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Cost and Efficiency, Spring 2021 Cycle: CDP Technical Report

TECHNICAL REPORT
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Executive Summary

In 2019, total Medicare expenditures were $799.4 billion, representing 3.6 percent of the gross domestic product (GDP).[1] Current estimates suggest that Medicare spending will grow 7.6 percent per year between 2019 and 2028.[1] This growth in spending underscores the need to create incentives for high value care. Measuring costs in a way that is transparent to consumers and unbiased to providers is an important component of understanding and controlling the costs of care and rewarding value. Measuring condition-specific costs of care is needed to identify high value care.

As reducing costs continues to be a focus of healthcare reform, it is important to understand the current use of resources in the healthcare system as it relates to quality—especially how resource use relates to health outcomes. The Improving Medicare Post-Acute Care Transformation Act of 2014 (IMPACT Act) and the Medicare Access and Children's Health Insurance Program (CHIP) Reauthorization Act of 2015 (MACRA) require the use of resource use measures to support payment reform efforts. The results of resource use measures will also be included on the Physician Compare website and will ultimately be included in the Merit-Based Incentive Payment System (MIPS) for physicians. Identifying and providing incentives for providers to deliver efficient care (i.e., high quality, lower cost) require quality measures as well as cost and resource use measures. Such measures position the healthcare system to evaluate the efficiency of care and stimulate changes in practice to improve value.

During the spring 2021 project cycle, the Cost and Efficiency Standing Committee evaluated five measures undergoing maintenance review against the National Quality Forum's (NQF) standard evaluation criteria. The Standing Committee recommended all five measures for continued endorsement, and the Consensus Standards Approval Committee (CSAC) upheld the Standing Committee's recommendations. The endorsed measures are listed below:

- **NQF #1598** Total Resource Use Population-Based PMPM Index (HealthPartners)
- **NQF #1604** Total Cost of Care Population-Based PMPM Index (HealthPartners)
- **NQF #2431** Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI) (Centers for Medicare & Medicaid Services [CMS]/Yale Centers for Outcomes Research and Evaluation [CORE])
- **NQF #2436** Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF) (CMS/Yale CORE)
- **NQF #2579** Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN) (CMS/Yale CORE)

Brief summaries of the measures are included in the body of the report; detailed summaries of the Standing Committee's discussions and ratings of the criteria for each measure are in Appendix A.

Introduction

From 1975 to 2020, healthcare spending as a share of the GDP more than doubled, from 7.9 percent to 18.0 percent.[2] In addition, Medicare spending as a share of the GDP nearly quadrupled, from 1.0 percent to 3.9 percent.[2] Driven by growth in the volume and intensity of services provided to beneficiaries and the number of beneficiaries aging into the program, Medicare's annual spending is projected to double from $782 billion to $1.5 trillion in the 10-year period between 2019 and 2029.[2]

These concerning trends can be attributed to many causes, including high costs for drugs, procedures, and administrative services, as well as poor coordination and overutilization of unnecessary health services. In 2019, payments under these hospital payment systems (e.g., inpatient prospective payment system [IPPS] and outpatient prospective payment system [OPPS]) totaled $186 billion.[2] In 2019, Medicare paid $73.5 billion for clinician services, accounting for just under 18 percent of traditional fee-for-service (FFS) Medicare spending.[2] Some of these costs can be attributed to variations in practice patterns for common diseases and conditions. Pneumonia (PN), heart failure (HF), and acute myocardial infarctions (AMIs) are some of the leading causes of hospitalization for Americans over 65 years of age and cost the United States (U.S.) approximately $13.4 to $84.9 billion in direct and indirect costs annually.[3–5]

This level of healthcare spending and growth has the potential to further increase federal deficits and debt or crowd out spending for other important national priorities.[2] Given this trend, healthcare cost measurement continues to be a critical component to assessing and improving the efficiency of the U.S. healthcare system. Improving U.S. health system efficiency has the potential to simultaneously reduce cost growth and improve the quality of care provided. Cost measures are the building blocks to efficiency and value.

NQF Portfolio of Performance Measures for Cost and Efficiency Conditions

The Cost and Efficiency Standing Committee (Appendix C) oversees NQF's portfolio of Cost and Efficiency measures (Appendix B), which includes both condition-specific and non-condition-specific measures. The Cost and Efficiency Standing Committee's charge is to assess cost and resource use measures and efficiency more broadly, including measures that assess the efficiency of healthcare delivery. The Standing Committee seeks to take a more holistic view of drivers of healthcare spending and identify sources of inefficiency and waste across the system. This portfolio contains 13 measures: seven condition-specific measures and six non-condition-specific measures.

Cost and Efficiency Measure Evaluation

On July 9, 13, and 27, 2021, the Cost and Efficiency Standing Committee evaluated five measures undergoing maintenance review against NQF's standard measure evaluation criteria.

Table 1. Cost and Efficiency Measure Evaluation Summary

Measure Summary	Maintenance	New	Total
Measures under review	5	0	5
Endorsed measures	5	0	5

Comments Received Prior to Standing Committee Evaluation

NQF accepts 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 May 6, 2021, and pre-meeting commenting closed on June 17, 2021, 2021. As of June 17, 2021, no comments had been submitted and shared with the Standing Committee prior to the measure evaluation meeting(s).

Comments Received After Standing Committee Evaluation

The continuous 16-week public commenting period with NQF member support closed on September 27, 2021. Following the Standing Committee's evaluation of the measures under review, NQF received three comments from one member organization pertaining to the draft report and to the measures under review (Appendix G). All comments for each measure under review have also been summarized in Appendix A.

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 to inform the Standing Committee's recommendations during the commenting period. This expression of support (or not) during the commenting period replaces the member voting opportunity that was previously held after the Standing Committee's deliberations. One NQF member expressed "do not support" for three of the five measures under review.

Overarching Issues

During the Standing Committee's discussion of the measures, several overarching issues emerged that were factored into the Standing Committee's ratings and recommendations for multiple measures.

Linking Cost and Quality Measures

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 either high or low cost and whether care was delivered efficiently.

During the spring 2021 measure evaluation proceedings, the Standing Committee questioned whether the developer was able to demonstrate that the hospitals being measured could demonstrate

improvements in costs while ensuring similar or higher levels of quality. Specifically, the Standing Committee was interested in the relationship between performances on the cost and quality measures. Some Standing Committee members expressed concern with the unintended consequence of performing well on cost measures at the expense of lower quality performance. While the developer did report that they performed some analysis in response to this question, it is not currently requested as part of the NQF submission process.

While NQF does aim to incorporate an evaluation of the link between cost and quality measures in future measure reviews, additional work is needed to establish criteria. 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. 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 Standing Committee understand the link between the selected cost and quality measures and criteria upon which to base an evaluation.

Reliability Thresholds

The Standing Committee discussed variation in reliability due to the number of cases in practices or facilities, as greater variance can be inherent in practices with lower case volume. For several of the measures reviewed this cycle, the Standing Committee expressed concern that the signal-to-noise reliability statistics for hospitals with small case volumes may not be sufficient for the measure to be considered reliable. For several review cycles, the Standing Committee has recognized the challenge of achieving acceptable thresholds for measure score reliability statistics. Additionally, the Standing Committee considered that the NQF Scientific Methods Panel (SMP) is reviewing various thresholds of reliability to determine which are acceptable. In addition, the Centers for Medicare & Medicaid Services (CMS) has looked at 0.4 as an acceptable threshold due to the trade-offs of trying to include more facilities or providers within the measure to promote more transparency across the system.

Social Risk Adjustment

Cost and resource use measurement is influenced by the care received in a healthcare setting, clinical processes, and social risk factors (SRFs) (e.g., age, race, ethnicity, gender, social relationships, and residential and community context). While some of the measures this cycle did test for SRFs for the risk adjustment model, namely the Agency for Healthcare Research & Quality (AHRQ) Socioeconomic Status (SES) Index and dual eligibility, some of the measures under review did not include these SRFs in the final model. The Standing Committee recognized the need to ensure that providers who serve people with SRFs are not penalized unfairly due to a lack of social risk adjustment. While the Standing Committee did note that it is important to maximize the predictive value of a risk adjustment model, understanding the role that SRFs play in clinical-cost episodes is critical. The impact of SRFs in cost and resource measures is unique because these factors may ultimately increase overall costs through poor transitions and hand-offs or potentially lower resource use due to access-to-care challenges. Each cost measure should be examined on a case-by-case basis to understand the role of patient SRFs in the measure.

The Standing Committee asked NQF staff whether any work is currently being done at NQF to address the concerns regarding SRF adjustment within quality measurement. In response, NQF staff stated that NQF is currently developing technical guidance for social and/or functional status-related risk adjustment within quality measurement. This guidance will help to evolve NQF's current criteria, which will occur after 2022. Therefore, measures under review for the spring 2021 cycle must be evaluated under NQF's current criteria.

Summary of Measure Evaluation

The following brief summaries of the measure evaluation highlight the major issues that the Standing Committee considered. Details of the Standing Committee's discussion and ratings of the criteria for each measure can be found in Appendix A.

NQF #1598 Total Resource Use Population-Based PMPM Index (HealthPartners): Endorsed

Description: The Resource Use Index (RUI) is a risk-adjusted measure of the frequency and intensity of services utilized to manage a provider group's patients. Resource use includes all resources associated with treating members, including professional, facility inpatient and outpatient, pharmacy, lab, radiology, and ancillary and behavioral health services. An RUI when viewed together with the Total Cost of Care measure (NQF #1604) provides a more complete picture of population-based drivers of health care costs; **Measure Type**: Cost/Resource Use; **Level of Analysis**: Population: Community, County or City, Clinician: Group/Practice; **Setting of Care**: Emergency Department and Services, Home Care, Inpatient/Hospital, Other, Outpatient Services, Post-Acute Care; **Data Source**: Claims

Quorum was not reached during the evaluation meeting, and the Standing Committee voted using an online voting tool after the meeting ended. Initially endorsed in 2017, NQF #1598 is a risk-adjusted measure that focuses on the frequency and intensity of services utilized to manage a provider group's patients. When reviewing the importance to measure and report criterion, some Standing Committee members raised concerns with the scope of improvement for this measure. The Standing Committee emphasized that lower cost does not necessarily correlate to improved quality. The Standing Committee also noted that if cost and quality are not highly correlated, there may be a risk of potential unintended consequences (i.e., lowering the quality of care provided). The Standing Committee asked the developer how they would address this challenge to prevent inadvertently reducing the quality of care. The developer explained that this measure is used to optimize health and patient experience while improving affordability. To that regard, when implementing NQF #1598 and NQF #1604, the goal is to use quality and resource together so that both improve. The developer emphasized that the impact on quality of care is the greatest when NQF #1598, a resource use measure, and NQF #1604, a cost measure, are implemented together.

One Standing Committee member asked for further understanding of the type of distribution represented by the improvement data that the developer provided. The developer clarified that the data demonstrated a normal distribution (i.e., slightly skewed towards the higher side) with variation in performance among the total providers being included in the measure over time. A Standing Committee member raised the following concern: Based on the measure specifications, the measure aims to make resources comparable across settings, which indicates that the location where the service was provided does not matter; however, the reimbursement differs based on where the service was provided, and the

total care relative resource values (TCRRV) table does not allow one to ascertain where the service was provided. The developer explained that the difference in the setting will not show up in NQF #1598, the current Total Resource Use measure; however, it will show up in NQF #1604, the total cost measure, and the developer once again emphasized that the two measures should be used together for a comprehensive view on how cost, resource use, and price interact with one another. The Standing Committee observed that this measure provides a top-line indication of resource use; as a result, the health systems and provider groups would need to get involved in determining which opportunity to focus on and put interventions in place for improvement. Ultimately, the Standing Committee agreed that this measure addresses a high-impact/high-resource use area of healthcare.

The Standing Committee noted that the SMP evaluated and rated this measure as high for reliability and validity. During their discussion, the Standing Committee acknowledged the SMP's concerns regarding intended testing on the HealthPartners data set; as a result, the testing would not be generalizable to other practices. The Standing Committee then asked the developer to clarify whether they tested the measure on any other data set outside the HealthPartners data set. The developer explained that HealthPartners has a network of providers, and they only have access to that data. Therefore, the developer does not have access to the data for providers outside of their network. Other organizations have implemented and are using the measure nationally; however, they do not have access to those data either. The developer added that the testing is broad enough for the measure to be potentially used to infer its effectiveness in other markets, as seen with the other organizations using the measure, such as the Network for Regional Healthcare Improvement (NRHI) in California, Minnesota (MN) Community Measurement, and other organizations. The developer elaborated that the MN Community Measurement releases a report each year that combines data from four different plans across MN, and in comparing the yearly trends, MN Community Measurement has observed improvement each year. In reviewing the testing methods, both the SMP and the Standing Committee noted that both the bootstrap and the 90 percent random sampling theoretically work for a large sample; however, it is unclear how the results would change when applied to smaller providers' groups (i.e., providers with less than 600 members). The developer agreed that lower provider sizes indicate higher variation; nonetheless, this measure can be used with lower provider sizes and can still produce reliable results due to the removal of outliers, which can have a drastic impact on the average value. The Standing Committee did not raise any further questions or concerns regarding reliability and passed the measure on this criterion.

Regarding validity, one Standing Committee member questioned whether the TCRRV incorporates pricing. The developer clarified that the TCRRVs are constructed in a way that removes price from the methodology so that the average paid amount is standardized across all hospital providers. Another Standing Committee member noted the appropriateness of presenting correlation coefficients with adjusted clinical groups (ACGs) scores; however, they raised concern on how to interpret the correlation coefficient with non-risk-adjusted per member per month (PMPM) because the model is, in fact, risk-adjusted. The developer explained that when the measure is not risk-adjusted, the correlations are high between the PMPMs and TCRRVs. The developer is trying to draw a parallel between some known healthcare utilization markers to demonstrate that TCRRVs are a good reflection of resource use. The developer further explained that they are comparing the non-risk-adjusted PMPM to the correlation coefficients of ACGs because ACGs are a proven measure of resources; in addition, by showing that

TCRRVs align well with ACGs, it illustrates that TCRRVs are also good metrics for resource use. Some Standing Committee members also raised concern about excluding patients over the age of 64 and questioned the rationale for using the truncation level of 125,000 TCRRVs. The developer noted that members over the age of 64 are excluded due to potential incomplete claims data of Medicare-eligible beneficiary. Sometimes, certain members have dual coverage, meaning they are in both Medicare and commercial plans; therefore, due to the difficulty in parsing out the costs that are paid for by Medicare versus the commercial plan, members over the age of 64 were excluded.

In terms of truncation, the developer noted that the truncation level was selected to remain aligned with healthcare costs and ensure the stability of the measure. TCRRVs per member above 125,000 are excluded (truncated). One of the Standing Committee members also expressed a need for a different approach to looking at SRFs because the testing data do not match the reality of the impact that race and income have on the measured outcome. It was noted that testing the addition of just one or two SES factors obscures the impact on the measured outcome due to partial effects for other variables in the model (e.g., comorbidities), and stratifying results by SES factors would likely reveal more disparities. As NQF's technical guidance on risk adjustment becomes finalized, the developer will take that fact into consideration when evolving their criteria for risk adjustment and including SES factors in the risk adjustment model. Without any further concerns, the Standing Committee passed the measure on the validity criterion.

Moving to feasibility, some Standing Committee members expressed concern that the implementation of the measure requires the use of ACGs, which must be licensed separately and may be cost-prohibitive for some entities. The developer noted that while an ACG is proprietary, the developer has organized a public-facing website with several resources and technical documentation, including tool kits for external organizations to download the necessary tools to run the measure free of charge. The developer has also created instructions and tool kits. The Standing Committee did not raise any further concerns and voted to pass the measure on the feasibility criterion. While discussing the usability and use criteria, some Standing Committee members expressed general concerns about the specifications not being fully transparent and noted that it was unclear as to how the measure was being reported and used. These Standing Committee members also questioned how the feedback on quality improvement was being provided to the provider groups and asked the developer to clarify what type of feedback was being provided. The developer stated that they provide quarterly comprehensive reports and monthly patient applications to best support providers in identifying opportunities for improving affordability for their patients while simultaneously supporting patient outreach, pre-visit planning, and care coordination efforts. The developer also engages with their network and provider groups on an ongoing basis. One Standing Committee member asked whether any data exist regarding whether this measure causes any harm to patients. The developer confirmed that they have not received any feedback on any harm caused by this measure. The Standing Committee observed that this measure has been used as a quality improvement tool within the HealthPartners network, and the developer has shown that it has been used by external organizations. The developer is collecting feedback on the measure. The Standing Committee did not raise any additional questions or concerns and passed the measure on use and usability.

The measure passed on all criteria and on overall suitability for endorsement. No public or member comments were received during the commenting period for this measure. During the CSAC meeting on November 30, 2021, the CSAC upheld the Standing Committee's recommendation and endorsed the measure. No appeals were received.

NQF #1604 Total Cost of Care Population-Based PMPM Index (HealthPartners): Endorsed

Description: The Total Cost of Care reflects a mix of complicated factors, such as patient illness burden, service utilization, and negotiated prices. The Total Cost Index (TCI) is a measure of a primary care provider's risk-adjusted cost effectiveness at managing their patient population. TCI includes all costs associated with treating members, including professional, facility inpatient and outpatient, pharmacy, lab, radiology, and ancillary and behavioral health services. A TCI when viewed together with the Total Resource Use measure (NQF-endorsed #1598) provides a more complete picture of population-based drivers of health care costs; **Measure Type**: Cost/Resource Use; **Level of Analysis**: Population: Community, County or City, Clinician: Group/Practice; **Setting of Care**: Emergency Department and Services, Home Care, Inpatient/Hospital, Other, Outpatient Services, Post-Acute Care; **Data Source**: Claims

Initially endorsed in 2017, NQF #1604 captures the primary care provider's risk-adjusted cost of managing their patient population. The Standing Committee observed the similarity between this measure and NQF #1598, and the concerns raised for NQF #1598 also apply to this measure (NQF #1604). The developer also noted the similarity between the two measures and added that the difference between the two measures is found in the costing approach. NQF #1598 is measuring resource use for every service, while NQF #1604 utilizes an allowed amount, which reflects the plan and member liability. In comparing the two measures, one Standing Committee member questioned how the incorporation of reimbursements in NQF #1604 affects providers who are practicing in higher cost-of-living and higher geographic wage areas versus lower cost-of-living and lower geographic wage areas. The developer clarified that the cost differential is driven by the price differential, and this measure can show the cost variation that is occurring across different states. One Standing Committee member further questioned whether the developer was conducting stratification to confirm that the differences in cost across providers are due to practice style and not the geographic differences in the labor wage rates. The developer confirmed that the measure is applied in that manner so that the comparison is made among the providers in the same wage market. The Standing Committee noted that the other concerns discussed regarding the importance to measure and report criterion for NQF #1598 also apply to this measure; it also agreed that this measure addresses a high-impact/high-resource use area of healthcare and passed the measure on the importance to measure and report criterion.

The Standing Committee noted that the SMP evaluated and rated this measure as high for both reliability and validity. The Standing Committee once again emphasized the similarity between the concerns for reliability and validity of this measure and those raised for NQF #1598. The Standing Committee requested additional documentation from the developer regarding the signal-to-noise analysis, which the developer offered to share after the meeting for the Standing Committee's reference. One Standing Committee member asked how a patient is attributed to different clinical practices, specifically what the attribution rules are when multimorbid patients are being handled by multiple providers. The developer explained that they used 12 months of claims data to identify the

primary care provider that the member visited most frequently. The Standing Committee did not have any further questions or concerns and passed the measure on reliability and validity.

Regarding feasibility, the Standing Committee observed that barriers to access are present because the ACG system is proprietary; however, this has been addressed by the training, software, and data collection that the developer provided. Therefore, the Standing Committee passed the measure on feasibility. In discussing usability and use, the Standing Committee questioned whether the performance results are available to outside organizations or practices whose performance is being measured. The developer once again emphasized that most of the external organizations publish performance reports publicly, while others do not. The Standing Committee acknowledged similar concerns with use and usability for NQF #1598 and passed the measure on both criteria. No public or member comments were received during the commenting period.

Quorum was not reached during the evaluation meeting, and the Standing Committee voted using an online voting tool after the meeting ended. The measure passed on all criteria and on overall suitability for endorsement. During the CSAC meeting on November 30, 2021, the CSAC upheld the Standing Committee's recommendation and endorsed the measure. No appeals were received.

NQF #2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI) (CMS/Yale CORE): Endorsed

Description: This measure estimates the hospital-level, risk-standardized payment for an acute myocardial infarction (AMI) episode-of-care starting with inpatient admission to a short-term, acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI; **Measure Type**: Cost/Resource Use; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Claims, Enrollment Data

This measure was previously endorsed in 2015. The Standing Committee acknowledged that AMI is one of the leading causes of hospitalization for Americans over 65 years of age and costs the U.S. roughly $84.9 billion in direct and indirect costs. The Standing Committee considered the performance data that the developer reported. These data consisted of a mean risk-standardized payment (RSP) of $25,561 with a range of $17,488 – $32,810 for a reporting period of July 1, 2016 – June 30, 2019. In addition, the median hospital RSP in the combined three-year data set was $25,422 (interquartile range [IQR] of $24,859 – $26,165). The Standing Committee discussed whether this measure is linked to quality. The developer mentioned that this measure is intended to be used in conjunction with other outcome measures beyond mortality, which would be indicators of quality. The Standing Committee considered whether the hospital would have to find the right quality score or whether the measure results would be presented in a manner that will help hospitals manage and reduce the variation. The developer confirmed that this measure is intended to be reported together with other quality measures, such as mortality. The measure results would be reported to the hospitals, including how hospitals compared with other hospitals; in this case, it would be for the mortality measure. The developer also mentioned that this measure is not in a pay-for-performance program. Rather, it is used in a pay-for-reporting program, in which the broader goal is to make hospitals health-conscious; there is no penalty for being above or below the national average. Hospitals are rewarded if they report on this measure. CMS stated that the purpose of this measure, along with several other condition-specific cost measures, is to

promote transparency, as well as target cost reductions. CMS has a measure (NQF #2158 *Medicare Spending per Beneficiary [MSPB]*) that covers a much broader list of conditions and to which payments are made based on the performance of that measure. The Standing Committee did not raise any further questions and passed the measure on the importance to measure and report criterion.

