGORIES

Inpatient services: Inpatient facility services; Inpatient services: Evaluation and management; Inpatient services: Procedures and surgeries; Inpatient services: Imaging and diagnostic; Inpatient services: Lab services; Inpatient services: Admissions/discharges; Inpatient services: Labor (hours, FTE, etc.); Ambulatory services: Outpatient facility services; Ambulatory services: Emergency Department; Ambulatory services: Pharmacy; Ambulatory services: Evaluation and management; Ambulatory services: Procedures and surgeries; Ambulatory services: Imaging and diagnostic; Ambulatory services: Lab services; Ambulatory services: Labor (hours, FTE, etc.); Durable Medical Equipment (DME)

ATTRIBUTION APPROACH

The measure attributes payments incurred during the 90-day episode to the original admitting hospital. We assign these payments to the admitting hospital because decisions made at the admitting hospital affect payments for care in the inpatient setting as well as the post-discharge and recovery periods for THA/TKA arthroplasty. Furthermore, attributing payments for a continuous episode of care to admitting hospitals may reveal practice variations in the full care of the illness that can result in increased payments. For patients who are admitted and then transferred to another hospital during the original index admission, we assign all payments to the original admitting hospital since this hospital is responsible for the initial care decisions and the decision to transfer the patient.

RISK ADJUSTMENT

Statistical risk model

STRATIFICATION

N/A

Appendix E1: Related and Competing Measures (tabular version)

Comparison of NQF 3474 to NQF 1550 and NQF 1551

	3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA	1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)
Steward	Centers for Medicare & Medicaid Services	Centers for Medicare & Medicaid Services	Centers for Medicare & Medicaid Services
Description	This measure estimates hospital-level, risk-standardized payments for an elective primary total THA/TKA episode of care, starting with an inpatient admission to a short-term acute care facility and extending 90 days post admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older.	The measure estimates a hospital-level risk-standardized complication rate (RSCR) associated with elective primary THA and TKA in Medicare Fee-For-Service beneficiaries who are 65 years and older. The outcome (complication) is defined as any one of the specified complications occurring from the date of index admission to 90 days post date of the index admission (the admission included in the measure cohort).	This measure estimates a hospital-level, 30-day RSRR following elective primary THA and/or TKA. The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission. A specified set of planned readmissions do not count as readmissions. The Centers for Medicare & Medicaid Services (CMS) annually reports the measure for patients who are 65 years and older and are Medicare fee-for-service (FFS) beneficiaries hospitalized in non-federal hospitals.
Measure Type	Cost/Resource Use	Outcome	Outcome
Data Source	Claims and Other	Claims, Other, Paper Medical Records	Claims, Other, Paper Medical Records
Level of Analysis	Facility	Facility	Facility
Target Population	Medicare Beneficiaries 65 years and older	Medicare Beneficiaries 65 years and older	Medicare Beneficiaries 65 years and older
Episode Description	Hospital Admission to 90 days post admission	Hospital Admission to 90 days post admission	Discharge to 30 days post discharge
Settings	Inpatient/Hospital	Inpatient/Hospital	Inpatient/Hospital, Other
Risk Adjustment	Statistical risk model	Statistical risk model	Statistical risk model

Appendix E2: Related and Competing Measures (narrative version)

Comparison of NQF 3474 to NQF 1550 and NQF 1551

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA
1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)
1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Steward

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Centers for Medicare & Medicaid Services

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Centers for Medicare & Medicaid Services

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Centers for Medicare & Medicaid Services

Description

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

This measure estimates hospital-level, risk-standardized payments for an elective primary total THA/TKA episode of care, starting with an inpatient admission to a short-term acute care facility and extending 90 days post admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older.

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

The measure estimates a hospital-level risk-standardized complication rate (RSCR) associated with elective primary THA and TKA in Medicare Fee-For-Service beneficiaries who are 65 years and older. The outcome (complication) is defined as any one of the specified complications occurring from the date of index admission to 90 days post date of the index admission (the admission included in the measure cohort).

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

This measure estimates a hospital-level, 30-day RSRR following elective primary THA and/or TKA. The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission. A specified set of planned readmissions do not count as readmissions. The Centers for Medicare & Medicaid Services (CMS) annually reports the measure for patients who are 65 years and older and are Medicare fee-for-service (FFS) beneficiaries hospitalized in non-federal hospitals.

Measure Type

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Cost/Resource Use

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Outcome

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Outcome

Data Source

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Claims and Other

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Claims, Other, Paper Medical Records

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Claims, Other, Paper Medical Records

Level of Analysis

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Facility

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Facility

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Facility

Target Population

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Medicare Beneficiaries 65 years and older

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Medicare Beneficiaries 65 years and older

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Medicare Beneficiaries 65 years and older

Episode Description

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Hospital Admission to 90 days post admission

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Hospital Admission to 90 days post admission

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Discharge to 30 days post discharge

Settings

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Inpatient/Hospital

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Inpatient/Hospital

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Inpatient/Hospital, Other

Risk Adjustment

3474 Hospital-Level Risk-Standardized Payment Associated with a 90-Day Episode of Care for Elective Primary Total Hip and/or Total Knee Arthroplasty (THA/TKA

Statistical risk model

1550 Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Statistical risk model

1551 Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

Statistical risk model

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ISBN