Moving to scientific acceptability, the Standing Committee considered the reliability testing, which was conducted at the performance measure score level. Using the Spearman-Brown prediction formula, the developer found that the agreement between the two independent assessments of the RSP for each hospital was 0.681. The Standing Committee acknowledged that the SMP reviewed and passed this measure on reliability. The Standing Committee asked whether signal-to-noise tests were conducted. The developer explained that hospitals with at least 25 admissions possessed a median signal-to-noise value of 0.404 with an IQR of 0.298 to 0.594. One Standing Committee member raised concern that the Standing Committee has considered higher cutoffs for some of the other measures rather than 0.4, such as 0.6 or 0.7. It was noted that the SMP is reviewing various thresholds of reliability to determine which ones are acceptable. In addition, CMS has looked at 0.4 as an acceptable threshold due to the trade-offs of trying to include more facilities or providers within the measure to promote more transparency across the system. The Standing Committee did not raise any additional concerns and passed the measure on reliability.

Moving to validity, the Standing Committee considered that the developer conducted face validity testing, in which eight of the 16 developer-convened Technical Expert Panel (TEP) members agreed that the measure can discern between good and poor quality of care. The developer also conducted empirical validity testing, comparing this measure to NQF #2158. The developer found a correlation coefficient of 0.281 ($p < 0.0001$), meaning that hospitals with higher spending across all Medicare FFS beneficiaries correlated with hospitals with higher spending on patients hospitalized with AMI. The Standing Committee considered the risk adjustment model, noting that the R-squared value slightly increased to 0.078, which suggests that approximately 8 percent of the variation in payment could be explained by patient-level risk factors. The Standing Committee discussed the approach to social risk adjustment, noting that testing the addition of just one or two SRFs obscures the impact due to partial effects for other variables in the model (e.g., comorbidities). In addition, stratifying results by social risk would likely reveal more disparities. The developer noted that they tested the impact of dual-eligible status and the AHRQ SES index as SRFs. The developer found that the two SRFs did have a slightly lower payment after adjusting for other risk factors in the multivariate model; nonetheless, the addition of these SRFs had limited impact on model performance and produced little change in the measure scores. In addition, the measure scores that were estimated with hospitals both with and without dual eligibility were highly correlated.

According to NQF staff, NQF is currently developing technical guidance, which was out for public comment at the time of this review, that will provide more clarity for developer and NQF Standing Committees in conducting SRF adjustment within quality measurement. NQF staff further noted that this guidance will not change NQF's evaluation criteria until the guidance is finalized at the end of next year (2022). The Standing Committee did not raise any further concerns and passed the measure on validity.

The Standing Committee did not raise any concerns with feasibility and passed the measure on this criterion. For use and usability, the Standing Committee acknowledged that this measure is currently publicly reported within CMS' Care Compare and used within the Hospital Inpatient Quality Reporting Program. In reviewing the usability criterion, the Standing Committee noted the very small differences in hospital-level RSPs for the AMI payment between 2018 and 2019 compared with the prior individual years (2016/2017 and 2017/2018). The median RSPs for each year were $25,248, $25,539, and $25,542 for 2016/2017, 2017/2018, and 2018/2019, respectively. The Standing Committee asked whether any longer-term harms of the measure's use have been identified. The developer stated that they did not identify any unintended consequences during measure development and testing. The Standing Committee did not raise any concerns, passed the measure on use and usability, and ultimately recommended the measure for continued endorsement. The Standing Committee reviewed related and competing measures during the post-comment call on October 22, 2021.

NQF did not receive any member or public comments prior to the evaluation meeting. Comments received after the measure evaluation meeting focused on reliability and minimum reliability thresholds, the testing methodology for SRFs after adjusting for clinical risk factors, the risk model's adequacy due to the R-squared results, and concern regarding the correlation between cost and quality. The developer provided feedback on the reliability concerns, stating that in calculating split-sample reliability, half of the patients within each hospital were randomly sampled from a three-year measurement period, with the intraclass correlation coefficient (ICC) calculated as a metric for agreement. The developer responded to the concerns related to SRFs and the R-squared results, noting that it is a standard and acceptable practice to test the incremental effects of SRFs within a clinical risk model. The developer explained that they produced a "quasi-R2" by regressing the total payment outcome on the predicted outcome. The developer also acknowledged that costs need to be assessed within the context of quality of care and shared an example of a hospital with payments greater than the national average and quality that is worse than the national rate, suggesting low-value care. The Standing Committee had no further concerns with the developer's response and accepted NQF's proposed response to the commenter. The Standing Committee took no further action.

Quorum was not reached during the evaluation meeting, and the Standing Committee voted using an online voting tool after the meeting ended. The measure passed on all criteria and on overall suitability for endorsement. During the CSAC meeting on November 30, 2021, the CSAC upheld the Standing Committee's recommendation and endorsed the measure. No appeals were received.

NQF #2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF) (CMS/Yale CORE): Endorsed

Description: This measure estimates the hospital-level, risk-standardized payment for a heart failure (HF) episode of care, starting with inpatient admission to a short-term, acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF; **Measure Type**: Cost/Resource Use; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Claims, Enrollment Data

This measure was previously endorsed in 2015. The Standing Committee acknowledged that HF is one of the top three leading causes of hospitalization for Americans over 65 years of age and is projected to cost the U.S. up to $70 billion in direct and indirect costs by 2030.

The Standing Committee considered the performance data that the developer reported. These data consisted of a mean RSP of $17,722 with a range of $13,171 – $27,996 during the reporting period of July 1, 2016 – June 30, 2019. In addition, the median hospital RSP in the combined three-year data set was $17,607 (IQR: $16,817 – $18,513). The Standing Committee noted that the same concerns raised during the discussion of NQF #2431 apply to this measure as well. The Standing Committee did not raise any further questions and passed the measure on the importance to measure and report criterion.

Moving to scientific acceptability, the Standing Committee considered the reliability testing, which was conducted at the performance measure score level. Using the Spearman-Brown prediction formula, the developer found that the agreement between the two independent assessments of the RSP for each hospital was 0.781. The Standing Committee acknowledged that the SMP reviewed and passed this measure on reliability. The Standing Committee also asked about the signal-to-noise results for this measure. In response, the developer stated that hospitals with at least 25 admissions possessed the following values for HF payment signal-to-noise reliability: a mean of 0.666, a median of 0.679, and an IQR of 0.528–0.801. The Standing Committee acknowledged that the same concerns with NQF #2431 apply to this measure as well. The Standing Committee did not raise any additional concerns and passed the measure on reliability.

Moving to validity, the Standing Committee considered that the developer conducted face validity testing, in which eight of the 16 developer-convened TEP members agreed that the measure can discern between good and poor quality of care. The developer also conducted empirical validity testing, comparing this measure to NQF #2158. Moreover, the developer found a correlation coefficient of 0.543, meaning that hospitals with higher spending across all Medicare FFS beneficiaries correlated with hospitals with higher spending on patients hospitalized with HF.

The Standing Committee considered the risk adjustment model, noting that the R-squared value slightly decreased to 0.031, which suggests that approximately 3 percent of the variation in payment could be explained by patient-level risk factors. The Standing Committee discussed the approach to social risk adjustment, noting that the developer tested the impact of dual-eligible status and the AHRQ SES index as SRFs. The developer found that the two SRFs did have a slightly lower payment after adjusting for other risk factors in the multivariate model; nonetheless, the addition of these SRFs had limited impact on model performance and produced little change in measure scores. In addition, the measure scores that were estimated with hospitals both with and without dual eligibility were highly correlated. The Standing Committee acknowledged that the same concerns with NQF #2431 apply to this measure as well. The Standing Committee did not raise any additional concerns and passed the measure on validity.

The Standing Committee did not raise any concerns with feasibility and passed the measure on this criterion. For use and usability, the Standing Committee acknowledged that this measure is currently publicly reported within CMS' Care Compare and used within the Hospital Inpatient Quality Reporting Program. In reviewing the usability criterion, the Standing Committee noted that the developer reported

a median hospital 30-day RSP of $17,607 for the HF payment measure for the three-year period between July 1, 2016, and June 30, 2019. The median RSP decreased by 2.6 percent from July 2017 – June 2018 (median RSP: $17,781) to July 2018 – June 2019 (median RSP: $17,310). The Standing Committee acknowledged that the same concerns with NQF #2431 for usability apply to this measure as well. The Standing Committee did not raise any further concerns, passed the measure on the use and usability criteria, and ultimately recommended the measure for continued endorsement. The Standing Committee reviewed related and competing measures during the post-comment call on October 22, 2021.

Comments received during the public commenting period expressed concern about the reliability results, the testing methodology for SRFs after adjusting for clinical risk factors, the risk model's adequacy due to the R-squared results, and the correlation between cost and quality. The developer provided feedback on the reliability concerns, stating that in calculating split-sample reliability, half of the patients within each hospital were randomly sampled from a three-year measurement period, with the ICC calculated as a metric for agreement. The developer responded to the concerns related to SRFs and the R-squared results, noting that it is a standard and acceptable practice to test the incremental effects of SRFs within a clinical risk model. The developer also produced a quasi-R2 by regressing the total payment outcome on the predicted outcome. The developer also acknowledged that costs need to be assessed within the context of quality of care and shared an example of a hospital with payments greater than the national average and quality that is worse than the national rate, suggesting low-value care. The Standing Committee had no further concerns with the developer's response and accepted NQF's proposed response to the commenter. The Standing Committee took no further action.

Quorum was not reached during the evaluation meeting, and the Standing Committee voted using an online voting tool after the meeting ended. The measure passed on all criteria and on overall suitability for endorsement. During the CSAC meeting on November 30, 2021, the CSAC upheld the Standing Committee's recommendation and endorsed the measure. No appeals were received.

NQF #2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN) (CMS/Yale CORE): Endorsed

Description: This measure estimates the hospital-level, risk-standardized payment for an eligible pneumonia (PN) episode of care, starting with inpatient admission to a short-term, acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of PN or principal discharge diagnosis of sepsis (not including severe sepsis) who have a secondary discharge diagnosis of PN coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA; **Measure Type**: Cost/Resource Use; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Claims, Enrollment Data

This measure was previously endorsed in 2014. The Standing Committee acknowledged that PN is one of the top three leading causes of hospitalization for Americans over 65 years of age and costs the U.S. approximately $13.4 billion annually.

The Standing Committee considered the performance data that the developer reported. These data consisted of a mean RSP of $18,283 with a range of $10,529 – $29,861 during the reporting period of July 1, 2016 – June 30, 2019. In addition, the median hospital RSP in the combined three-year data set was $18,200 (IQR: $17,015 – $19,453). The Standing Committee noted that the same concerns raised during the discussion of NQF #2431 apply to this measure as well. The Standing Committee did not raise any further questions and passed the measure on the importance to measure and report criterion.

Moving to scientific acceptability, the Standing Committee considered the reliability testing, which was conducted at the performance measure score level. Using the Spearman-Brown prediction formula, the agreement between the two independent assessments of the RSP for each hospital was 0.815. The Standing Committee acknowledged that the SMP reviewed and passed this measure on reliability. The Standing Committee asked about the signal-to-noise results for this measure. In response, the developer stated that hospitals with at least 25 admissions possessed a mean signal-to-noise value of 0.820, a median of 0.8554, and an IQR of 0.7472 to 0.919. The Standing Committee acknowledged that the same concerns with NQF #2431 and NQF #2436 apply to this measure as well. The Standing Committee did not raise any additional concerns and passed the measure on reliability.

Moving to validity, the Standing Committee considered that the developer conducted face validity testing, in which 10 of the 16 developer-convened TEP members agreed that the measure can discern between good and poor quality of care. The developer also conducted empirical validity testing, comparing this measure to NQF #2158. In addition, the developer found a correlation between PN RSPs and the MSPB score of 0.588, which suggests that hospitals with higher performance on this measure are more likely to have higher performance scores on NQF #2158.

The Standing Committee considered the risk adjustment model, noting that the updated, calculated R-squared result was 0.076. The Standing Committee discussed the approach to social risk adjustment, noting that the developer presents analyses that show the significant association between dual eligibility (but not low AHRQ SES) and higher payments, even after adjusting for other risk factors in a multivariable model. The addition of the social risk variables has little impact on model performance and produces little change in measure scores. In addition, the measure scores estimated for hospitals both with and without dual eligibility are highly correlated (0.999). The developer noted that CMS ultimately decided to not adjust this measure for either dual eligibility or the AHRQ SES Index. The Standing Committee acknowledged that the same concerns with NQF #2431 and NQF #2436 apply to this measure as well. They did not raise any additional concerns and passed the measure on validity.

The Standing Committee did not raise any concerns with feasibility and passed the measure on this criterion as well. For use and usability, the Standing Committee acknowledged that this measure is currently publicly reported within CMS' Care Compare and used within the Hospital Inpatient Quality Reporting Program. In reviewing the usability criterion, the Standing Committee noted that the developer reported a median hospital 30-day RSP of $18,200 for the PN payment measure for the three-year period between July 1, 2016, and June 30, 2019. The median RSP decreased by 1 percent from July 2017 – June 2018 (median RSP: $18,226) to July 2018 – June 2019 (median RSP: $18,037). The Standing Committee acknowledged that the same concerns with NQF #2431 and NQF #2436 for usability apply to this measure as well. The Standing Committee did not raise any further concerns and passed the

measure on the use and usability criteria. The Standing Committee reviewed related and competing measures during the post-comment call on October 22, 2021.

Comments received during the public commenting period expressed concern about the testing methodology for SRFs after adjusting for clinical risk factors, the adequacy of the risk model due to the R-squared results, and concern regarding the correlation between cost and quality. The developer provided feedback on the reliability concerns, stating that in calculating split-sample reliability, half of the patients within each hospital were randomly sampled from a three-year measurement period with the ICC calculated as a metric for agreement. Responding to concerns on SRFs and the R-squared results, the developer noted that it is a standard and acceptable practice to test the incremental effects of SRFs within a clinical risk model; the developer produced a quasi-R2 by regressing the total payment outcome on the predicted outcome. The developer also acknowledged that costs need to be assessed within the context of quality of care and shared an example of a hospital with payments that are greater than the national average and quality that is worse than the national rate, suggesting low-value care. The Standing Committee had no further concerns with the developer's response and accepted NQF's proposed response to the commenter. The Standing Committee took no further action.

Quorum was not reached during the evaluation meeting, and the Standing Committee voted using an online voting tool after the meeting ended. The measure passed on all criteria and on overall suitability for endorsement. During the CSAC meeting on November 30, 2021, the CSAC upheld the Standing Committee's recommendation and endorsed the measure. No appeals were received.

References

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Appendix A: Details of Measure Evaluation

Rating Scale: H=High; **M**=Moderate; **L**=Low; **I**=Insufficient; **NA**=Not Applicable; **Y**=Yes; **N**=No

Vote totals may differ between measure criteria and between measures as Standing Committee members often have to join calls late or leave calls early. NQF ensures that quorum is maintained for all live voting. All voting outcomes are calculated using the number of Standing Committee members present during the meeting for that vote as the denominator. Denominator vote counts may vary throughout the criteria due to intermittent Standing Committee attendance fluctuation. The vote totals reflect members present and eligible to vote at the time of the vote. If quorum is not achieved or maintained during the meeting, the Standing Committee receives a recording of the meeting and a link to submit online votes. During the measure evaluation meeting, quorum for voting was not achieved (a minimum of 13 of 19 active Standing Committee members present). Therefore, the Standing Committee discussed all relevant criteria and voted after the meeting using an online voting tool.

Endorsed Measures

NQF #1598 Total Resource Use Population-Based PMPM Index

Measure Worksheet | Specifications

Description: The Resource Use Index (RUI) is a risk-adjusted measure of the frequency and intensity of services utilized to manage a provider group's patients. Resource use includes all resources associated with treating members, including professional, facility inpatient and outpatient, pharmacy, lab, radiology, and ancillary and behavioral health services.

A Resource Use Index when viewed together with the Total Cost of Care measure (NQF #1604) provides a more complete picture of population-based drivers of healthcare costs.

Numerator Statement: Not required for cost measures.

Denominator Statement: Not required for cost measures.

Exclusions: Not required for cost measures.

Adjustment/Stratification: Statistical risk model. Measures are adjusted for clinical risk and limited to the commercial population.

Level of Analysis: Population: Community, County or City, Clinician: Group/Practice

Setting of Care: Emergency Department and Services, Home Care, Inpatient/Hospital, Other, Outpatient Services, Post-Acute Care

Type of Measure: Cost/Resource Use

Data Source: Claims

Measure Steward: HealthPartners

STANDING COMMITTEE MEETING: July 9, 2021

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

(1a. High Impact and 1b. Opportunity for Improvement)

1a. High Impact and 1b. Opportunity for Improvement: **Total Votes: 15; H-7**; **M-8**; **L-0**; **I-0**

Rationale

- The Standing Committee acknowledged that this measure has been submitted for maintenance review and was previously endorsed in 2017. They also noted the similarity between this submission and the previous submission in 2017 regarding the data the developer cited. These data demonstrated that healthcare spending constitutes a high proportion (17%) of the U.S. GDP, and high healthcare costs contribute to adults forgoing healthcare. The developer suggested that this measure can support a comprehensive measurement system to identify areas of overuse.

- Some Standing Committee members raised concerns with the scope of improvement for this measure. The Standing Committee emphasized that lower cost does not necessarily correlate to improved quality. The Standing Committee noted that if cost and quality are not highly correlated, then there may be a risk of potential unintended consequences, such as lowering the quality of care provided. The Standing Committee asked the developer how they would address this challenge to prevent inadvertently reducing the quality of care. The developer explained that this measure is used to optimize health and patient experience while improving affordability. To that regard, when implementing the measures (both NQF #1598 and #1604), the goal is to use quality and resource together so that both improve. The developer emphasized that the impact on quality of care is the greatest when NQF #1598, a resource use measure, and NQF #1604, a cost measure, are implemented together.
- The Standing Committee reviewed the performance scores across measured provider groups of total resource use from 2017–2019 dates of service, which noted that out of the 65 provider groups measured in NQF #1598, the Total Resource Use measure, 26 were better than average; 3 were 10% better than average; 12 were 10% higher than average; and 50 were within 10% of the average.
- The Standing Committee also acknowledged that the developer discovered that the insurance product also contributed with a $133 difference in cost between commercial and Medicaid. The variation in resource use was much less; however, it was still significant, with Medicaid-covered members utilizing $75 more of resources.
- One Standing Committee member asked for further understanding of the type of distribution represented by the improvement data that the developer provided, specifically the meaningful difference in performance data that noted 26 providers were better than average, three were 10% better than average, 12 were 10% higher than average, and 50 were within 10% of the average and the type of distribution. The developer clarified that the data demonstrated a normal distribution (i.e., slightly skewed towards the higher side) with variation in performance among the total providers included in the measure over time.
- A Standing Committee member raised the following concern: Based on the measure submission document, the measure aims to make resources comparable across settings, which indicates that the location where the service was provided does not matter; however, the reimbursement differs based on where the service was provided, and the TCRRV table does not allow one to ascertain where the service was provided. The developer explained that the difference in the setting will not show up in NQF #1598; however, it will show up in NQF #1604, the Total Cost measure. Once again, the developer emphasized that the two measures should be used together for a comprehensive view on how cost, resource use, and price interact with one another.
- The Standing Committee observed that this measure provides a top-line indication of resource use; as a result, the health systems and provider groups would need to get involved to determine which opportunity for improvement to focus on and put interventions in place for improvement. Ultimately, the Standing Committee agreed that this measure addresses a high-impact/high-resource use area of healthcare.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria.

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

2a. Reliability: **Total Votes: 14; H-7**; **M-7**; **L-0**; **I-0**; 2b. Validity: **Total Votes: 14; H-5**; **M-7**; **L-2**; **I-0**

Rationale

Reliability

- The Standing Committee considered the reliability testing, which was conducted at the performance measure score level. The developer used two methods to demonstrate the repeatability of the results, using bootstrapped averages with full replacement and a 90% random sampling without replacement approach, which approximates controlling for case-mix. The variances from the actual RUI ranged from -0.0037 to 0.0062 in the bootstrap from 0.0019 to 0.0016 in the 90% sample.

- The Standing Committee acknowledged that the SMP reviewed and passed this measure with a rating of high for reliability **(SMP Total votes: 9; H-4; M-3; L-0; I-2)**.
- The Standing Committee noted the SMP's concerns with this measure's intended use for the HealthPartners data set, and the testing would not be generalizable to other practices. The Standing Committee then asked the developer to clarify whether they have tested the measure on any other data set outside of the HealthPartners data set.
- The developer explained that HealthPartners has a network of providers, and they only have access to those data. Therefore, the developer does not have access to the data for providers outside of their network. Other organizations have implemented and are using the measure nationally; however, they also do not have access to those data. The developer added that the testing is broad enough for the measure to be potentially used to infer its effectiveness in other markets, as seen with the other organizations using the measure, such as Network for Regional Healthcare Improvement (NRHI) in California, Minnesota (MN) Community Measurement, and other organizations. The developer elaborated that the MN Community Measurement releases a report each year that combines data from four different plans across MN, and in comparing the yearly trends, MN Community Measurement has observed improvement each year.
- In reviewing the testing methods, both the SMP and the Standing Committee noted that the bootstrap and 90% random sampling theoretically work for a large sample; however, it is unclear how the results would change when applied to smaller providers' groups (i.e., providers with less than 600 members).
- The developer agreed that lower provider sizes indicate higher variation, but this measure can be used with lower provider sizes and can still produce reliable results due to the removal of outliers, which can drastically affect the average value.
- The Standing Committee did not raise any further questions or concerns regarding reliability for this measure and passed the measure on this criterion.
- Since quorum was not achieved during the measure evaluation meetings, the Standing Committee was not asked whether they would like to uphold the SMP's rating. Voting occurred offline via a web-based tool, and the Standing Committee was asked to provide their own vote for reliability.

Validity

- The Standing Committee acknowledged that the SMP reviewed and passed this measure with a rating of high for validity **(SMP Total votes: 9; H-4; M-2; L-1; I-2)**.
- The Standing Committee observed that three approaches were used to assess validity: (1) Critical data elements were correlated with each other and utilization; (2) The performance measure score was validated against "known risk-adjusted utilization metrics"; and (3) High-/low-performing groups were compared on utilization and RUI (although this largely shows the validity of the risk adjustor). Face validity was determined through a 45-day commenting period.
- The Standing Committee considered that the correlations between the non-risk-adjusted Place of Service Metrics, the non-risk-adjusted PMPMs, and the non-risk-adjusted TCRRVs range between 0.55 and 0.84; the non-risk-adjusted resource composite is correlated with ACGs, non-risk-adjusted PMPMs, and non-risk-adjusted TCRRVs, ranging between 0.77 and 0.95.
- One Standing Committee member questioned whether the TCRRV incorporates pricing. The developer clarified that the TCRRVs are constructed in a way that removes price from the methodology so that the average paid amount is standardized across all hospital providers.
- The Standing Committee considered that NQF #1598 uses the proprietary Johns Hopkins Adjusted Clinical Grouper, which adjusts for variation in risk profile using age, gender, and diagnosis (i.e., clinical risk adjustment). The measure is also limited by insurance coverage to commercial only. The developer considered education and income for risk adjustment, but they did not include these SRFs in the final model.
- Another Standing Committee member noted that presenting correlation coefficients with ACG scores was appropriate; however, they raised concerns on how to interpret the correlation coefficient with non-risk-adjusted PMPMs because the model is, in fact, risk-adjusted. The developer explained that when the measure is not risk-adjusted, the correlations are high

between the PMPMs and the TCRRVs. The developer is trying to draw a parallel between some known utilization markers, such as ACGs and TCRRVs, to demonstrate that TCRRVs are a good reflection of resource use. The developer further explained that they are comparing the non-risk-adjusted PMPM to the correlation coefficients of ACG because ACGs are a proven measure of resources, and by showing that TCRRVs align well with ACGs, it illustrates that TCRRVs are also a good metric for resource use.

- The Standing Committee also noted that the truncation level of 125,000 TCRRVs is used for the measure, and TCRRVs per member above 125,000 are excluded (truncated). They raised concerns about excluding patients over the age of 64 and questioned the rationale for using the truncation level of 125,000 TCRRVs. The developer noted that members over the age of 64 are excluded due to potential incomplete claims data of Medicare-eligible beneficiary. Sometimes, certain members have dual coverage, meaning they are in both Medicare and commercial plans; therefore, due to the difficulty in parsing out the costs that are paid for by Medicare versus the commercial plan, members over the age of 64 were excluded. In terms of truncation, the developer noted that the truncation level was selected to remain aligned with healthcare costs and ensure stability of the measure. TCRRVs per member above 125,000 are excluded (i.e., truncated).
- One of the Standing Committee members also expressed need for a different approach to looking at SRFs because the testing data do not match the reality that race and income have an impact on the measured outcome. It was noted that testing the addition of just one or two SES factors obscures the impact on the measured outcome due to partial effects for other variables in the model (e.g., comorbidities), and stratifying results by SES factors would likely reveal more disparities. The developer stated that as NQF's technical guidance on risk adjustment becomes finalized, the developer will take that fact into consideration when evolving their criteria for risk adjustment and including SES factors in the risk adjustment model.
- Without any further concerns, the Standing Committee passed the measure on the validity criterion.
- Since quorum was not achieved during the measure evaluation meetings, the Standing Committee was not asked whether they would like to uphold the SMP's rating. Voting occurred offline via a web-based tool, and the Standing Committee was asked to provide their own vote for validity.

3. Feasibility: Total Votes: 15; H-6; M-9; 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

- Standing Committee members expressed concern that the implementation of the measure requires the use of ACGs, which must be licensed separately and maybe be cost-prohibitive for some entities.
- The developer noted that while ACG is proprietary, they have organized a public-facing website with several resources and technical documentation, including tool kits for external organizations to download the necessary tools to run the measure free of charge. The developer has also created instructions and tool kits for both Statistical Analysis System (SAS) and non-SAS users.
- The Standing Committee did not express any further concerns and voted to pass the measure on feasibility.

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: **Total Votes: 15; Pass-15; No Pass-0** 4b. Usability: **Total Votes: 15; H-2; M-13; L-0; I-0**

Rationale

- Some Standing Committee members expressed general concerns about the specifications not being fully transparent and noted that it was unclear on how the measure was being reported and used.
- Some Standing Committee members also questioned how the feedback on quality improvement was being provided to the provider groups and asked the developer to clarify what type of feedback was being provided.
- The developer provides quarterly comprehensive reports and monthly patient applications to best support providers in identifying opportunities for improving affordability for their patients while at the same time supporting patient outreach, pre-visit planning, and care coordination efforts. The developer also engages with its network and provider groups on an ongoing basis and has organized a public-facing website with several resources and technical documentation, including tool kits for external organizations to download the necessary tools to run the measure free of charge.
- One Standing Committee member asked whether any data exist regarding whether this measure causes any harm to patients. The developer confirmed that they have not received any such feedback on any harm caused by this measure.
- The Standing Committee observed that this measure has been used as a quality improvement tool within the HealthPartners network, and the developer has shown that it has been used by external organizations; the developer is collecting feedback on the measure.
- The Standing Committee did not raise any additional questions or concerns, passed the measure on usability and use, and recommended this measure for continued endorsement.

5. Related and Competing Measures

- No related or competing measures were noted.

6. Standing Committee Recommendation for Endorsement: **Total Votes: 15; Y-15**; **N-0**

7. Public and Member Comment

- No public or member comments were received during the commenting period.

8. Consensus Standards Approval Committee (CSAC) Vote: Total votes: 10; Y-10; N-0 (November 30, 2021): Endorsed

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

NQF #1604 Total Cost of Care Population-Based PMPM Index

Measure Worksheet | Specifications

Description: The Total Cost of Care reflects a mix of complicated factors, such as patient illness burden, service utilization, and negotiated prices. The Total Cost Index (TCI) is a measure of a primary care provider's risk-adjusted cost effectiveness at managing the population they care for. TCI includes all costs associated with treating members, including professional, facility inpatient and outpatient, pharmacy, lab, radiology, and ancillary and behavioral health services.

A Total Cost Index when viewed together with the Total Resource Use measure (NQF #1598) provides a more complete picture of population-based drivers of health care costs.

Numerator Statement: Not required for cost measures.

Denominator Statement: Not required for cost measures.

Exclusions: Not required for cost measures.

Adjustment/Stratification: Statistical risk model. Measures are adjusted for clinical risk and limited to the commercial population.

Level of Analysis: Population: Community, County or City, Clinician: Group/Practice

Setting of Care: Emergency Department and Services, Home Care, Inpatient/Hospital, Other, Outpatient Services, Post-Acute Care

Type of Measure: Cost/Resource Use
Data Source: Claims
Measure Steward: HealthPartners
STANDING COMMITTEE MEETING: July 9, 2021

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

(1a. High Impact and 1b. Opportunity for Improvement)

1a. High Impact and 1b. Opportunity for Improvement: **Total Votes: 15; H-7**; **M-8**; **L-0**; **I-0**

Rationale

- The Standing Committee acknowledged that this measure was previously endorsed in 2017, in which the developer cited data demonstrating that healthcare spending constitutes a high proportion (17%) of the U.S. GDP, and high healthcare costs contribute to adults forgoing healthcare. The developer suggested that this measure can support a comprehensive measurement system to identify areas of overuse.
- The Standing Committee reviewed the performance scores across measured provider groups of total resource use from 2017–2019 dates of service, which noted that out of the 65 provider groups measured in NQF #1598, 26 were better than average; 3 were 10% better than average; 12 were 10% higher than average; and 50 were within 10% of the average.
- The Standing Committee also acknowledged that the developer discovered that the insurance product also contributed significantly, with a $207 difference in cost between commercial and Medicaid. The variation in resource use was much less; however, it was still significant, with Medicaid-covered members utilizing $55 more of resources.
- The Standing Committee observed the similarity between this measure and NQF #1598, and the concerns raised for NQF #1598 also apply to this measure (NQF #1604). The developer also noted the similarity between the two measures and added that the difference between the two measures is found in the costing approach. NQF #1598 is measuring resource use for every service, while NQF #1604 utilizes an allowed amount, which reflects the plan and member liabilities.
- In comparing the two measures, one Standing Committee member questioned how the incorporation of reimbursements in this measure affects providers practicing in higher cost-of-living and higher geographic wage areas versus lower cost-of-living and lower geographic wage areas. The developer clarified that the cost differential is driven by the price differential, and this measure can show the cost variation that is occurring across different states.
- One Standing Committee member further questioned whether the developer was conducting stratification to confirm that the differences in cost across providers is due to practice style and not the geographic differences between the labor wage rates. The developer confirmed that the measure is applied in that manner so that the comparison is made among the providers in the same wage market.
- The Standing Committee noted that the other concerns discussed regarding the importance to measure and report criterion for NQF #1598 also apply to this measure and agreed that this measure addresses a high-impact/high-resource use area of healthcare. Ultimately, the Standing Committee passed the measure on the importance to measure and report criterion.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria.

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

2a. Reliability: **Total Votes: 14; H-8**; **M-6**; **L-0**; **I-0**; 2b. Validity: **Total Votes: 14; H-3**; **M-8**; **L-3**; **I-0**

Rationale

- The Standing Committee noted that the SMP evaluated and rated this measure as high for both reliability **(SMP Total votes: 9; H-4; M-3; L-0; I-2)** and validity **(SMP Total votes: 9; H-4; M-2; L-1; I-2)**.
- The Standing Committee once again emphasized that the concerns for the reliability and validity of this measure are similar to those raised for NQF #1598.

- The Standing Committee requested additional documentation from the developer regarding the signal-to-noise analysis, which the developer offered to share with the Standing Committee after the meeting, for reference.
- One Standing Committee member asked how a patient is attributed to different clinical practices, specifically what the attribution rules are when multimorbid patients are being handled by multiple providers. The developer explained that they used 12 months of claims data to identify the primary care provider that the member visited most frequently.
- The Standing Committee did not have any further questions or concerns and passed the measure on reliability and validity.
- The Standing Committee considered the reliability testing, which was conducted at the performance measure score level. The developer used two methods to demonstrate the repeatability of the results. To measure the reliability of the #NQF 1604, the actual results were compared to the results calculated by two sampling methods: bootstrapping and a 90% random sample. The differences between the actual TCI results and both the bootstrap and 90% sample results are very small, ranging from -0.0032 to 0.0066 in the bootstrap to -0.0026 to 0.0025 in the 90% sample.
- Since quorum was not achieved during the measure evaluation meetings, the Standing Committee was not asked whether they would like to uphold the SMP's rating. Voting occurred offline via a web-based tool, and the Standing Committee was asked to provide their own vote for reliability.

3. Feasibility: Total Votes: 15; H-7; M-7; L-1; 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 Standing Committee observed that barriers to access are present because the ACG system is proprietary; however, this has been addressed by the training, software, and data collection that the developer provided. Therefore, the Standing Committee passed the measure on feasibility without any additional concerns.

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: **Total Votes: 15; Pass-15; No Pass-0** 4b. Usability: **Total Votes: 15; H-5; M-8; L-2; I-0**

Rationale

- The Standing Committee questioned whether the performance results are available to outside organizations or practices whose performances are being measured. The developer once again emphasized that most of the external organizations publish performance reports publicly, while others do not.
- The Standing Committee acknowledged that the concerns raised for use and usability are similar to those raised for NQF #1598 and passed the measure on this criterion.

5. Related and Competing Measures

- No related or competing measures were noted.

6. Standing Committee Recommendation for Endorsement: **Total Votes: 15; Y-14**; **N-1**

7. Public and Member Comment

- No public or member comments were received during the commenting period.

8. Consensus Standards Approval Committee (CSAC) Vote: Total vote: 10; Y-10; N-0 (November 30, 2021): Endorsed

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

NQF #2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Measure Worksheet | Specifications

Description: This measure estimates the hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short-term, acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

Numerator Statement: Not required for cost measures.

Denominator Statement: Not required for cost measures.

Exclusions: Not required for cost measures.

Adjustment/Stratification: Statistical risk model

Level of Analysis: Facility

Setting of Care: Inpatient/Hospital

Type of Measure: Cost/Resource Use

Data Source: Claims, Enrollment Data

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

STANDING COMMITTEE MEETING: July 13, 2021

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

(1a. High Impact and 1b. Opportunity for Improvement)

1a. High Impact and 1b. Opportunity for Improvement: **Total Votes: 15; H-5**; **M-9**; **L-1**; **I-0**

Rationale

- The Standing Committee acknowledged that this measure has been submitted for maintenance review and was previously endorsed in 2015.
- The Standing Committee noted that the developer cited AMI as one of the leading causes of hospitalization for Americans over 65 years of age and costs the U.S. roughly $84.9 billion in direct and indirect costs.
- The Standing Committee considered the performance data, in which the developer reported a mean RSP of $25,561 with a range of $17,488 – $32,81 for a reporting period of July 1, 2016 – June 30, 2019. The median hospital RSP in the combined three-year data set was $25,422 (IQR of $24,859 – $26,165).
- The Standing Committee also considered the distribution of hospital-level measure scores stratified by the proportion of patients with SRFs (dual eligibility and low Agency for Healthcare Research and Quality [AHRQ] SES). The Standing Committee noted that the measure scores do not vary significantly as a function of facilities' proportion of patients with SRFs.
- The Standing Committee discussed whether this measure is linked to quality. The developer mentioned that this measure is intended for use in conjunction with other outcome measures, beyond mortality, which would be indicators of quality.
- The Standing Committee considered whether it would be up to the hospital to find the right quality score or whether the measure results would be presented in a manner that will help hospitals manage and reduce the variation.
- The developer confirmed that this measure is intended to be reported together with other quality measures, such as mortality. The measure results would be reported to the hospitals, including how hospitals compared to other hospitals; in this case, it would be for the mortality measure. The developer also mentioned that this measure is not in a pay-for-performance program. Rather, it is used in a pay-for-reporting program, in which the broader goal is to make hospitals health conscious. There is no penalty for being above or below the national average. Hospitals are rewarded if they report on this measure.
- CMS stated that the purpose of this measure, along with several other condition-specific cost measures, is to promote transparency, as well as target cost reductions. CMS has a measure

(NQF #1598) that covers a much broader list of conditions and to which payments are made based on the performance of that measure.
- The Standing Committee did not raise any further questions and passed the measure on the importance to measure and report criterion.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria.

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

2a. Reliability: **Total Votes: 14; H-5**; **M-6**; **L-3**; **I-0**; 2b. Validity: **Total Votes: 14; H-3**; **M-7**; **L-3**; **I-1**

Rationale

- The Standing Committee considered the reliability testing, which was conducted at the performance measure score level.
- The developer conducted measure score level reliability testing: calculating the ICC using a split sample (i.e., test-retest) method for hospitals with 25 admissions or more.
- Using the Spearman-Brown prediction formula, the developer found that the agreement between the two independent assessments of the RSP for each hospital was 0.681.
- The Standing Committee acknowledged that the SMP reviewed and passed this measure on reliability **(SMP Total Votes: 8; H-3, M-5, L-0, I-0)**.
- The Standing Committee asked whether signal-to-noise tests were conducted. The developer explained that for hospitals with at least 25 admissions, the median signal-to-noise was 0.404 with an IQR of 0.298–0.594. One Standing Committee member raised concern that the Standing Committee has considered higher cutoffs for some of the other measures rather than 0.4, such as 0.6 or 0.7.
- It was noted that the SMP is reviewing various thresholds of reliability to determine which ones are acceptable. In addition, CMS has looked at 0.4 as an acceptable threshold due to the trade-offs of trying to include more facilities or providers within the measure to promote more transparency across the system.
- The Standing Committee did not raise any additional concerns and passed the measure on reliability.
- Moving to validity, the Standing Committee considered that the developer conducted face validity testing, in which eight of the 16 developer-convened TEP members agreed that the measure can discern between good and poor quality of care.
- The developer also conducted empirical validity testing comparing this measure to NQF #1598. The developer found a correlation coefficient of 0.281 ($p < 0.0001$), meaning that hospitals with higher spending across all Medicare FFS beneficiaries correlated with hospitals with higher spending on patients hospitalized with AMI.
- The Standing Committee considered the risk adjustment model, noting that the R-squared value slightly increased up to 0.078, suggesting that about 8 percent of the variation in payment could be explained by patient-level risk factors.
- The Standing Committee acknowledged that the SMP reviewed and passed the measure on validity **(SMP Total Votes: 8; H-1, M-5, L-2, I-0)**.
- The Standing Committee discussed the approach to social risk adjustment, noting that testing the addition of just one or two SRFs obscures the impact due to partial effects for other variables in the model (e.g., comorbidities). Stratifying results by social risk would likely reveal more disparities.
- The developer noted that it tested the impact of dual-eligible status and the AHRQ SES index as SRFs. The developer found that the two SRFs did have a slightly lower payment after adjusting for other risk factors in the multivariate model; nonetheless, the addition of these SRFs had limited impact on model performance and produced little change in measure scores. The measure scores estimated with hospitals both with and without dual eligibility were highly correlated.
- NQF staff stated that NQF is currently developing technical guidance, which was out for public comment at the time of this review, that will provide more clarity for developer and NQF Standing Committees in conducting SRF adjustment within quality measurement. NQF staff

further noted that this guidance will not change NQF's evaluation criteria until the guidance is finalized at the end of next year (2022).
- The Standing Committee did not raise any further concerns and passed the measure on validity.

3. Feasibility: Total Votes: 15; H-8; M-7; 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 Standing Committee considered that this measure uses administrative claims data and that all data elements for this measure are in defined fields in electronic claims.
- The developer also indicated that no fees are associated with the use of this measure.
- The Standing Committee did not raise any concerns and passed the measure on feasibility.

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: **Total Votes: 15; Pass-15; No Pass-0** 4b. Usability: **Total Votes: 15; H-1; M-10; L-3; I-1**

Rationale

- The Standing Committee considered that this measure is currently publicly reported within CMS' Care Compare and used within the Hospital Inpatient Quality Reporting Program.
- The Standing Committee acknowledged that the developer reported that stakeholders did not raise any questions or issues requiring additional analysis or changes to the measure since the last endorsement maintenance cycle.
- In reviewing the usability criterion, the Standing Committee noted the very small differences in hospital-level RSPs for the AMI payment in 2018–2019 compared with the prior individual years (2016/2017; 2017/2018). The median RSPs for each year were $25,248, $25,539, and $25,542, for 2016/2017, 2017/2018, and 2018/2019, respectively.
- The Standing Committee asked whether any longer-term harms of the measure's use have been identified. In response, the developer stated that they did not identify any unintended consequences during measure development and testing.
- The Standing Committee did not raise any concerns and passed the measure on use and usability.

5. Related and Competing Measures

- The Standing Committee observed that several measures are related to this metric, but it did not consider these measures to be competing.
- The developer identified the following related measures:
    - NQF #0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization
    - NQF #0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization
    - NQF #2158 Medicare Spending per Beneficiary (MSPB) Hospital
    - NQF #2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)
    - NQF #2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)
    - NQF #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)

6. Standing Committee Recommendation for Endorsement: **Total votes: 15; Y-11**; **N-4**

7. Public and Member Comment

- The American Medical Association (AMA) voiced concern with the signal-to-noise ratio (SNR) value ranges specified in NQF #2431 (median: 0.404; 0.298–0.594).
- AMA raised concern with testing for SRFs after adjusting for clinical risk factors and questioned the adequacy of the risk model due to the R-squared results specified in NQF #2431 (r-squared=0.078).
- AMA voiced concern related to the lack of demonstrated correlation between cost measures and any one quality measure within the hospital's quality programs.
- The content of this comment was discussed at the post-evaluation comment meeting on October 22, 2021. The Standing Committee acknowledged the challenges with achieving reliability thresholds for measure score reliability while balancing the trade-off of including more facilities or providers within the measure to promote transparency across the healthcare system.
- The Standing Committee also acknowledged the commenter's concern that cost and resource use measures can be influenced by care received in a healthcare setting but also by clinical processes and SRFs. While the Standing Committee did note that it is important to maximize the predictive value of a risk adjustment model, elements of a risk model should be included based on a conceptual and empirical rationale.
- Lastly, the Standing Committee recognized that cost and resource use measures should be used in the context of and reported with quality measures and emphasized the importance of reporting performance to demonstrate improvements in cost while ensuring similar or higher levels of care quality. The Standing Committee noted that the current NQF cost and efficiency endorsement criteria do not require specifications or testing of a paired quality measure.

8. Consensus Standards Approval Committee (CSAC) Vote: Total votes: 10; Y-10; N-0 (November 30, 2021): Endorsed

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9.Appeals

- No appeals were received.

NQF #2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Measure Worksheet| Specifications

Description: This measure estimates the hospital-level, risk-standardized payment for an HF episode of care starting with inpatient admission to a short-term, acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

Numerator Statement: Not required for cost measures.

Denominator Statement: Not required for cost measures.

Exclusions: Not required for cost measures.

Adjustment/Stratification: Statistical risk model

Level of Analysis: Facility

Setting of Care: Inpatient/Hospital

Type of Measure: Cost/Resource Use

Data Source: Claims, Enrollment Data

Measure Steward: Centers for Medicare & Medicaid Services

STANDING COMMITTEE MEETING: July 27, 2021

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

(1a. High Impact and 1b. Opportunity for Improvement)

1a. High Impact and 1b. Opportunity for Improvement: **Total Votes: 15; H-4**; **M-9**; **L-2**; **I-0**

Rationale

- The Standing Committee acknowledged that this measure has been submitted for maintenance review and was previously endorsed in 2015.
- The Standing Committee noted that the developer cited HF as one of the top three leading causes of hospitalization for Americans over 65 years of age and is projected to cost the U.S. up to $70 billion in direct and indirect costs by 2030.
- The Standing Committee considered the performance data, in which the developer reported a mean RSP of $17,722 with a range of $13,171 – $27,996 during the reporting period of July 1, 2016 – June 30, 2019. The median hospital RSP in the combined three-year data set was $17,607 (IQR of $16,817 – $18,513).
- The Standing Committee also considered the distribution of hospital-level measure scores stratified by the proportion of patients with SRFs (dual eligibility and low AHRQ SES). The Standing Committee noted that the measure scores do not vary significantly as a function of facilities' proportion of patients with SRFs.
- The Standing Committee noted that the same concerns raised during the discussion of NQF #2431 apply to this measure as well.
- The Standing Committee did not raise any further questions and passed the measure on the importance to measure and report criterion.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria.

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

2a. Reliability: **Total Votes: 14; H-6**; **M-8**; **L-0**; **I-0**; 2b. Validity: **Total Votes: 14; H-2**; **M-9**; **L-3**; **I-0**

Rationale

- The Standing Committee achieved sufficient attendance and did not achieve quorum. Therefore, the Standing Committee voted offline on reliability and validity instead of voting to accept the SMP's rating.
- The Standing Committee considered the reliability testing, which was conducted at the performance measure score level.
- The developer conducted measure score level reliability testing: calculating the ICC using a split sample (i.e., test-retest) method for hospitals with 25 admissions or more.
- Using the Spearman-Brown prediction formula, the developer found that the agreement between the two independent assessments of the RSP for each hospital was 0.781.
- The Standing Committee acknowledged that the SMP reviewed and passed this measure on reliability **(SMP Total Votes 8; H-5, M-3, L-0, I-0)**.
- The Standing Committee asked about the signal-to-noise results for this measure. The developer explained that for hospitals with at least 25 admissions, the HF payment signal-to-noise reliability values had a mean of 0.666, a median of 0.679, and an IQR of 0.528–0.801.
- The Standing Committee acknowledged that the same concerns with NQF #2431 apply to this measure as well.
- The Standing Committee did not raise any additional concerns and passed the measure on reliability.
- Moving to validity, the Standing Committee considered that the developer conducted face validity testing, in which eight of the 16 developer-convened TEP members agreed that the measure can discern between good and poor quality of care.
- The developer also conducted empirical validity testing, comparing this measure to the MSPB measure. The developer found a correlation coefficient of 0.543, meaning that hospitals with higher spending across all Medicare FFS beneficiaries correlated with hospitals with higher spending on patients hospitalized with HF.
- The Standing Committee considered the risk adjustment model, noting that the R-squared value slightly decreased to 0.031, suggesting that about 3% of the variation in payment could be explained by patient-level risk factors.
- The Standing Committee acknowledged that the SMP reviewed and passed the measure on validity **(SMP Total Votes 8; H-2, M-4, L-2, I-0)**.

- The Standing Committee discussed the approach to social risk adjustment, noting that testing the addition of just one or two SRFs obscures the impact due to partial effects for other variables in the model (e.g., comorbidities). Stratifying results by social risk would likely reveal more disparities.
- The developer noted that it tested the impact of dual-eligible status and the AHRQ SES index as SRFs. The developer found that the two SRFs did have a slightly lower payment after adjusting for other risk factors in the multivariate model; nonetheless, the addition of these SRFs had limited impact on model performance and produced little change in measure scores. The measure scores estimated with hospitals both with and without dual eligibility were highly correlated.
- The Standing Committee acknowledged that the same concerns with NQF #2431 apply to this measure as well.
- The Standing Committee did not raise any additional concerns and passed the measure on validity.

3. Feasibility: Total Votes: 15; H-6; M-9; 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 Standing Committee considered that this measure uses administrative claims data and that all data elements for this measure are in defined fields in electronic claims.
- The developer also indicated that no fees are associated with the use of this measure.
- The Standing Committee did not raise any concerns and passed the measure on feasibility.

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: **Total Votes: 15**; **Pass-15; No Pass-0** 4b. Usability: **Total Votes: 15; H-2; M-8; L-4; I-1**

Rationale

- The Standing Committee considered that this measure is currently publicly reported within CMS' Care Compare and used within the Hospital Inpatient Quality Reporting Program.
- The Standing Committee acknowledged that the developer reported that stakeholders did not raise any questions or issues requiring additional analysis or changes to the measure since the last endorsement maintenance cycle.
- In reviewing the usability criterion, the Standing Committee noted that the developer reported a median hospital 30-day RSP of $17,607 for the HF payment measure for the three-year period between July 1, 2016, and June 30, 2019. The median RSP decreased by 2.6 percent from July 2017 – June 2018 (median RSP: $17,781) to July 2018 – June 2019 (median RSP: $17,310).
- The Standing Committee acknowledged that the same concerns with NQF #2431 for usability apply to this measure as well.
- The Standing Committee did not raise any further concerns and passed the measure on use and usability.

5. Related and Competing Measures

- The Standing Committee observed that several measures are related to this metric, but it did not consider these measures to be competing.
- The developer identified the following related measures:
    - NQF #0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization
    - NQF #0330 Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization
    - NQF #2158 Medicare Spending per Beneficiary (MSPB) Hospital

- NQF #2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)
- NQF #2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)
- NQF #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)

6. Standing Committee Recommendation for Endorsement: **Total Votes: 15; Y-14**; **N-1**

7. Public and Member Comment

- AMA voiced concern with the SNR value ranges specified in NQF #2436 (median: 0.679; 0.528–0.801).
- AMA raised concern with testing for SRFs after adjusting for clinical risk factors and questioned the adequacy of the risk model due to the R-squared results specified in NQF #2436 (r-squared=0.031).
- AMA voiced concern related to the lack of demonstrated correlation between cost measures and any one quality measure within the hospital's quality programs.
- The content of this comment was discussed at the post-evaluation comment meeting on October 22, 2021. The Standing Committee acknowledged the challenges with achieving reliability thresholds for measure score reliability while balancing the trade-off of including more facilities or providers within the measure to promote transparency across the healthcare system.
- The Standing Committee also acknowledged the commenter's concern that cost and resource use measures can be influenced by care received in a healthcare setting but also by clinical processes and SRFs. While the Standing Committee did note that it is important to maximize the predictive value of a risk adjustment model, elements of a risk model should be included based on a conceptual and empirical rationale.
- Lastly, the Standing Committee recognized that cost and resource use measures should be used in the context of and reported with quality measures and emphasized the importance of reporting performance to demonstrate improvements in cost while ensuring similar or higher levels of care quality. The Standing Committee noted that the current NQF cost and efficiency endorsement criteria do not require specifications or testing of a paired quality measure.

8. Consensus Standards Approval Committee (CSAC) Vote: Total votes: 10; Y-10; N-0 (November 30, 2021): Endorsed

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

NQF #2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Measure Worksheet| Specifications

Description: This measure estimates the hospital-level, risk-standardized payment for an eligible pneumonia (PN) episode of care starting with inpatient admission to a short-term, acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of PN or principal discharge diagnosis of sepsis (not including severe sepsis) who have a secondary discharge diagnosis of PN coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

Numerator Statement: Not required for cost measures.

Denominator Statement: Not required for cost measures.

Exclusions: Not required for cost measures.

Adjustment/Stratification: Statistical risk model

Level of Analysis: Facility
Setting of Care: Inpatient/Hospital
Type of Measure: Cost/Resource Use
Data Source: Claims, Enrollment Data
Measure Steward: Centers for Medicare & Medicaid Services
STANDING COMMITTEE MEETING July 27, 2021

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

(1a. High Impact and 1b. Opportunity for Improvement)

1a. High Impact and 1b. Opportunity for Improvement: **Total Votes: 15; H-3**; **M-10**; **L-2**; **I-0**

Rationale

- The Standing Committee acknowledged that this measure has been submitted for maintenance review and was previously endorsed in 2014.
- The Standing Committee noted that the developer cited PN as one of the leading causes of hospitalization for Americans over 65 years of age and costs the U.S. approximately $13.4 billion annually.
- The Standing Committee considered the performance data, in which the developer reported a mean RSP of $18,283 with a range of $10,529 – $29,861 during the reporting period of July 1, 2016 – June 30, 2019. The median hospital RSP in the combined three-year data set was $18,200 (IQR of $17,015 – $19,453).
- The Standing Committee also considered the distribution of hospital-level measure scores stratified by the proportion of patients with SRFs (dual eligibility and low AHRQ SES). The Standing Committee noted that the measure scores do not vary significantly as a function of facilities' proportion of patients with SRFs.
- The Standing Committee noted that the same concerns raised during the discussion of NQF #2431 apply to this measure as well.
- The Standing Committee did not raise any further questions and passed the measure on the importance to measure and report criterion.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria.

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

2a. Reliability: **Total Votes: 14; H-5**; **M-9**; **L-0**; **I-0**; 2b. Validity: **Total Votes: 14; H-3**; **M-9**; **L-1**; **I-1**

Rationale

- The Standing Committee considered the reliability testing, which was conducted at the performance measure score level.
- The Standing Committee reviewed the testing information, in which the developer conducted a spilt-sample reliability to test the agreement between two independent subsets of patients within hospitals. The developer calculated the ICC for hospitals with 25 admissions or more. Using the Spearman-Brown prediction formula, the agreement between the two independent assessments of the RSP for each hospital was 0.815.
- The Standing Committee acknowledged that the SMP reviewed and passed this measure on reliability **(SMP Total Votes:8; H-5, M-3, L-0, I-0)**.
- The Standing Committee asked about the signal-to-noise results for this measure. The developer explained that for hospitals with at least 25 admissions, the mean signal-to-noise was 0.820, the median was 0.8554, and the IQR was 0.7472–0.919.
- The Standing Committee acknowledged that the same concerns with NQF #2431 and NQF #2436 apply to this measure as well.
- The Standing Committee did not raise any additional concerns and passed the measure on reliability.
- Moving to validity, the Standing Committee considered that the developer conducted face validity testing, in which 10 of the 16-developer convened TEP members agreed that the measure can discern between good versus poor quality of care.

- The developer also conducted empirical validity testing, comparing this measure to the MSPB measure. The developer found a correlation between PN RSPs and the MSPB score of 0.588, suggesting that hospitals with higher performance on this measure are more likely to have higher performance scores on NQF #2158.
- The Standing Committee considered the risk adjustment model, noting that the updated, calculated R-squared result was 0.076.
- The Standing Committee acknowledged that the SMP reviewed and passed the measure on validity **(SMP Total Votes: 8; H-2, M-4, L-2, I-0)**.
- The Standing Committee discussed the approach to social risk adjustment, noting that the developer presents analyses that show a significant association between dual eligibility (but not low AHRQ SES) and higher payments, even after adjusting for other risk factors in a multivariable model. The addition of the social risk variables has little impact on model performance and produces little change in the measure scores. The measure scores estimated for hospitals both with and without dual eligibility are highly correlated (0.999). The developer noted that CMS ultimately decided to not adjust this measure for either dual eligibility or the AHRQ SES Index.
- The Standing Committee acknowledged that the same concerns with NQF #2431 and #2579 apply to this measure as well.
- The Standing Committee did not raise any additional concerns and passed the measure on validity.

3. Feasibility: Total Votes: 15; H-7; M-8; 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 Standing Committee considered that this measure uses administrative claims data and that all data elements for this measure are in defined fields in electronic claims.
- The developer also indicated that no fees are associated with the use of this measure.
- The Standing Committee did not raise any concerns and passed the measure on feasibility.

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: **Total Votes: 15; Pass-15; No Pass-0** 4b. Usability: **Total Votes: 15; H-2; M-9; L-4; I-0**

Rationale

- The Standing Committee considered that this measure is currently publicly reported within CMS' Care Compare and used within the Hospital Inpatient Quality Reporting Program.
- The Standing Committee acknowledged that the developer reported that stakeholders did not raise any questions or issues requiring additional analysis or changes to the measure since the last endorsement maintenance cycle.
- In reviewing the usability criterion, the Standing Committee noted that the developer reported a median hospital 30-day RSP of $18,200 for the PN payment measure for the three-year period between July 1, 2016, and June 30, 2019. The median RSP decreased by 1% from July 2017 – June 2018 (median RSP: $18,226) to July 2018 – June 2019 (median RSP: $18,037).
- The Standing Committee acknowledged that the same concerns with NQF #2431 and NQF #2579 for usability apply to this measure as well.
- The Standing Committee did not raise any further concerns and passed the measure on use and usability.

5. Related and Competing Measures

- The Standing Committee observed that several measures are related to this metric, but it did not consider these measures to be competing.
- The developer identified the following related measures:

- NQF #0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization
- NQF #0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization
- NQF #0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization
- NQF #2158 Medicare Spending per Beneficiary (MSPB) Hospital
- NQF #2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)
- NQF #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)

6. Standing Committee Recommendation for Endorsement: **Total Votes: 15; Y-15**; **N-0**

7. Public and Member Comment

- AMA raised concern with testing for SRFs after adjusting for clinical risk factors and questioned the adequacy of the risk model due to the R-squared results specified in NQF #2579 (r-squared=0.076).
- AMA voiced concern related to the lack of demonstrated correlation between cost measures and any one quality measure within the hospital's quality programs.
- The content of this comment was discussed at the post-evaluation comment meeting on October 22, 2021. The Standing Committee acknowledged the commenter's concern that cost and resource use measures can be influenced by care received in a healthcare setting but also by clinical processes and SRFs. While the Standing Committee did note that it is important to maximize the predictive value of a risk adjustment model, elements of a risk model should be included based on a conceptual and empirical rationale.
- Lastly, the Standing Committee recognized that cost and resource use measures should be used in the context of and reported with quality measures and emphasized the importance of reporting performance to demonstrate improvements in cost while ensuring similar or higher levels of care quality. The Standing Committee noted that the current NQF cost and efficiency endorsement criteria do not require specifications or testing of a paired quality measure.

8. Consensus Standards Approval Committee (CSAC) Vote: Total vote: 10; Y-10; N-0 (November 30, 2021): Endorsed

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

Appendix B: Cost and Efficiency Portfolio—Use in Federal Programs*

NQF #	Title	Federal Programs (Finalized or Implemented)
1598	Total Resource Use Population-Based PMPM Index	None
1604	Total Cost of Care Population-Based PMPM Index	None
2158	Medicare Spending per Beneficiary (MSPB)	Care Compare
2431	Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)	Care Compare Hospital Inpatient Quality Reporting
2436	Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)	Care Compare Hospital Inpatient Quality Reporting
2579	Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia	Care Compare Hospital Inpatient Quality Reporting
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)	Care Compare Hospital Inpatient Quality Reporting
3509	Routine Cataract Removal With Intraocular Lens (IOL) Implantation	None
3510	Screening/Surveillance Colonoscopy	None
3512	Knee Arthroplasty	None
3561	Medicare Spending per Beneficiary Post-Acute Care Measure for Inpatient Rehabilitation Facilities	Inpatient Rehabilitation Facility Quality Reporting Care Compare
3562	Medicare Spending per Beneficiary Post-Acute Care Measure for Long-Term Care Hospitals	Long-Term Care Hospital Quality Reporting Care Compare
3575	Total per Capita Cost (TPCC)	None

*CMS Measures Inventory Tool Last Accessed January 25, 2022.

Appendix C: Cost and Efficiency Standing Committee and NQF Staff

STANDING COMMITTEE

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Rockville, Maryland

Sunny Jhamnani, MD (Co-Chair)
Dignity Health & Banner Health
Phoenix, Arizona

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Titusville, New Jersey

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Rochester, Minnesota

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Columbia, South Carolina

Cory Byrd
Humana, Inc.
Louisville, Kentucky

Amy Chin, MS
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New York, New York

Cheryl Damberg, PhD
RAND Corporation
Santa Monica, California

Lindsay Erickson, MPH
Integrated Healthcare Association
Oakland, California

Risha Gidwani, DrPH
RAND Corporation, UCLA School of Public Health
Santa Monica, California

Emma Hoo
Pacific Business Group
San Francisco, California

Sean Hopkins
New Jersey Hospital Association
Princeton, New Jersey

Jonathan Jaffrey
University of Wisconsin School of Medicine and Public Health
Madison, Wisconsin

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Chicago, Illinois

Donald Klitgaard, MD
MedLink Advantage
Avoca, Iowa

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Manager, Quality Measurement (*Former*)

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Administrative Assistant, Measurement Science & Application

Tristan Wind, BS, ACHE-SA
Coordinator, Measurement Science & Application

Appendix D: Measure Specifications

NQF #1598 Total Resource Use Population-Based PMPM Index

STEWARD

HealthPartners

DESCRIPTION

The Resource Use Index (RUI) is a risk adjusted measure of the frequency and intensity of services utilized to manage a provider group's patients. Resource use includes all resources associated with treating members including professional, facility inpatient and outpatient, pharmacy, lab, radiology, ancillary and behavioral health services.

A Resource Use Index when viewed together with the Total Cost of Care measure (NQF-endorsed #1604) provides a more complete picture of population based drivers of health care costs.

TYPE

Cost/Resource Use

DATA SOURCE

Claims

Users administrative claims data base

Risk Adjustment Tool, Johns Hopkins ACG System

Standardized costing code table

Total Care Relative Resource Values (TCRRV); specification provided

LEVEL

Population : Community, County or City, Clinician : Group/Practice

SETTING

Emergency Department and Services, Home Care, Inpatient/Hospital, Other, Outpatient Services, Post-Acute Care All care settings included

NUMERATOR STATEMENT

120754| 141015| 135810

NUMERATOR DETAILS

120754| 141015| 135810

DENOMINATOR STATEMENT

120754| 141015| 135810

DENOMINATOR DETAILS

120754| 141015| 135810

EXCLUSIONS

120754| 141015| 135810

EXCLUSION DETAILS

120754| 141015| 135810

RISK ADJUSTMENT

Statistical risk model

STRATIFICATION

Measures are adjusted for clinical risk and limited to the commercial population.

TYPE SCORE

Ratio; Other (specify): https://www.healthpartners.com/content/dam/brand-identity/pdfs/plan/tcoc-sample-medical-group.pdf page 9

A provider Total Resource Use Index (RUI) of 1.10 equates to 10% higher risk adjusted resource use. Similarly, a provider RUI score of 0.90 equates to 10% less paid risk adjusted resource use.

A score of 1.0 is equivalent to the peer group average.

ALGORITHM

120754| 141015| 135810 120754| 141015| 135810

120754| 141015| 135810

NQF #1604 Total Cost of Care Population-Based PMPM Index

STEWARD

HealthPartners

DESCRIPTION

Total Cost of Care reflects a mix of complicated factors such as patient illness burden, service utilization and negotiated prices. Total Cost Index (TCI) is a measure of a primary care provider's risk adjusted cost effectiveness at managing the population they care for. TCI includes all costs associated with treating members including professional, facility inpatient and outpatient, pharmacy, lab, radiology, ancillary and behavioral health services.

A Total Cost Index when viewed together with the Total Resource Use measure (NQF-endorsed #1598) provides a more complete picture of population based drivers of health care costs.

TYPE

Cost/Resource Use

DATA SOURCE

Claims Use administrative claims data base

Risk Adjustment Tool, Johns Hopkins ACG System

LEVEL

Population : Community, County or City, Clinician : Group/Practice

SETTING

Emergency Department and Services, Home Care, Inpatient/Hospital, Other, Outpatient Services, Post-Acute Care All care settings

NUMERATOR STATEMENT

120754| 117446| 109921| 135810

NUMERATOR DETAILS

120754| 117446| 109921| 135810

DENOMINATOR STATEMENT

120754| 117446| 109921| 135810

DENOMINATOR DETAILS

120754| 117446| 109921| 135810

EXCLUSIONS

120754| 117446| 109921| 135810

EXCLUSION DETAILS

120754| 117446| 109921| 135810

RISK ADJUSTMENT

Statistical risk model

STRATIFICATION

Measures are adjusted for clinical risk and limited to the commercial population.

TYPE SCORE

Ratio; Other (specify): https://www.healthpartners.com/content/dam/brand-identity/pdfs/plan/tcoc-sample-medical-group.pdf see page 9 A provider Total Cost Index (TCI) of 1.10 equates to 10% higher paid risk adjusted PMPM. Similarly, a provider TCI score of 0.90 equates to 10% less paid risk adjusted PMPM.

A score of 1.0 is equivalent to the peer group average.

ALGORITHM

120754| 117446| 109921| 135810

NQF #2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

STEWARD

Centers for Medicare & Medicaid Services

DESCRIPTION

This measure estimates hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

TYPE

Cost/Resource Use

DATA SOURCE

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency

services, as well as inpatient and outpatient physician claims. The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

LEVEL

Facility

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

118210| 112469| 135810| 146637| 141015| 146313

NUMERATOR DETAILS

118210| 112469| 135810| 146637| 141015| 146313

DENOMINATOR STATEMENT

118210| 112469| 135810| 146637| 141015| 146313

DENOMINATOR DETAILS

118210| 112469| 135810| 146637| 141015| 146313

EXCLUSIONS

118210| 112469| 135810| 146637| 141015| 146313

EXCLUSION DETAILS

118210| 112469| 135810| 146637| 141015| 146313

RISK ADJUSTMENT

Statistical risk model

STRATIFICATION

N/A

TYPE SCORE

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The AMI risk-standardized payment (RSP) is most meaningful when presented in the context of an AMI outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

ALGORITHM

118210| 112469| 135810| 146637| 141015| 146313

NQF #2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

STEWARD

Centers for Medicare & Medicaid Services

DESCRIPTION

This measure estimates hospital-level, risk-standardized payment for a HF episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

TYPE

Cost/Resource Use

DATA SOURCE

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

Price standardization methodology:

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable

medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

LEVEL

Facility

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

118210| 112469| 135810| 146637| 141015| 146313

NUMERATOR DETAILS

118210| 112469| 135810| 146637| 141015| 146313

DENOMINATOR STATEMENT

118210| 112469| 135810| 146637| 141015| 146313

DENOMINATOR DETAILS

118210| 112469| 135810| 146637| 141015| 146313

EXCLUSIONS

118210| 112469| 135810| 146637| 141015| 146313

EXCLUSION DETAILS

118210| 112469| 135810| 146637| 141015| 146313

RISK ADJUSTMENT

Statistical risk model

STRATIFICATION

N/A

TYPE SCORE

Continuous variable. Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The HF risk-standardized payment (RSP) is most meaningful when presented in the context of an HF outcome measure, such as the publicly reported HF mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

Algorithm

118210| 112469| 135810| 146637| 141015| 146313

NQF #2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

STEWARD

Centers for Medicare & Medicaid Services

DESCRIPTION

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

TYPE

Cost/Resource Use

DATA SOURCE

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical

equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

LEVEL

Facility

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

118210| 135560| 109921| 135810| 141015| 146637| 146313

NUMERATOR DETAILS

118210| 135560| 109921| 135810| 141015| 146637| 146313

DENOMINATOR STATEMENT

118210| 135560| 109921| 135810| 141015| 146637| 146313

DENOMINATOR DETAILS

118210| 135560| 109921| 135810| 141015| 146637| 146313

EXCLUSIONS

118210| 135560| 109921| 135810| 141015| 146637| 146313

EXCLUSION DETAILS

118210| 135560| 109921| 135810| 141015| 146637| 146313

RISK ADJUSTMENT

Statistical risk model

STRATIFICATION

N/A

TYPE SCORE

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

ALGORITHM

118210| 135560| 109921| 135810| 141015| 146637| 14631

Appendix E: Related and Competing Measures

Comparison of NQF #2431 and NQF #0230

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)
#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Steward

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Centers for Medicare & Medicaid Services

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Centers for Medicare & Medicaid Services

Description

#2431 Hospital-Level, Risk-Standardized Payment Associated with a 30-Day Episode-of-Care for Acute Myocardial Infarction (AMI

This measure estimates hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure estimates a hospital-level 30-day risk-standardized mortality rate (RSMR) for patients discharged from the hospital with a principal diagnosis of AMI. Mortality is defined as death for any cause within 30 days after the date of admission for the index admission. CMS annually reports the measure for patients who are 65 years or older and are either Medicare fee-for-service (FFS) beneficiaries and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities.

Type

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Cost/Resource Use

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Outcome

Data Source

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims. The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 112469| 135810| 146637| 141015| 146313 Attachment1 118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Claims, Enrollment Data, Other Data sources for the Medicare FFS measure:

Medicare Part A Inpatient and Part B Outpatient Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims for the 12 months prior to an index admission.

Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission as well as vital status. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992). The Master Beneficiary Summary File (MBSF) is an annually created file derived the EDB that contains enrollment information for all Medicare beneficiaries including dual eligible status. Years 2016-2019 were used.

Veterans Health Administration (VA) Data: This data source contains data for VA inpatient and outpatient services including: inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician data for the 12 months prior to and including each index admission. Unlike Medicare FFS patients, VA patients are not required to have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission.

The American Community Survey (2013-2017): The American Community Survey data is collected annually and an aggregated 5-years data were used to calculate the Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) composite index score.

References:

Fleming C, Fisher ES, Chang CH, Bubolz TA, Malenka DJ. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs hospitals. Medical Care. 1992; 30(5): 377-91.

No data collection instrument provided Attachment NQF_datadictionary_AMImortality_Fall2020_final_7.22.20.xlsx

Level

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Facility

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Facility

Setting

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Inpatient/Hospital

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Inpatient/Hospital

Numerator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The outcome for this measure is 30-day all-cause mortality. We define mortality as death from any cause within 30 days from the date of admission for patients hospitalized with a principal diagnosis of AMI.

Numerator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure counts all deaths (including in-hospital deaths) for any cause to any acute care hospital within 30 days of the date of the index AMI hospitalization.

Identifying deaths in the FFS measure

As currently reported, we identify deaths for FFS Medicare patients 65 years and older in the Medicare Enrollment Database (EDB) and for VA patients in the VA data.

Denominator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

This claims-based measure is used for patients aged 65 years or older.

The cohort includes admissions for patients aged 65 years and older discharged from the hospital with a principal discharge diagnosis of AMI and with a complete claims history for the 12 months prior to admission. The measure is publicly reported by CMS for those patients 65 years and older who are Medicare FFS or VA beneficiaries admitted to non-federal or VA hospitals, respectively.

Additional details are provided in S.7 Denominator Details.

Denominator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

To be included in the measure cohort used in public reporting, patients must meet the following inclusion criteria:

1. Having a principal discharge diagnosis of AMI;

2. Enrolled in Medicare fee-for-service (FFS) Part A and Part B for the 12 months prior to the date of the index admission and Part A during the index admission, or those who are VA beneficiaries;

3. Aged 65 or over; and

4. Not transferred from another acute care facility.

We have explicitly tested the measure for those aged 65+ years (see Testing Attachment for details).

Exclusions

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The mortality measures exclude index admissions for patients:

1. Discharged alive on the day of admission or the following day who were not transferred to another acute care facility;

2. With inconsistent or unknown vital status or other unreliable demographic (age and gender) data;

3. Enrolled in the Medicare hospice program or used VA hospice services any time in the 12 months prior to the index admission, including the first day of the index admission; or

4. Discharged against medical advice (AMA).

For patients with more than one admission for a given condition in a given year, only one index admission for that condition is randomly selected for inclusion in the cohort.

Exclusion Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

1. The discharge disposition indicator is used to identify patients alive at discharge. Transfers are identified in the claims when a patient with a qualifying admission is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day. Patient length of stay and condition is identified from the admission claim.

Rationale: This exclusion prevents inclusion of patients who likely did not have clinically significant AMI.

2. Inconsistent vital status or unreliable data are identified if any of the following conditions are met 1) the patient's age is greater than 115 years; 2) if the discharge date

for a hospitalization is before the admission date; and 3) if the patient has a sex other than 'male' or 'female'.

Rationale: Reliable and consistent data are necessary for valid calculation of the measure.

3. Hospice enrollment in the 12 months prior to or on the index admission is identified using hospice data. This exclusion applies when the measure is used in Medicare FFS patients only.

Rationale: These patients are likely continuing to seek comfort measures only; thus, mortality is not necessarily an adverse outcome or signal of poor quality care.

4. Discharges against medical advice (AMA) are identified using the discharge disposition indicator in claims data.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

Risk Adjustment

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Statistical risk model

118210| 112469| 135810| 146637| 141015| 146313

118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Statistical risk model

118210| 112469| 146637| 150289

118210| 112469| 146637| 150289

Stratification

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

N/A

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

N/A

Type Score

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The AMI risk-standardized payment (RSP) is most meaningful when presented in the context of an AMI outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Rate/proportion better quality = lower score

Algorithm

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure estimates hospital-level 30-day all-cause RSMRs following hospitalization for AMI using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient and hospital levels to account for variance in patient outcomes within and between hospitals [Normand and Shahian, 2007]. At the patient level, it models the log-odds of mortality within 30 days of index admission using age, sex, selected clinical covariates, and a hospital-specific intercept. At the hospital level, it models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of a mortality at the hospital, after accounting for patient risk. The hospital-specific intercepts are given a distribution to account for the clustering (non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths at a given hospital, multiplied by the national observed mortality rate. For each hospital, the numerator of the ratio is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the denominator is the number of deaths expected based on the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality rates or better quality, and a higher ratio indicates higher-than-expected mortality rates or worse quality.

The "predicted" number of deaths (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific intercept on the risk of mortality. The estimated hospital-specific intercept is added coefficients multiplied by the patient characteristics. The results are transformed and summed over all patients attributed to a hospital to get a predicted value. The "expected" number of deaths (the denominator) is obtained in the same manner, but a common intercept using all hospitals in our sample is added in place of the hospital-specific intercept. The results are transformed and summed over all patients in the hospital to get an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the years of data in that period.

This calculation transforms the ratio of predicted over expected into a rate that is compared to the national observed readmission rate. The hierarchical logistic regression models are described fully in the original methodology report posted on QualityNet [https://qualitynet.org/inpatient/measures/mortality/methodology].

References:

1. Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22(2): 206-226.

2. Krumholz H, Normand S, Galusha D, et al. Risk-Adjustment Models for AMI and HF 30-Day Mortality Methodology. 2005. 118210| 112469| 146637| 150289

Submission Items

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

5.1 Identified measures: 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

5.1 Identified measures: 0730 : Acute Myocardial Infarction (AMI) Mortality Rate

0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

1893 : Hospital 30-Day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD) hospitalization

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

3502 : Hybrid Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

3504 : Claims-Only Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: We did not include in our list of related measures any non-outcome (e.g., process) measures with the same target population as our measure. Our measure cohort was heavily vetted by clinical experts, a technical expert panel, and a public comment period. Additionally, the measure, with the specified cohort, has been publicly reported since 2008. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure).

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2431 and NQF #0505

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Steward

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Centers for Medicare & Medicaid Services

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Centers for Medicare & Medicaid Services

Description

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

This measure estimates hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure estimates a hospital-level 30-day, all-cause, risk-standardized readmission rate (RSRR) for patients age 65 and older discharged from the hospital with a principal diagnosis of acute myocardial infarction (AMI). Readmission is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission. Readmissions are classified as planned and unplanned by applying the planned readmission algorithm. CMS annually reports the measure for patients who are 65 years or older and enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are patients hospitalized in Veterans Health Administration (VA) facilities.

Type

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Cost/Resource Use

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Outcome

Data Source

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims. The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Claims, Enrollment Data, Other Data sources for the Medicare FFS measure:

Medicare Part A Inpatient and Part B Outpatient claims: This data source contains claims data for FFS inpatient and outpatient services including Medicare inpatient hospital care, outpatient hospital services, as well as inpatient and outpatient physician claims for the 12 months prior to an index admission.

Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission as well as vital status. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992). The Master Beneficiary Summary File (MBSF) is an annually created file derived the EDB that contains enrollment information for all Medicare beneficiaries including dual eligible status. Years 2016-2019 were used.

Veterans Health Administration (VA) Data: This data source contains administrative data for VA inpatient and outpatient services including: inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician data for the 12 months prior to and including each index admission. Unlike Medicare FFS patients, VA patients are not required to have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission.

The American Community Survey (2013-2017): We used the American Community Survey (2013-2017) to derive an updated AHRQ SES index score at the patient nine-digit zip code level for use in studying the association between our measure and SRFs.

References

Fleming C., Fisher ES, Chang CH, Bubolz D, Malenda J. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs Hospitals. Medical Care. 1992; 30(5): 377-91.

No data collection instrument provided Attachment NQF_datadictionary_AMIreadmission_Fall2020_final_7.22.20.xlsx

Level

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Facility

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Facility

Setting

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Inpatient/Hospital

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Inpatient/Hospital

Numerator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

The outcome for this measure is 30-day all-cause readmissions. We define readmission as an inpatient acute care admission for any cause, with the exception of certain planned readmissions, within 30 days from the date of discharge from the index for patients 65 and older discharged from the hospital with a principal discharge diagnosis of AMI. If a patient has more than one unplanned admission (for any reason) within 30 days after discharge from the index admission, only the first one is counted as a readmission. The measure looks for a dichotomous yes or no outcome of whether each admitted patient has an unplanned readmission within 30 days. However, if the first readmission after discharge is considered planned, any subsequent unplanned readmission is not counted as an outcome for that index admission because the unplanned readmission could be related to care provided during the intervening planned readmission rather than during the index admission.

Additional details are provided in S.5 Numerator Details.

Numerator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure counts readmissions to any acute care hospital for any cause within 30 days of the date of discharge of the index AMI admission, excluding planned readmissions as defined below.

Planned Readmission Algorithm (Version 4.0)

The planned readmission algorithm is a set of criteria for classifying readmissions as planned using Medicare and VA administrative claims data. The algorithm identifies admissions that are typically planned and may occur within 30 days of discharge from the hospital.

The planned readmission algorithm has three fundamental principles:

1. A few specific, limited types of care are always considered planned (transplant surgery, maintenance chemotherapy/ immunotherapy, rehabilitation);

2. Otherwise, a planned readmission is defined as a non-acute readmission for a scheduled procedure; and,

3. Admissions for acute illness or for complications of care are never planned.

The algorithm was developed in 2011 as part of the Hospital-Wide Readmission measure. In 2013, CMS applied the algorithm to its other readmission measures.

In applying the algorithm to condition- and procedure-specific measures, teams of clinical experts reviewed the algorithm in the context of each measure-specific patient cohort and, where clinically indicated, adapted the content of the algorithm to better reflect the likely clinical experience of each measure's patient cohort. The planned readmission algorithm is applied to the AMI measure without modifications.

The planned readmission algorithm and associated code tables are attached in data field S.2b (Data Dictionary or Code Table).

Denominator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

The cohort includes admissions for patients aged 65 years and older discharged from the hospital with a principal diagnosis of AMI; and with a complete claims history for the 12 months prior to admission.

Additional details are provided in S.7 Denominator Details.

Denominator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

To be included in the measure cohort used in public reporting, patients must meet the following inclusion criteria:

1. Principal discharge diagnosis of AMI;

2. Enrolled in Medicare fee-for-service (FFS) Part A and B for the 12 months prior to the date of admission, and enrolled in Part A during the index admission, or those who are VA beneficiaries;

3. Aged 65 or over;

4. Discharged alive from a non-federal short-term acute care hospital or VA hospital; and,

5. Not transferred to another acute care facility.

Exclusions

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

The 30-day AMI readmission measure excludes index admissions for patients:

1) Without at least 30 days of post-discharge enrollment in Medicare FFS (in the case of patients who are not VA beneficiaries);

2) Discharged against medical advice (AMA);

3) Same-day discharges; or

4) Admitted within 30 days of a prior index admission for AMI.

Exclusion Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

The AMI readmission measure excludes index admissions for patients:

1. Without at least 30 days of post-discharge enrollment in Medicare FFS (in the case of patients who are not VA beneficiaries), which is identified with enrollment data from the Medicare Enrollment Database.

Rationale: The 30-day readmission outcome cannot be assessed in this group since claims data are used to determine whether a patient was readmitted.

2. Discharged against medical advice (AMA) are identified using the discharge disposition indicator in claims data.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

3. Same-day discharges. This information is identified in claims data.

Rationale: Patients admitted and then discharged on the same day are not included as an index admission because it is unlikely that these patients had clinically significant AMIs.

4. AMI admissions within 30 days of discharge from a qualifying AMI index admission are identified by comparing the discharge date from the index admission with subsequent admission dates.

Rationale: Additional AMI admissions within 30 days are excluded as index admissions because they are part of the outcome. A single admission does not count as both an index admission and a readmission for another index admission.

Risk Adjustment

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Statistical risk model

118210| 112469| 135810| 146637| 141015| 146313

118210| 112469| 135810| 146637| 141015| 146313

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Statistical risk model

118210| 112469| 146637

118210| 112469| 146637

Stratification

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

N/A

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

N/A

Type Score

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The AMI risk-standardized payment (RSP) is most meaningful when presented in the context of an AMI outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

Rate/proportion better quality = lower score

Algorithm

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

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#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure estimates hospital-level 30-day, all-cause, RSRRs following hospitalization for AMI using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient and hospital levels to account for variance in patient outcomes within and between hospitals (Normand and Shahian, 2007). At the patient level, it models the log-odds of readmission within 30 days of index admission using age, sex, selected clinical covariates, and a hospital-specific intercept. At the hospital level, it models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of a readmission at the hospital, after accounting for patient risk. The hospital-specific intercepts are given a distribution to account for the clustering

(non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSRR is calculated as the ratio of the number of "predicted" to the number of "expected" readmissions at a given hospital, multiplied by the national observed readmission rate. For each hospital, the numerator of the ratio is the number of readmissions within 30 days predicted on the basis of the hospital's performance with its observed case mix; and the denominator is the number of readmissions expected based on the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected readmission rates or better quality, and a higher ratio indicates higher-than-expected readmission rates or worse quality.

The "predicted" number of readmissions (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific intercept on the risk of readmission. The estimated hospital-specific intercept is added to the sum of the estimated regression coefficients multiplied by the patient characteristics. The results are transformed and summed over all patients attributed to a hospital to get a predicted value. The "expected" number of readmissions (the denominator) is obtained in the same manner, but a common intercept using all hospitals in our sample is added in place of the hospital-specific intercept. The results are transformed and summed over all patients in the hospital to get an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the years of data in that period.

This calculation transforms the ratio of predicted over expected into a rate that is compared to the national observed readmission rate. The hierarchical logistic regression models are described fully and in the original methodology reports posted on QualityNet (https://qualitynet.org/inpatient/measures/readmission/methodology)

References

Normand S-LT, Shahian D, M,. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Statistical Science. 2007;22(2):206-226 118210| 112469| 146637

Submission Items

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

5.1 Identified measures: 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#0505 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization

5.1 Identified measures: 0730 : Acute Myocardial Infarction (AMI) Mortality Rate

0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

2473 : Hybrid hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI)

2879 : Hybrid Hospital-Wide Readmission (HWR) Measure with Claims and Electronic Health Record Data

2881 : Excess days in acute care (EDAC) after hospitalization for acute myocardial infarction (AMI)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: We did not include in our list of related measures any non-outcome (e.g., process) measures with the same target population as our measure. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure).

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2431 and NQF #2158

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)
#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Steward

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Centers for Medicare & Medicaid Services

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Centers for Medicare & Medicaid Services

Description

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

This measure estimates hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital. Specifically, the MSPB Hospital measure assesses the cost to Medicare for Part A and Part B services performed by hospitals and other healthcare providers during an MSPB Hospital episode, which is comprised of the periods 3-days prior to, during, and 30-days following a patient's hospital stay. The MSPB Hospital measure is not condition specific and uses standardized prices when measuring costs. Beneficiary populations eligible for the MSPB Hospital calculation include Medicare beneficiaries enrolled in Medicare Parts A and B who were discharged between January 1 and December 1 in a calendar year from short-term acute hospitals paid under the Inpatient Prospective Payment System (IPPS).

Type

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Cost/Resource Use

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Cost/Resource Use

Data Source

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims. The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment,

prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Assessment Data, Claims, Enrollment Data, Other Medicare Part A and Part B claims data: Part A and B claims data are used to build MSPB Hospital episodes, calculate episode costs, and construct risk adjustors. CMS Office of Information Systems (OIS) maintains a detailed Medicare Claims Processing Manual available at the following URL: https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs-Items/CMS018912.

Medicare Enrollment Database (EDB): This is used to determine beneficiary-level exclusions and supplemental risk adjustors, specifically Medicare Parts A, B, and C enrollment; primary payer; disability status; end-stage renal disease (ESRD); beneficiary birth dates; and beneficiary death dates.

Minimum Data Set (MDS): The MDS is used to create the Long Term Care Indicator variable in risk adjustment. Data documentation for the MDS is available at the following URL: https://www.resdac.org/cms-data/files/mds-3.0.

We used additional data sources for measure testing purposes:

- American Community Survey (ACS): This is used for evaluating social risk factors. https://www.census.gov/programs-surveys/acs/technical-documentation/summary-file-documentation.html.
- Common Medicare Environment (CME) database: This is used for evaluating social risk factors. https://www.ccwdata.org/documents/10280/19002256/medicare-enrollment-impact-of-conversion-from-edb-to-cme.pdf.
- Area Deprivation Index (ADI): University of Wisconsin School of Medicine Public Health. 2015 Area Deprivation Index v2.0. Downloaded from https://www.neighborhoodatlas.medicine.wisc.edu February 24, 2020.

131107| 135246| 109921| 135810| 148384| 150289 Data dictionary URL; Data dictionary attachment; Code table attachment 131107| 135246| 109921| 135810| 148384| 150289

Level

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Facility

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Facility

Setting

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Inpatient/Hospital

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Inpatient/Hospital

Numerator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Numerator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Denominator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Denominator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

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#2158 Medicare Spending per Beneficiary (MSPB) Hospital

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Exclusions

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

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#2158 Medicare Spending per Beneficiary (MSPB) Hospital

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Exclusion Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

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#2158 Medicare Spending per Beneficiary (MSPB) Hospital

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Risk Adjustment

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Statistical risk model

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#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Stratification by risk category/subgroup

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131107| 135246| 109921| 135810| 148384| 150289

Stratification

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

N/A

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

The MSPB Hospital measure is stratified by Major Diagnostic Category (MDC), which are mutually exclusive groups of MS-DRGs that correspond to an organ system (e.g., diseases and disorders of the digestive system) or cause (e.g., burns). There are 25 MDCs

Type Score

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The AMI risk-standardized payment (RSP) is most meaningful when presented in the context of an AMI outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Ratio; Attachment An MSPB Hospital measure that is less than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is less than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period. An MSPB Hospital measure that is greater than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is greater than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period.

Algorithm

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289 131107| 135246| 109921| 135810| 148384| 150289

Submission Items

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

5.1 Identified measures: 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

5.1 Identified measures:

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 131107| 135246| 109921| 135810| 148384| 150289

5b.1 If competing, why superior or rationale for additive value: H.2.1 Response: The MSPB Hospital measure has been harmonized with MSPB Clinician and MSPB-PAC in the following ways: (i) change in risk adjusted ratio calculation, and (ii) allowing readmissions to trigger an episode (specific to MSPB Clinician).

Comparison of NQF #2431 and NQF #2436

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)
#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Steward

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Centers for Medicare & Medicaid Services

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Centers for Medicare & Medicaid Services

Description

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

This measure estimates hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

This measure estimates hospital-level, risk-standardized payment for a HF episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

Type

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Cost/Resource Use

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Cost/Resource Use

Data Source

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims. The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

Price standardization methodology:

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

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Level

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Facility

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Facility

Setting

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Inpatient/Hospital

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Inpatient/Hospital

Numerator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

Numerator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

Denominator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

Denominator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

Exclusions

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

Exclusion Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

Risk Adjustment

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Statistical risk model

118210| 112469| 135810| 146637| 141015| 146313

118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Statistical risk model

118210| 112469| 135810| 146637| 141015| 146313

118210| 112469| 135810| 146637| 141015| 146313

Stratification

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

N/A

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

N/A

Type Score

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The AMI risk-standardized payment (RSP) is most meaningful when presented in the context of an AMI outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The HF risk-standardized payment (RSP) is most meaningful when presented in the context of an HF outcome measure, such as the publicly reported HF mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

Algorithm

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

Submission Items

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

5.1 Identified measures: 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

5.1 Identified measures: 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2431 and NQF #2579

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)
#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Steward

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Centers for Medicare & Medicaid Services

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Centers for Medicare & Medicaid Services

Description

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

This measure estimates hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

Type

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Cost/Resource Use

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Cost/Resource Use

Data Source

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care,

outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims. The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 135560| 109921| 135810| 141015| 146637| 146313 Data dictionary attachment
118210| 135560| 109921| 135810| 141015| 146637| 146313

Level

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Facility

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Facility

Setting

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Inpatient/Hospital

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Inpatient/Hospital

Numerator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Numerator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Denominator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Denominator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Exclusions

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Exclusion Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Risk Adjustment

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Statistical risk model

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118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Statistical risk model

118210| 135560| 109921| 135810| 141015| 146637| 146313

118210| 135560| 109921| 135810| 141015| 146637| 146313

Stratification

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

N/A

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

N/A

Type Score

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The AMI risk-standardized payment (RSP) is most meaningful when presented in the context of an AMI outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

Algorithm

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313 118210| 135560| 109921| 135810| 141015| 146637| 146313

Submission Items

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

5.1 Identified measures: 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

5.1 Identified measures: 0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 135560| 109921| 135810| 141015| 146637| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2431 and NQF #3474

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)
#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

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Centers for Medicare & Medicaid Services

#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

Description

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

This measure estimates hospital-level, risk-standardized payment for an AMI episode-of-care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of AMI.

#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.

Type

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Cost/Resource Use

#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

Data Source

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims. The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical

equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#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, Enrollment Data Data sources

Chronic Condition Data Warehouse (CCW)

We used the Chronic Condition Data Warehouse (CCW) to develop our measure. The CCW contains existing CMS beneficiary claims data from multiple care settings that can be linked by a unique patient identifier, allowing researchers to analyze individual patient data across the continuum of care. We used a 100% sample of all FFS Medicare beneficiaries

from July 2010 - June 2012 who underwent elective hip or knee replacement and met all cohort inclusion criteria.

The measure was developed using claims data from seven standard analytic files contained in the CCW data (inpatient, outpatient, skilled nursing facility, home health agency, hospice, carrier [physician/supplier Part B items], and durable medical equipment).

Medicare Administrative Claims

The data sources for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between April 1, 2012 and March 31, 2015 (2016 reporting period). The period for public reporting of the THA/TKA measure aligns with the 90-day THA/TKA complication measure. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2006 through 2016 was applied to the claims to calculate the measures.

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, post-discharge mortality status, and dual-eligibility. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

The American Community Survey (2008-2012)

The American Community Survey data is collected annually and an aggregated 5-years data was used to calculate the AHRQ socioeconomic status (SES) composite index score.

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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Level

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Facility

#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

Setting

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Inpatient/Hospital

#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

Numerator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Numerator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Denominator Statement

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Denominator Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Exclusions

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Exclusion Details

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Risk Adjustment

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Statistical risk model

118210| 112469| 135810| 146637| 141015| 146313

118210| 112469| 135810| 146637| 141015| 146313

#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

146637| 135548| 146313

146637| 135548| 146313

Stratification

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

N/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)

The measure is not stratified.

Type Score

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than

or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The AMI risk-standardized payment (RSP) is most meaningful when presented in the context of an AMI outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#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)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The THA/TKA risk-standardized payment (RSP) is most meaningful when presented in the context of a THA/TKA outcome measure, such as the publicly reported THA/TKA complication measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

Algorithm

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313 146637| 135548| 146313

Submission Items

#2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

5.1 Identified measures: 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/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)

5.1 Identified measures: 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)

1609 : ETG Based HIP/KNEE REPLACEMENT cost of care measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 146637| 135548| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2436 and NQF #0229

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)
#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Steward

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Centers for Medicare & Medicaid Services

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Centers for Medicare & Medicaid Services

Description

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

This measure estimates hospital-level, risk-standardized payment for a HF episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

The measure estimates a hospital-level 30-day, all-cause, risk-standardized mortality rate for patients discharged from the hospital with a principal diagnosis of HF. Mortality is defined as death for any cause within 30 days after the date of admission for the index admission. CMS annually reports the measure for patients who are 65 years or older and enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are patients hospitalized in Veterans Health Administration (VA) facilities.

Type

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Cost/Resource Use

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Outcome

Data Source

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

Price standardization methodology:

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Claims, Enrollment Data, Other Data sources for the Medicare FFS measure:

Medicare Part A Inpatient and Part B Outpatient Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims for the 12 months prior to an index admission.

Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission as well as vital status. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992). The Master Beneficiary Summary File (MBSF) is an annually created file derived the EDB that contains enrollment information for all Medicare beneficiaries including dual eligible status. Years 2016-2019 were used.

Veterans Health Administration (VA) Data: This data source contains data for VA inpatient and outpatient services including: inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician data for the 12 months prior to and including each index admission. Unlike Medicare FFS patients, VA patients are not required to have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission.

The American Community Survey (2013-2017): The American Community Survey data is collected annually and an aggregated 5-years data were used to calculate the Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) composite index score.

References:

Fleming C, Fisher ES, Chang CH, Bubolz TA, Malenka DJ. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs hospitals. Medical Care. 1992; 30(5): 377-91.

No data collection instrument provided Attachment NQF_datadictionary_HFmortality_Fall2020_final_7.22.20.xlsx

Level

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Facility

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Facility

Setting

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Inpatient/Hospital

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Inpatient/Hospital

Numerator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

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#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

The outcome for this measure is 30-day all-cause mortality. We define mortality as death from any cause within 30 days from the date of admission for patients 65 and older hospitalized with a principal diagnosis of HF.

Numerator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

The measure counts all deaths (including in-hospital deaths) for any cause within 30 days of the date of the index HF admission.

Identifying deaths in the FFS measure

As currently reported, we identify deaths for FFS Medicare patients 65 years and older in the Medicare Enrollment Database (EDB) and for VA patients in the VA data.

Denominator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

This claims-based measure is used for a cohort of patients aged 65 years or older.

The cohort includes admissions for patients aged 65 years and older discharged from the hospital with a principal discharge diagnosis of HF and with a complete claims history for the 12 months prior to admission. The measure is publicly reported by CMS for those patients 65 years and older who are Medicare FFS or VA beneficiaries admitted to non-federal or VA hospitals, respectively.

Additional details are provided in S.7 Denominator Details.

Denominator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

To be included in the measure cohort used in public reporting, patients must meet the following inclusion criteria:

1. Principal discharge diagnosis of heart failure

2. Enrolled in Medicare fee-for-service (FFS) Part A and Part B for the 12 months prior to the date of the index admission and Part A during the index admission, or those who are VA beneficiaries

3. Aged 65 or over

4. Not transferred from another acute care facility

We have explicitly tested the measure for those aged 65+ years and those aged 65+ years (see Testing Attachment for details).

Exclusions

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

The mortality measures exclude index admissions for patients:

1. Discharged alive on the day of admission or the following day who were not transferred to another acute care facility;

2. With inconsistent or unknown vital status or other unreliable demographic (age and gender) data;

3. Enrolled in the Medicare hospice program or used VA hospice services any time in the 12 months prior to the index admission, including the first day of the index admission;

4. Discharged against medical advice (AMA); or

5. Patients undergoing left ventricular assist device (LVAD) implantation or heart transplantation during an index admission or who have a history of LVAD or heart transplant in the preceding year.

For patients with more than one admission for a given condition in a given year, only one index admission for that condition is randomly selected for inclusion in the cohort for each year.

Exclusion Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

1. The discharge disposition indicator is used to identify patients alive at discharge. Transfers are identified in the claims when a patient with a qualifying admission is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day. Patient length of stay and condition is identified from the admission claim.

Rationale: This exclusion prevents inclusion of patients who likely did not have clinically significant HF.

2. Inconsistent vital status or unreliable data are identified if any of the following conditions are met 1) the patient's age is greater than 115 years: 2) if the discharge date for a hospitalization is before the admission date; 3) if the patient has a sex other than 'male' or 'female'.

Rationale: Reliable and consistent data are necessary for valid calculation of the measure.

3. Hospice enrollment in the 12 months prior to or on the index admission is identified using hospice data and the Inpatient standard analytic file (SAF).

Rationale: These patients are likely continuing to seek comfort measures only; thus, mortality is not necessarily an adverse outcome or signal of poor quality care.

4. Discharges against medical advice (AMA) are identified using the discharge disposition indicator in claims data.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

5. Patients with LVAD implantation or heart transplantation during an index admission or in the previous 12 months are identified by the corresponding codes for these procedures included in claims data.

Rationale: Patients undergoing implantation of an LVAD designed to offer intermediate to long-term support (weeks to years) as a bridge to heart transplant or destination therapy represent a clinically distinct, highly-selected group of patients cared for at highly specialized medical centers.

Risk Adjustment

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Statistical risk model

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118210| 112469| 135810| 146637| 141015| 146313

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Statistical risk model

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118210| 112469| 146637| 141015| 150289

Stratification

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

N/A

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

N/A

Type Score

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The HF risk-standardized payment (RSP) is most meaningful when presented in the context of an HF outcome measure, such as the publicly reported HF mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

Rate/proportion better quality = lower score

Algorithm

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

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#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

The measure estimates hospital-level 30-day all-cause RSMRs following hospitalization for HF using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient and hospital levels to account for variance in patient outcomes within and between hospitals [Normand and Shahian, 2007]. At the patient level, it models the log-odds of mortality within 30 days of index admission using age, sex, selected clinical covariates, and a hospital-specific intercept. At the hospital level, it models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of a mortality at the hospital, after accounting for patient risk. The hospital-specific intercepts are given a distribution to account for the clustering (non-

independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths at a given hospital, multiplied by the national observed mortality rate. For each hospital, the numerator of the ratio is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the denominator is the number of deaths expected based on the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality rates or better quality, and a higher ratio indicates higher-than-expected mortality rates or worse quality.

The "predicted" number of deaths (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific intercept on the risk of mortality. The estimated hospital-specific intercept is added coefficients multiplied by the patient characteristics. The results are transformed and summed over all patients attributed to a hospital to get a predicted value. The "expected" number of deaths (the denominator) is obtained in the same manner, but a common intercept using all hospitals in our sample is added in place of the hospital-specific intercept. The results are transformed and summed over all patients in the hospital to get an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the years of data in that period.

This calculation transforms the ratio of predicted over expected into a rate that is compared to the national observed readmission rate. The hierarchical logistic regression models are described fully in the original methodology report posted on QualityNet [https://qualitynet.org/inpatient/measures/mortality/methodology].

References:

1. Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22(2): 206-226. 118210| 112469| 146637| 141015| 150289

Submission Items

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

5.1 Identified measures: 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#0229 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

5.1 Identified measures: 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0358 : Heart Failure Mortality Rate (IQI 16)

0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

1893 : Hospital 30-Day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD) hospitalization

3502 : Hybrid Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

3504 : Claims-Only Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: We did not include in our list of related measures any non-outcome (e.g., process) measures with the same target population as our measure. Our measure cohort was heavily vetted by clinical experts, a technical expert panel, and a public comment period. Additionally, the measure, with the specified cohort, has been publicly reported since 2008. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure).

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2436 and NQF #0330

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)
#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Steward

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Centers for Medicare & Medicaid Services

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Centers for Medicare & Medicaid Services

Description

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

This measure estimates hospital-level, risk-standardized payment for a HF episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

The measure estimates a hospital-level risk-standardized readmission rate (RSRR) for patients discharged from the hospital with a principal diagnosis of heart failure (HF). Readmission is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission. Readmissions are classified as planned and unplanned by applying the planned readmission algorithm. The target population is patients age 65 and over. The Centers for Medicare & Medicaid Services (CMS) annually reports the measure for patients who are 65 years or older and are enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are patients hospitalized in Veterans Health Administration (VA) facilities.

Type

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Cost/Resource Use

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Outcome

Data Source

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

Price standardization methodology:

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the

measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 112469| 135810| 146637| 141015| 146313 Attachment1 118210| 112469| 135810| 146637| 141015| 146313

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Claims, Enrollment Data, Other Data sources for the Medicare FFS measure:

Medicare Part A Inpatient and Part B Outpatient Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, and inpatient and outpatient physician claims for the 12 months prior to an index admission.

Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on

admission as well as vital status. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992). The Master Beneficiary Summary File (MBSF) is an annually created file derived from the EDB that contains enrollment information for all Medicare beneficiaries including dual eligible status. Years 2016-2019 were used.

Veterans Health Administration (VA) Data: This data source contains data for VA inpatient and outpatient services including: inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician data for the 12 months prior to and including each index admission. Unlike Medicare FFS patients, VA patients are not required to have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission.

The American Community Survey (2013-2017): We used the American Community Survey (2013-2017) to derive an updated AHRQ SES index score at the patient nine-digit zip code level for use in studying the association between our measure and SRFs.

References

Fleming C., Fisher ES, Chang CH, Bubolz D, Malenda J. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs Hospitals. Medical Care. 1992; 30(5): 377-91.

No data collection instrument provided Attachment NQF_datadictionary_HFreadmission_Fall2020_final_7.22.20.xlsx

Level

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Facility

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Facility

Setting

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Inpatient/Hospital

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Inpatient/Hospital

Numerator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

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#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

The outcome for this measure is 30-day readmissions. We define readmissions as any inpatient acute care admission, with the exception of certain planned readmissions, within 30 days from the date of discharge from an index admission with a principal discharge diagnosis of HF in patients 65and older. If a patient has more than one unplanned

admission (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission. The measure looks for a dichotomous yes or no outcome of whether each admitted patient has an unplanned readmission within 30 days. However, if the first readmission after discharge is considered planned, any subsequent unplanned readmission is not counted as an outcome for that index admission, because the unplanned readmission could be related to care provided during the intervening planned readmission rather than during the index admission.

Additional details are provided in S.5 Numerator Details.

Numerator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

The measure counts readmissions to any acute care hospital for any cause within 30 days of the date of discharge of the index HF admission, excluding planned readmissions as defined below.

Planned Readmission Algorithm (Version 4.0)

The planned readmission algorithm is a set of criteria for classifying readmissions as planned using Medicare claims and VA administrative data. The algorithm identifies admissions that are typically planned and may occur within 30 days of discharge from the hospital.

The Planned Readmission Algorithm has three fundamental principles:

1. A few specific, limited types of care are always considered planned (obstetric delivery, transplant surgery, maintenance chemotherapy/radiotherapy/ immunotherapy, rehabilitation);

2. Otherwise, a planned readmission is defined as a non-acute readmission for a scheduled procedure; and,

3. Admissions for acute illness or for complications of care are never planned.

The algorithm was developed in 2011 as part of the Hospital-Wide Readmission measure. In 2013, CMS applied the algorithm to its other readmission measures.

In applying the algorithm to condition- and procedure-specific measures, teams of clinical experts reviewed the algorithm in the context of each measure-specific patient cohort and, where clinically indicated, adapted the content of the algorithm to better reflect the likely clinical experience of each measure's patient cohort. For the HF readmission measure, CMS used the Planned Readmission Algorithm without modifications.

The planned readmission algorithm and associated code tables are attached in data field S.2b (Data Dictionary or Code Table).

Denominator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

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#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

The cohort includes admissions for patients aged 65years and older discharged from the hospital with a principal discharge diagnosis of HF, and with a complete claims history for the 12 months prior to admission. The measure is publicly reported by CMS for those patients 65 years and older who are Medicare FFS or VA beneficiaries admitted to non-federal or VA hospitals, respectively.

Additional details are provided in S.7 Denominator Details

Denominator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

To be included in the measure cohort used in public reporting, patients must meet the following additional inclusion criteria:

1. Principal discharge diagnosis of HF;

2. Enrolled in Medicare fee-for-service (FFS) Part A and Part B for the 12 months prior to the date of admission, and enrolled in Part A during the index admission, or those who are VA beneficiaries;

3. Aged 65 or over;

4. Discharged alive from a non-federal short-term acute care hospital or VA hospital; and,

5. Not transferred to another acute care facility.

Exclusions

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

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#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

The 30-day HF readmission measure excludes index admissions for patients:

1. Without at least 30 days of post-discharge enrollment in Medicare FFS (in the case of patients who are not VA beneficiaries);

2. Discharged against medical advice (AMA);

3. Admitted within 30 days of a prior index admission for HF; and

4. With a procedure code for LVAD implantation or heart transplantation either during the index admission or in the 12 months prior to the index admission.

Exclusion Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

The HF readmission measure excludes index admissions for patients:

1. Without at least 30 days of post-discharge enrollment in Medicare FFS (in the case of patients who are not VA beneficiaries), which is identified with enrollment data from the Medicare Enrollment Database.

Rationale: The 30-day readmission outcome cannot be assessed in this group since claims data are used to determine whether a patient was readmitted.

2. Discharges against medical advice (AMA) are identified using the discharge disposition indicator in claims data.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

3. HF admissions within 30 days of discharge from a qualifying HF index admission are identified by comparing the discharge date from the index admission with subsequent admission dates.

Rationale: Additional HF admissions within 30 days are excluded as index admissions because they are part of the outcome. A single admission does not count as both an index admission and a readmission for another index admission.

4. With a procedure code for LVAD implantation or heart transplantation either during the index admission or in the 12 months prior to the index admission, which are identified by the corresponding codes included in claims data (codes can be found in attached Data Dictionary).

Rationale: Patients with these procedures are a clinically distinct group with a different risk of the readmission outcome.

Risk Adjustment

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Statistical risk model

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118210| 112469| 135810| 146637| 141015| 146313

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Statistical risk model

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117446| 141973| 137977| 112469| 146637| 150289

Stratification

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

N/A

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

N/A

Type Score

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The HF risk-standardized payment (RSP) is most meaningful when presented in the context of an HF outcome measure, such as the publicly reported HF mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

Rate/proportion better quality = lower score

Algorithm

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

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#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

The measure estimates hospital-level 30-day all-cause RSRRs following hospitalization for HF using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient- and hospital-levels to account for variance in patient outcomes within and between hospitals (Normand and Shahian, 2007). At the patient-level, it models the log-odds of readmission within 30 days of discharge using age, sex, selected clinical covariates, and a hospital-specific intercept. At the hospital level, it models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of readmission at the hospital, after accounting for patient risk. The hospital-specific intercepts are given a distribution to account for the clustering (non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSRR is calculated as the ratio of the number of “predicted” readmissions to the number of “expected” readmissions, multiplied by the national unadjusted readmission rate. For each hospital, the numerator of the ratio (“predicted”) is the number of readmissions within 30 days predicted on the basis of the hospital’s performance with its observed case mix, and the denominator (“expected”) is the number of readmissions expected on the basis of the nation’s performance with that hospital’s case mix. This approach is analogous to a ratio of “observed” to “expected” used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital’s performance given its case mix to an average hospital’s performance with the same case mix. Thus, a lower ratio indicates lower-than-expected readmission, or better quality, and a higher ratio indicates higher-than-expected readmission, or worse quality.

The "predicted" number of readmissions (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific intercept on the risk of readmission. The estimated hospital-specific effect is added to the sum of the estimated regression coefficients multiplied by the patient characteristics. The results are log transformed and summed over all patients attributed to a hospital to get a predicted value. The "expected" number of readmissions (the denominator) is obtained in the same manner, but a common intercept using all hospitals in our sample is added in place of the hospital specific intercept. The results are log transformed and summed over all patients in the hospital to get an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the years of data in that period.

This calculation transforms the ratio of predicted over expected into a rate that is compared to the national observed readmission rate. The hierarchical logistic regression models are described fully in the original methodology report (Krumholz et al., 2005).

References:

1. Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22(2): 206-226.

2. Krumholz H, Normand S, Galusha D, et al. Risk-Adjustment Models for HF and HF 30-Day Readmission Methodology. 2005. 117446| 141973| 137977| 112469| 146637| 150289

Submission Items

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

5.1 Identified measures: 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#0330 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Heart Failure (HF) Hospitalization

5.1 Identified measures: 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

1891 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following chronic obstructive pulmonary disease (COPD) hospitalization

2879 : Hybrid Hospital-Wide Readmission (HWR) Measure with Claims and Electronic Health Record Data

2880 : Excess days in acute care (EDAC) after hospitalization for heart failure (HF)

2886 : Risk-Standardized Acute Admission Rates for Patients with Heart Failure

2888 : Accountable Care Organization Risk-Standardized Acute Hospital Admission Rate for Patients with Multiple Chronic Conditions

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: We did not include in our list of related measures any non-outcome (e.g., process) measures with the same target population as our measure. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure).

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2436 and NQF #2158

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)
#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Steward

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Centers for Medicare & Medicaid Services

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Centers for Medicare & Medicaid Services

Description

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

This measure estimates hospital-level, risk-standardized payment for a HF episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital. Specifically, the MSPB Hospital measure assesses the cost to Medicare for Part A and Part B services performed by hospitals and other healthcare providers during an MSPB Hospital episode, which is comprised of the periods 3-days prior to, during, and 30-days following a patient's hospital stay. The MSPB Hospital measure is not condition specific and uses standardized prices when measuring costs. Beneficiary populations eligible for the MSPB Hospital calculation include Medicare beneficiaries enrolled in Medicare Parts A and B who were discharged between January 1 and December 1 in a calendar year from short-term acute hospitals paid under the Inpatient Prospective Payment System (IPPS).

Type

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Cost/Resource Use

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Cost/Resource Use

Data Source

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

Price standardization methodology:

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Assessment Data, Claims, Enrollment Data, Other Medicare Part A and Part B claims data: Part A and B claims data are used to build MSPB Hospital episodes, calculate episode costs, and construct risk adjustors. CMS Office of Information Systems (OIS) maintains a detailed Medicare Claims Processing Manual available at the following URL: https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs-Items/CMS018912.

Medicare Enrollment Database (EDB): This is used to determine beneficiary-level exclusions and supplemental risk adjustors, specifically Medicare Parts A, B, and C enrollment; primary payer; disability status; end-stage renal disease (ESRD); beneficiary birth dates; and beneficiary death dates.

Minimum Data Set (MDS): The MDS is used to create the Long Term Care Indicator variable in risk adjustment. Data documentation for the MDS is available at the following URL: https://www.resdac.org/cms-data/files/mds-3.0.

We used additional data sources for measure testing purposes:

- American Community Survey (ACS): This is used for evaluating social risk factors. https://www.census.gov/programs-surveys/acs/technical-documentation/summary-file-documentation.html.
- Common Medicare Environment (CME) database: This is used for evaluating social risk factors. https://www.ccwdata.org/documents/10280/19002256/medicare-enrollment-impact-of-conversion-from-edb-to-cme.pdf.
- Area Deprivation Index (ADI): University of Wisconsin School of Medicine Public Health. 2015 Area Deprivation Index v2.0. Downloaded from https://www.neighborhoodatlas.medicine.wisc.edu February 24, 2020.

131107| 135246| 109921| 135810| 148384| 150289 Data dictionary URL; Data dictionary attachment; Code table attachment 131107| 135246| 109921| 135810| 148384| 150289

Level

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Facility

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Facility

Setting

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Inpatient/Hospital

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Inpatient/Hospital

Numerator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

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Numerator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Denominator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Denominator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Exclusions

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Exclusion Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Risk Adjustment

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Statistical risk model

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118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Stratification by risk category/subgroup

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131107| 135246| 109921| 135810| 148384| 150289

Stratification

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

N/A

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

The MSPB Hospital measure is stratified by Major Diagnostic Category (MDC), which are mutually exclusive groups of MS-DRGs that correspond to an organ system (e.g., diseases and disorders of the digestive system) or cause (e.g., burns). There are 25 MDCs

Type Score

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The HF risk-standardized payment (RSP) is most meaningful when presented in the context of an HF outcome measure, such as the publicly reported HF mortality measure. This is

because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Ratio; Attachment An MSPB Hospital measure that is less than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is less than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period. An MSPB Hospital measure that is greater than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is greater than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period.

Algorithm

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289 131107| 135246| 109921| 135810| 148384| 150289

Submission Items

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

5.1 Identified measures: 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

5.1 Identified measures:

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 131107| 135246| 109921| 135810| 148384| 150289

5b.1 If competing, why superior or rationale for additive value: H.2.1 Response: The MSPB Hospital measure has been harmonized with MSPB Clinician and MSPB-PAC in the

following ways: (i) change in risk adjusted ratio calculation, and (ii) allowing readmissions to trigger an episode (specific to MSPB Clinician).

Comparison of NQF #2436 and NQF #2579

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)
#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Steward

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Centers for Medicare & Medicaid Services

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Centers for Medicare & Medicaid Services

Description

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

This measure estimates hospital-level, risk-standardized payment for a HF episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

Type

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Cost/Resource Use

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Cost/Resource Use

Data Source

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

Price standardization methodology:

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 112469| 135810| 146637| 141015| 146313 Attachment1 118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 135560| 109921| 135810| 141015| 146637| 146313 Data dictionary attachment
118210| 135560| 109921| 135810| 141015| 146637| 146313

Level

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Facility

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Facility

Setting

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Inpatient/Hospital

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Inpatient/Hospital

Numerator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Numerator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Denominator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Denominator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Exclusions

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Exclusion Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

Risk Adjustment

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Statistical risk model

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118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Statistical risk model

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118210| 135560| 109921| 135810| 141015| 146637| 146313

Stratification

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

N/A

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

N/A

Type Score

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The HF risk-standardized payment (RSP) is most meaningful when presented in the context of an HF outcome measure, such as the publicly reported HF mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

Algorithm

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313 118210| 135560| 109921| 135810| 141015| 146637| 146313

Submission Items

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

5.1 Identified measures: 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

5.1 Identified measures: 0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 135560| 109921| 135810| 141015| 146637| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2436 and NQF #3474

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)
#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

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Centers for Medicare & Medicaid Services

#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

Description

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

This measure estimates hospital-level, risk-standardized payment for a HF episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years of age or older with a principal discharge diagnosis of HF.

#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.

Type

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Cost/Resource Use

#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

Data Source

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the AMI payment measure aligns with the 30-day AMI mortality and readmission measures for harmonization purposes.

Price standardization methodology:

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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#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, Enrollment Data Data sources

Chronic Condition Data Warehouse (CCW)

We used the Chronic Condition Data Warehouse (CCW) to develop our measure. The CCW contains existing CMS beneficiary claims data from multiple care settings that can be linked by a unique patient identifier, allowing researchers to analyze individual patient data across the continuum of care. We used a 100% sample of all FFS Medicare beneficiaries from July 2010 - June 2012 who underwent elective hip or knee replacement and met all cohort inclusion criteria.

The measure was developed using claims data from seven standard analytic files contained in the CCW data (inpatient, outpatient, skilled nursing facility, home health agency, hospice, carrier [physician/supplier Part B items], and durable medical equipment).

Medicare Administrative Claims

The data sources for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between April 1, 2012 and March 31, 2015 (2016 reporting period). The period for public reporting of the THA/TKA measure aligns with the 90-day THA/TKA complication measure. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2006 through 2016 was applied to the claims to calculate the measures.

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, post-discharge mortality status, and dual-eligibility. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

The American Community Survey (2008-2012)

The American Community Survey data is collected annually and an aggregated 5-years data was used to calculate the AHRQ socioeconomic status (SES) composite index score.

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

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Level

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Facility

#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

Setting

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Inpatient/Hospital

#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

Numerator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Numerator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Denominator Statement

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Denominator Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Exclusions

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Exclusion Details

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313

Risk Adjustment

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Statistical risk model

118210| 112469| 135810| 146637| 141015| 146313

118210| 112469| 135810| 146637| 141015| 146313

#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

146637| 135548| 146313

146637| 135548| 146313

Stratification

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

N/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)

The measure is not stratified.

Type Score

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The HF risk-standardized payment (RSP) is most meaningful when presented in the context of an HF outcome measure, such as the publicly reported HF mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#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)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The THA/TKA risk-standardized payment (RSP) is most meaningful when presented in the context of a THA/TKA outcome measure, such as the publicly reported THA/TKA complication measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

Algorithm

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

118210| 112469| 135810| 146637| 141015| 146313 118210| 112469| 135810| 146637| 141015| 146313

#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)

146637| 135548| 146313 146637| 135548| 146313

Submission Items

#2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

5.1 Identified measures: 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 112469| 135810| 146637| 141015| 146313

5b.1 If competing, why superior or rationale for additive value: N/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)

5.1 Identified measures: 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)

1609 : ETG Based HIP/KNEE REPLACEMENT cost of care measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 146637| 135548| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2579 and NQF #0230

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Steward

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Centers for Medicare & Medicaid Services

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Centers for Medicare & Medicaid Services

Description

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure estimates a hospital-level 30-day risk-standardized mortality rate (RSMR) for patients discharged from the hospital with a principal diagnosis of AMI. Mortality is

defined as death for any cause within 30 days after the date of admission for the index admission. CMS annually reports the measure for patients who are 65 years or older and are either Medicare fee-for-service (FFS) beneficiaries and hospitalized in non-federal hospitals or are hospitalized in Veterans Health Administration (VA) facilities.

Type

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Cost/Resource Use

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Outcome

Data Source

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers.

We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 135560| 109921| 135810| 141015| 146637| 146313 Data dictionary attachment
118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Claims, Enrollment Data, Other Data sources for the Medicare FFS measure:

Medicare Part A Inpatient and Part B Outpatient Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims for the 12 months prior to an index admission.

Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission as well as vital status. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992). The Master Beneficiary Summary File (MBSF) is an annually created file derived the EDB that contains enrollment information for all Medicare beneficiaries including dual eligible status. Years 2016-2019 were used.

Veterans Health Administration (VA) Data: This data source contains data for VA inpatient and outpatient services including: inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician data for the 12 months prior to and including each index admission. Unlike Medicare FFS patients, VA patients are not required to have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission.

The American Community Survey (2013-2017): The American Community Survey data is collected annually and an aggregated 5-years data were used to calculate the Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) composite index score.

References:

Fleming C, Fisher ES, Chang CH, Bubolz TA, Malenka DJ. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs hospitals. Medical Care. 1992; 30(5): 377-91.

No data collection instrument provided Attachment NQF_datadictionary_AMImortality_Fall2020_final_7.22.20.xlsx

Level

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Facility

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Facility

Setting

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Inpatient/Hospital

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Inpatient/Hospital

Numerator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The outcome for this measure is 30-day all-cause mortality. We define mortality as death from any cause within 30 days from the date of admission for patients hospitalized with a principal diagnosis of AMI.

Numerator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure counts all deaths (including in-hospital deaths) for any cause to any acute care hospital within 30 days of the date of the index AMI hospitalization.

Identifying deaths in the FFS measure

As currently reported, we identify deaths for FFS Medicare patients 65 years and older in the Medicare Enrollment Database (EDB) and for VA patients in the VA data.

Denominator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

This claims-based measure is used for patients aged 65 years or older.

The cohort includes admissions for patients aged 65 years and older discharged from the hospital with a principal discharge diagnosis of AMI and with a complete claims history for the 12 months prior to admission. The measure is publicly reported by CMS for those patients 65 years and older who are Medicare FFS or VA beneficiaries admitted to non-federal or VA hospitals, respectively.

Additional details are provided in S.7 Denominator Details.

Denominator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

To be included in the measure cohort used in public reporting, patients must meet the following inclusion criteria:

1. Having a principal discharge diagnosis of AMI;

2. Enrolled in Medicare fee-for-service (FFS) Part A and Part B for the 12 months prior to the date of the index admission and Part A during the index admission, or those who are VA beneficiaries;

3. Aged 65 or over; and

4. Not transferred from another acute care facility.

We have explicitly tested the measure for those aged 65+ years (see Testing Attachment for details).

Exclusions

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The mortality measures exclude index admissions for patients:

1. Discharged alive on the day of admission or the following day who were not transferred to another acute care facility;

2. With inconsistent or unknown vital status or other unreliable demographic (age and gender) data;

3. Enrolled in the Medicare hospice program or used VA hospice services any time in the 12 months prior to the index admission, including the first day of the index admission; or

4. Discharged against medical advice (AMA).

For patients with more than one admission for a given condition in a given year, only one index admission for that condition is randomly selected for inclusion in the cohort.

Exclusion Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

1. The discharge disposition indicator is used to identify patients alive at discharge. Transfers are identified in the claims when a patient with a qualifying admission is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day. Patient length of stay and condition is identified from the admission claim.

Rationale: This exclusion prevents inclusion of patients who likely did not have clinically significant AMI.

2. Inconsistent vital status or unreliable data are identified if any of the following conditions are met 1) the patient's age is greater than 115 years; 2) if the discharge date for a hospitalization is before the admission date; and 3) if the patient has a sex other than 'male' or 'female'.

Rationale: Reliable and consistent data are necessary for valid calculation of the measure.

3. Hospice enrollment in the 12 months prior to or on the index admission is identified using hospice data. This exclusion applies when the measure is used in Medicare FFS patients only.

Rationale: These patients are likely continuing to seek comfort measures only; thus, mortality is not necessarily an adverse outcome or signal of poor quality care.

4. Discharges against medical advice (AMA) are identified using the discharge disposition indicator in claims data.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

Risk Adjustment

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Statistical risk model

118210| 135560| 109921| 135810| 141015| 146637| 146313

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Statistical risk model

118210| 112469| 146637| 150289

118210| 112469| 146637| 150289

Stratification

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

N/A

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

N/A

Type Score

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

Rate/proportion better quality = lower score

Algorithm

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313 118210| 135560| 109921| 135810| 141015| 146637| 146313

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

The measure estimates hospital-level 30-day all-cause RSMRs following hospitalization for AMI using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient and hospital levels to account for variance in patient outcomes within and between hospitals [Normand and Shahian, 2007]. At the patient level, it models the log-odds of mortality within 30 days of index admission using age, sex, selected clinical covariates, and a hospital-specific intercept. At the hospital level, it models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of a mortality at the hospital, after accounting for patient risk. The hospital-specific intercepts are given a distribution to account for the clustering (non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSMR is calculated as the ratio of the number of “predicted” to the number of “expected” deaths at a given hospital, multiplied by the national observed mortality rate. For each hospital, the numerator of the ratio is the number of deaths within 30 days

predicted on the basis of the hospital's performance with its observed case mix, and the denominator is the number of deaths expected based on the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality rates or better quality, and a higher ratio indicates higher-than-expected mortality rates or worse quality.

The "predicted" number of deaths (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific intercept on the risk of mortality. The estimated hospital-specific intercept is added coefficients multiplied by the patient characteristics. The results are transformed and summed over all patients attributed to a hospital to get a predicted value. The "expected" number of deaths (the denominator) is obtained in the same manner, but a common intercept using all hospitals in our sample is added in place of the hospital-specific intercept. The results are transformed and summed over all patients in the hospital to get an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the years of data in that period.

This calculation transforms the ratio of predicted over expected into a rate that is compared to the national observed readmission rate. The hierarchical logistic regression models are described fully in the original methodology report posted on QualityNet [https://qualitynet.org/inpatient/measures/mortality/methodology].

References:

1. Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22(2): 206-226.

2. Krumholz H, Normand S, Galusha D, et al. Risk-Adjustment Models for AMI and HF 30-Day Mortality Methodology. 2005. 118210| 112469| 146637| 150289

Submission Items

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

5.1 Identified measures: 0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 135560| 109921| 135810| 141015| 146637| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#0230 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Acute Myocardial Infarction (AMI) Hospitalization

5.1 Identified measures: 0730 : Acute Myocardial Infarction (AMI) Mortality Rate

0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0229 : Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Heart Failure (HF) Hospitalization

1893 : Hospital 30-Day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD) hospitalization

2431 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for Acute Myocardial Infarction (AMI)

3502 : Hybrid Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

3504 : Claims-Only Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: We did not include in our list of related measures any non-outcome (e.g., process) measures with the same target population as our measure. Our measure cohort was heavily vetted by clinical experts, a technical expert panel, and a public comment period. Additionally, the measure, with the specified cohort, has been publicly reported since 2008. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure).

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2579 and NQF #0468

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Steward

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Centers for Medicare & Medicaid Services

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Centers for Medicare & Medicaid Services

Description

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

The measure estimates a hospital-level 30-day risk-standardized mortality rate (RSMR). Mortality is defined as death for any cause within 30 days after the date of admission for the index admission, discharged from the hospital with a principal discharge diagnosis of pneumonia, including aspiration pneumonia or a principal discharge diagnosis of sepsis (not severe sepsis) with a secondary diagnosis of pneumonia (including aspiration pneumonia) coded as present on admission (POA). CMS annually reports the measure for patients who are 65 years or older and are either Medicare fee-for-service (FFS) beneficiaries and hospitalized in non-federal hospitals or patients hospitalized in Veterans Health Administration (VA) facilities.

Type

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Cost/Resource Use

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Outcome

Data Source

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 135560| 109921| 135810| 141015| 146637| 146313 Data dictionary attachment
118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Claims, Enrollment Data, Other Data sources for the Medicare FFS measure:

Medicare Part A Inpatient and Part B Outpatient Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care,

outpatient hospital services, as well as inpatient and outpatient physician claims for the 12 months prior to an index admission.

Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission as well as vital status. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992). The Master Beneficiary Summary File (MBSF) is an annually created file derived the EDB that contains enrollment information for all Medicare beneficiaries including dual eligible status. Years 2016-2019 were used.

Veterans Health Administration (VA) Data: This data source contains data for VA inpatient and outpatient services including: inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician data for the 12 months prior to and including each index admission. Unlike Medicare FFS patients, VA patients are not required to have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission.

The American Community Survey (2013-2017): The American Community Survey data is collected annually and an aggregated 5-years data were used to calculate the Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) composite index score.

Reference:

Fleming C., Fisher ES, Chang CH, Bubolz D, Malenda J. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs Hospitals. Medical Care. 1992; 30(5): 377-91.

No data collection instrument provided Attachment NQF_datadictionary_PNmortality_Fall2020_final_7.22.20.xlsx

Level

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Facility

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Facility

Setting

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Inpatient/Hospital

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Inpatient/Hospital

Numerator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

The outcome for this measure is 30-day all-cause mortality (including in-hospital deaths). We define mortality as death from any cause within 30 days of the index admission datefrom the date of admission for patients hospitalized with a principal discharge diagnosis of pneumonia, including aspiration pneumonia or a principal discharge diagnosis of sepsis (not severe sepsis) with a secondary discharge diagnosis of pneumonia (including aspiration pneumonia) coded as POA and no secondary discharge diagnosis of severe sepsis.

Numerator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

The measure counts all deaths (including in-hospital deaths) for any cause within 30 days of the date of admission of the index pneumonia hospitalization.

Identifying deaths in the FFS measure

As currently reported, we identify deaths for FFS Medicare patients 65 years or over in the Medicare Enrollment Database (EDB) and for VA patients in the VA data.

Denominator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

This claims-based measure is used for a cohort of patients aged 65 years or over older.

The cohort includes admissions for patients aged 65 years and older discharged from the hospital with principal discharge diagnosis of pneumonia, including aspiration pneumonia or a principal discharge diagnosis of sepsis (not severe sepsis) with a secondary discharge diagnosis of pneumonia (including aspiration pneumonia) coded as POA but no secondary discharge diagnosis of severe sepsis; and with a complete claims history for the 12 months prior to admission. The measure will be publicly reported by CMS for those patients 65 years or older who are Medicare FFS beneficiaries admitted to non-federal hospitals or patients admitted to VA hospitals.

Additional details are provided in S.9 Denominator Details.

Denominator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

To be included in the measure cohort used in public reporting, patients must meet the following inclusion criteria:

1. Principal discharge diagnosis of pneumonia, including aspiration pneumonia; or

Principal discharge diagnosis of sepsis (not including severe sepsis), with a secondary discharge diagnosis of pneumonia (including aspiration pneumonia) coded as POA but no secondary discharge diagnosis of severe sepsis;

2. Enrolled in Medicare fee-for-service (FFS);

3. Aged 65 or over;

4. Not transferred from another acute care facility; and

5. Enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission and enrolled in Part A during the index admission.

We have explicitly tested the measure for those aged 65 years or over (see Testing Attachment for details).

Exclusions

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

The mortality measure excludes index admissions for patients:

1. Discharged alive on the day of admission or the following day who were not transferred to another acute care facility;

2. With inconsistent or unknown vital status or other unreliable demographic (age and gender) data;

3. Enrolled in the Medicare hospice program or used VA hospice services any time in the 12 months prior to the index admission, including the first day of the index admission; or

4. Discharged against medical advice (AMA).

For patients with more than one admission for a given condition in a given year, only one index admission for that condition is randomly selected for inclusion in the cohort.

Exclusion Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

1. The discharge disposition indicator is used to identify patients alive at discharge. Transfers are identified in the claims when a patient with a qualifying admission is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day. Patient length of stay and condition is identified from the admission claim.

Rationale: This exclusion prevents inclusion of patients who likely did not have clinically significant pneumonia.

2. Inconsistent vital status or unreliable data are identified if any of the following conditions are met 1) the patient's age is greater than 115 years; 2) if the discharge date for a hospitalization is before the admission date; or 3) if the patient has a sex other than 'male' or 'female'.

Rationale: Reliable and consistent data are necessary for valid calculation of the measure.

3. Hospice enrollment in the 12 months prior to or on the index admission is identified using hospice enrollment data.

Rationale: These patients are likely continuing to seek comfort measures only; thus, mortality is not necessarily an adverse outcome or signal of poor quality care.

4. Discharges against medical advice (AMA) are identified using the discharge disposition indicator.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

After all exclusions are applied, the measure randomly selects one index admission per patient per year for inclusion in the cohort so that each episode of care is mutually independent with the similar probability of the outcome. For each patient, the probability of death may increase with each subsequent admission, and therefore, the episodes of care are not mutually independent. Also, for the three-year combined data, when index admissions occur during the transition between measure reporting periods (June and July of each year) and both are randomly selected for inclusion in the measure, the measure includes only the June admission. The July admissions are excluded to avoid assigning a single death to two admissions.

Risk Adjustment

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Statistical risk model

118210| 135560| 109921| 135810| 141015| 146637| 146313

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Statistical risk model

107491| 118210| 112469| 146637| 150289

107491| 118210| 112469| 146637| 150289

Stratification

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

N/A

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

N/A

Type Score

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than

average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

Rate/proportion better quality = lower score

Algorithm

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313 118210| 135560| 109921| 135810| 141015| 146637| 146313

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

The measure estimates hospital-level 30-day all-cause RSMRs following hospitalization for pneumonia using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient and hospital levels to account for variance in patient outcomes within and between hospitals (Normand and Shahian, 2007). At the patient level, it models the log-odds of mortality within 30 days of index admission using age, sex, selected clinical covariates, and a hospital-specific intercept. At the hospital level, it models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of a mortality at the hospital, after accounting for patient risk. The hospital-specific intercepts are given a distribution to account for the clustering (non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSMR is calculated as the ratio of the number of “predicted” to the number of “expected” deaths at a given hospital, multiplied by the national observed mortality rate. For each hospital, the numerator of the ratio is the number of deaths within 30 days predicted on the basis of the hospital’s performance with its observed case mix, and the denominator is the number of deaths expected based on the nation’s performance with that hospital’s case mix. This approach is analogous to a ratio of “observed” to “expected” used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital’s performance given its case mix to an average hospital’s performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality rates or better quality, and a higher ratio indicates higher-than-expected mortality rates or worse quality.

The “predicted” number of deaths (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific intercept on the risk of mortality. The estimated hospital-specific intercept is added to the sum of the estimated regression coefficients multiplied by the patient characteristics. The results are transformed and summed over all patients attributed to a hospital to get a predicted value. The “expected” number of deaths (the denominator) is obtained in the same manner, but a common intercept using all hospitals in our sample is added in place of the hospital-specific intercept. The results are transformed and summed over all patients in

the hospital to get an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the years of data in that period.

This calculation transforms the ratio of predicted over expected into a rate that is compared to the national observed mortality rate. The hierarchical logistic regression models are described fully in the original methodology report posted on QualityNet: https://qualitynet.org/inpatient/measures/mortality/methodology.

References:

Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22(2): 206-226. 107491| 118210| 112469| 146637| 150289

Submission Items

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

5.1 Identified measures: 0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 135560| 109921| 135810| 141015| 146637| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization

5.1 Identified measures: 0231 : Pneumonia Mortality Rate (IQI #20)

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0279 : Community Acquired Pneumonia Admission Rate (PQI 11)

1891 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following chronic obstructive pulmonary disease (COPD) hospitalization

1893 : Hospital 30-Day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD) hospitalization

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

3502 : Hybrid Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

3504 : Claims-Only Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure

5a.1 Are specs completely harmonized? No

5a.2 If not completely harmonized, identify difference, rationale, impact: We did not include in our list of related measures any non-outcome (for example, process) measures with the same target population as our measure. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure). Lastly, this measure and the NQF Inpatient Pneumonia Mortality (AHRQ) Measure #0231 are complementary rather than competing measures. Although they both assess mortality for patients admitted to acute care hospitals with a principal discharge diagnosis of pneumonia, the specified outcomes are different. This measure assesses 30-day mortality while #0231 assesses inpatient mortality. Assessment of 30-day and inpatient mortality outcomes have distinct advantages and uses which make them complementary as opposed to competing. For example, the 30-day period provides a broader perspective on hospital care and utilizes standard time period to examine hospital performance to avoid bias by differences in length of stay among hospitals. However, in some settings it may not be feasible to capture post-discharge mortality making the inpatient measure more useable. We have previously consulted with AHRQ to examine harmonization of complementary measures of mortality for patients with AMI and stroke. We have found that the measures are harmonized to the extent possible given that small differences in cohort inclusion and exclusion criteria are warranted on the basis of the use of different outcomes. However, this current measure includes patients with a principal discharge diagnosis of sepsis and a secondary discharge diagnosis of pneumonia that is present on admission. The cohort was also expanded to include patients with a principal discharge diagnosis of aspiration pneumonia. Thus, the current measure cohort is still not harmonized with measure #0231.

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2579 and NQF #0506

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)
#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Steward

NQF #2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Centers for Medicare & Medicaid Services

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Centers for Medicare & Medicaid Services

Description

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal

discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

The measure estimates a hospital-level 30-day, all-cause, risk-standardized readmission rate (RSRR) for patients age 65 and older discharged from the hospital with either a principal discharge diagnosis of pneumonia (including aspiration pneumonia) or a principal discharge diagnosis of sepsis (not severe sepsis) with a secondary diagnosis of pneumonia (including aspiration pneumonia) coded as present on admission (POA). Readmission is defined as an unplanned readmission for any cause within 30 days of the discharge date for the index admission. Readmissions are classified as planned and unplanned by applying the planned readmission algorithm. CMS annually reports the measure for patients who are 65 years or older and enrolled in fee-for-service (FFS) Medicare and hospitalized in non-federal hospitals or are patients hospitalized in Veterans Health Administration (VA) facilities.

Type

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Cost/Resource Use

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Outcome

Data Source

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology

specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 135560| 109921| 135810| 141015| 146637| 146313 Data dictionary attachment 118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Claims, Enrollment Data, Other Data sources for the Medicare FFS measure:

Medicare Part A Inpatient and Part B Outpatient Claims: This data source contains claims data for FFS inpatient and outpatient services including Medicare inpatient hospital care, outpatient hospital services, as well as inpatient and outpatient physician claims for the 12 months prior to an index admission.

Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission as well as vital status. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992). The Master Beneficiary Summary File (MBSF) is an annually created file derived from the EDB that contains enrollment

information for all Medicare beneficiaries including dual eligible status. Years 2016-2019 were used.

Veterans Health Administration (VA) Data: This data source contains data for VA inpatient and outpatient services including: inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician data for the 12 months prior to and including each index admission. Unlike Medicare FFS patients, VA patients are not required to have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of admission.

The American Community Survey (2013-2017): We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

References

Fleming C., Fisher ES, Chang CH, Bubolz D, Malenda J. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs Hospitals. Medical Care. 1992; 30(5): 377-91.

No data collection instrument provided Attachment NQF_datadictionary_PNreadmission_Fall2020_final_7.22.20.xlsx

Level

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Facility

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Facility

Setting

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Inpatient/Hospital

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Inpatient/Hospital

Numerator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

The outcome for this measure is 30-day readmissions. We define readmission as an inpatient acute care admission for any cause, with the exception of certain planned readmissions, within 30 days from the date of discharge from the index admission for patients 65 and older discharged from the hospital with a principal diagnosis of pneumonia, including aspiration pneumonia or a principal diagnosis of sepsis (not severe sepsis) with a secondary diagnosis of pneumonia (including aspiration pneumonia) coded

as POA and no secondary diagnosis of severe sepsis. If a patient has more than one unplanned admission (for any reason) within 30 days after discharge from the index admission, only the first one is counted as a readmission. The measure looks for a dichotomous yes or no outcome of whether each admitted patient has an unplanned readmission within 30 days. However, if the first readmission after discharge is considered planned, any subsequent unplanned readmission is not counted as an outcome for that index admission because the unplanned readmission could be related to care provided during the intervening planned readmission rather than during the index admission.

Numerator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

The measure counts readmissions to any acute care hospital for any cause within 30 days of the date of discharge of the index pneumonia admission, excluding planned readmissions as defined below.

Planned Readmission Algorithm (Version 4.0)

The planned readmission algorithm is a set of criteria for classifying readmissions as planned using Medicare claims and VA administrative data. The algorithm identifies admissions that are typically planned and may occur within 30 days of discharge from the hospital.

The planned readmission algorithm has three fundamental principles:

1. A few specific, limited types of care are always considered planned (transplant surgery, maintenance chemotherapy/immunotherapy, rehabilitation);

2. Otherwise, a planned readmission is defined as a non-acute readmission for a scheduled procedure; and,

3. Admissions for acute illness or for complications of care are never planned.

The algorithm was developed in 2011 as part of the Hospital-Wide Readmission measure. In 2013, CMS applied the algorithm to its other readmission measures.

In applying the algorithm to condition- and procedure-specific measures, teams of clinical experts reviewed the algorithm in the context of each measure-specific patient cohort and, where clinically indicated, adapted the content of the algorithm to better reflect the likely clinical experience of each measure's patient cohort. The planned readmission algorithm is applied to the pneumonia measure without modifications.

The planned readmission algorithm and associated code tables are attached in data field S.2b (Data Dictionary or Code Table).

Denominator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

The cohort includes admissions for patients aged 65 years and older discharged from the hospital with a principal discharge diagnosis of pneumonia, including aspiration pneumonia

or a principal discharge diagnosis of sepsis (not severe sepsis) with a secondary discharge diagnosis of pneumonia (including aspiration pneumonia) coded as POA and no secondary discharge diagnosis of severe sepsis; and with a complete claims history for the 12 months prior to admission. The measure is publicly reported by CMS for those patients 65 years and older who are Medicare FFS or VA beneficiaries admitted to non-federal or VA hospitals, respectively.

Additional details are provided in S.7 Denominator Details.

Denominator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

To be included in the measure cohort used in public reporting, patients must meet the following inclusion criteria:

1. Principal discharge diagnosis of pneumonia, including aspiration pneumonia; or principal discharge diagnosis of sepsis (not including severe sepsis), with a secondary discharge diagnosis of pneumonia (including aspiration pneumonia) coded as POA but no secondary discharge diagnosis of severe sepsis;

2. Enrolled in Medicare fee-for-service (FFS) in Part A and Part B for the 12 months prior to the date of admission, and enrolled in Part A during the index admission, or those who are VA beneficiaries;

3. Aged 65 or over;

4. Discharged alive from a non-federal short-term acute care hospital or VA hospital; and,

5. Not transferred from another acute care facility.

Exclusions

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

The 30-day pneumonia (PN) readmission measure excludes index admissions for patients:

1. Discharged against medical advice (AMA);

2. Without at least 30 days post-discharge enrollment in FFS Medicare (in the case of patients who are not VA beneficiaries);

3. Admitted within 30 days of a prior index admission for pneumonia.

Exclusion Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

The pneumonia readmission measure excludes index admissions for patients:

1. Discharges against medical advice (AMA) are identified using the discharge disposition indicator in claims data.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

2. Without at least 30 days of post-discharge enrollment in Medicare FFS (in the case of patients who are not VA beneficiaries), which is identified with enrollment data from the Medicare Enrollment Database.

Rationale: The 30-day readmission outcome cannot be assessed in this group since claims data are used to determine whether a patient was readmitted.

3. Pneumonia admissions within 30 days of discharge from a qualifying pneumonia index admission are identified by comparing the discharge date from the index admission with subsequent admission dates.

Rationale: Additional pneumonia admissions within 30 days are excluded as index admissions because they are part of the outcome. A single admission does not count as both an index admission and a readmission for another index admission.

Risk Adjustment

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Statistical risk model

118210| 135560| 109921| 135810| 141015| 146637| 146313

118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Statistical risk model

141973| 112469| 146637

141973| 112469| 146637

Stratification

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

N/A

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

N/A

Type Score

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of

an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

Rate/proportion better quality = lower score

Algorithm

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313 118210| 135560| 109921| 135810| 141015| 146637| 146313

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

The measure estimates hospital-level 30-day, all-cause, RSRRs following hospitalization for pneumonia using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient and hospital levels to account for variance in patient outcomes within and between hospitals (Normand and Shahian, 2007). At the patient level, it models the log-odds of readmission within 30 days of index admission using age, sex, selected clinical covariates, and a hospital-specific intercept. At the hospital level, it models the hospital-specific intercepts as arising from a normal distribution. The hospital intercept represents the underlying risk of a readmission at the hospital, after accounting for patient risk. The hospital-specific intercepts are given a distribution to account for the clustering (non-independence) of patients within the same hospital. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals.

The RSRR is calculated as the ratio of the number of “predicted” to the number of “expected” readmissions at a given hospital, multiplied by the national observed readmission rate. For each hospital, the numerator of the ratio is the number of readmissions within 30 days predicted on the basis of the hospital’s performance with its observed case mix; and the denominator is the number of readmissions expected based on the nation’s performance with that hospital’s case mix. This approach is analogous to a ratio of “observed” to “expected” used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital’s performance given its case mix to an average hospital’s performance with the same case mix. Thus, a lower ratio indicates lower-than-expected readmission rates or better quality, and a higher ratio indicates higher-than-expected readmission rates or worse quality.

The “predicted” number of readmissions (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific intercept on the risk of readmission. The estimated hospital-specific intercept is added to the sum of the estimated regression coefficients multiplied by the patient characteristics. The results are transformed and summed over all patients attributed to a hospital to get a predicted value. The “expected” number of readmissions (the denominator) is obtained in the same manner, but a common intercept using all hospitals in our sample is added in place of the hospital-specific intercept. The results are transformed and summed over all patients in the hospital to get an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the years of data in that period.

This calculation transforms the ratio of predicted over expected into a rate that is compared to the national observed readmission rate. The hierarchical logistic regression models are described fully in the original methodology report posted on QualityNet (https://qualitynet.org/inpatient/measures/readmission/methodology).

References:

Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22(2): 206-226. 141973| 112469| 146637

Submission Items

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

5.1 Identified measures: 0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 135560| 109921| 135810| 141015| 146637| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#0506 Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

5.1 Identified measures: 0231 : Pneumonia Mortality Rate (IQI #20)

0279 : Community Acquired Pneumonia Admission Rate (PQI 11)

1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

2579 : Hospital-level, risk-standardized payment associated with a 30-day episode of care for pneumonia (PN)

2882 : Excess days in acute care (EDAC) after hospitalization for pneumonia

5a.1 Are specs completely harmonized? No

5a.2 If not completely harmonized, identify difference, rationale, impact: We did not include in our list of related measures any non-outcome (e.g., process) measures with the same target population as our measure. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure).

5b.1 If competing, why superior or rationale for additive value: N/A

Comparison of NQF #2579 and NQF #2158

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)
#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Steward

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Centers for Medicare & Medicaid Services

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Centers for Medicare & Medicaid Services

Description

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital. Specifically, the MSPB Hospital measure assesses the cost to Medicare for Part A and Part B services performed by hospitals and other healthcare providers during an MSPB Hospital episode, which is comprised of the periods 3-days prior to, during, and 30-days following a patient's hospital stay. The MSPB Hospital measure is not condition specific and uses standardized prices when measuring costs. Beneficiary populations eligible for the MSPB Hospital calculation include Medicare beneficiaries enrolled in Medicare Parts A and B who were discharged between January 1 and December 1 in a calendar year from short-term acute hospitals paid under the Inpatient Prospective Payment System (IPPS).

Type

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Cost/Resource Use

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Cost/Resource Use

Data Source

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 135560| 109921| 135810| 141015| 146637| 146313 Data dictionary attachment 118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Assessment Data, Claims, Enrollment Data, Other Medicare Part A and Part B claims data: Part A and B claims data are used to build MSPB Hospital episodes, calculate episode costs, and construct risk adjustors. CMS Office of Information Systems (OIS) maintains a detailed Medicare Claims Processing Manual available at the following URL: https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs-Items/CMS018912.

Medicare Enrollment Database (EDB): This is used to determine beneficiary-level exclusions and supplemental risk adjustors, specifically Medicare Parts A, B, and C enrollment; primary payer; disability status; end-stage renal disease (ESRD); beneficiary birth dates; and beneficiary death dates.

Minimum Data Set (MDS): The MDS is used to create the Long Term Care Indicator variable in risk adjustment. Data documentation for the MDS is available at the following URL: https://www.resdac.org/cms-data/files/mds-3.0.

We used additional data sources for measure testing purposes:

- American Community Survey (ACS): This is used for evaluating social risk factors. https://www.census.gov/programs-surveys/acs/technical-documentation/summary-file-documentation.html.
- Common Medicare Environment (CME) database: This is used for evaluating social risk factors. https://www.ccwdata.org/documents/10280/19002256/medicare-enrollment-impact-of-conversion-from-edb-to-cme.pdf.
- Area Deprivation Index (ADI): University of Wisconsin School of Medicine Public Health. 2015 Area Deprivation Index v2.0. Downloaded from https://www.neighborhoodatlas.medicine.wisc.edu February 24, 2020.

131107| 135246| 109921| 135810| 148384| 150289 Data dictionary URL; Data dictionary attachment; Code table attachment 131107| 135246| 109921| 135810| 148384| 150289

Level

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Facility

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Facility

Setting

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Inpatient/Hospital

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Inpatient/Hospital

Numerator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Numerator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Denominator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Denominator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Exclusions

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Exclusion Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289

Risk Adjustment

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Statistical risk model

118210| 135560| 109921| 135810| 141015| 146637| 146313

118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Stratification by risk category/subgroup

131107| 135246| 109921| 135810| 148384| 150289

131107| 135246| 109921| 135810| 148384| 150289

Stratification

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

N/A

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

The MSPB Hospital measure is stratified by Major Diagnostic Category (MDC), which are mutually exclusive groups of MS-DRGs that correspond to an organ system (e.g., diseases and disorders of the digestive system) or cause (e.g., burns). There are 25 MDCs

Type Score

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

Ratio; Attachment An MSPB Hospital measure that is less than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is less than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period. An MSPB Hospital measure that is greater than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is greater than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period.

Algorithm

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313 118210| 135560| 109921| 135810| 141015| 146637| 146313

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

131107| 135246| 109921| 135810| 148384| 150289 131107| 135246| 109921| 135810| 148384| 150289

Submission Items

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

5.1 Identified measures: 0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 135560| 109921| 135810| 141015| 146637| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

#2158 Medicare Spending per Beneficiary (MSPB) Hospital

5.1 Identified measures:

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 131107| 135246| 109921| 135810| 148384| 150289

5b.1 If competing, why superior or rationale for additive value: H.2.1 Response: The MSPB Hospital measure has been harmonized with MSPB Clinician and MSPB-PAC in the following ways: (i) change in risk adjusted ratio calculation, and (ii) allowing readmissions to trigger an episode (specific to MSPB Clinician).

The M

Comparison of NQF #2579 and NQF #3474

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)
#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

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Centers for Medicare & Medicaid Services

#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

Description

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

This measure estimates hospital-level, risk-standardized payment for an eligible pneumonia episode of care starting with inpatient admission to a short term acute-care facility and extending 30 days post-admission for Medicare fee-for-service (FFS) patients who are 65 years or older with a principal discharge diagnosis of pneumonia or principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary discharge diagnosis of pneumonia coded as present on admission (POA) and no secondary diagnosis of severe sepsis coded as POA.

#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.

Type

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Cost/Resource Use

#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

Data Source

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Claims, Enrollment Data Data Sources

Medicare Inpatient and Outpatient Administrative Claims: This data source contains claims data for FFS inpatient and outpatient services including: Medicare inpatient hospital care, outpatient hospital services, skilled nursing facility care, some home health agency services, as well as inpatient and outpatient physician claims.

The 2020 reporting period for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between July 1, 2016 and June 30, 2019. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment. The period for public reporting of the PN payment

measure aligns with the 30-day PN mortality and readmission measures for harmonization purposes.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2009 through 2019 was applied to the claims to calculate the measures. Price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies) were calculated using standardized methodology specific to services reimbursed through Medicare parts A and B (for specific values see https://www.resdac.org/articles/cms-price-payment-standardization-overview).

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, and post-discharge mortality status. These data have previously been shown to accurately reflect patient vital status (Fleming et al. 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

American Community Survey (2013-2017)

We used the American Community Survey (2013-2017) to derive an updated Agency for Healthcare Research and Quality (AHRQ) Socioeconomic Status (SES) index score at the patient nine-digit zip code level for use in studying the association between our measure and social risk factors (SRFs).

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

118210| 135560| 109921| 135810| 141015| 146637| 146313 Data dictionary attachment
118210| 135560| 109921| 135810| 141015| 146637| 146313

#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, Enrollment Data Data sources

Chronic Condition Data Warehouse (CCW)

We used the Chronic Condition Data Warehouse (CCW) to develop our measure. The CCW contains existing CMS beneficiary claims data from multiple care settings that can be linked by a unique patient identifier, allowing researchers to analyze individual patient data across the continuum of care. We used a 100% sample of all FFS Medicare beneficiaries from July 2010 - June 2012 who underwent elective hip or knee replacement and met all cohort inclusion criteria.

The measure was developed using claims data from seven standard analytic files contained in the CCW data (inpatient, outpatient, skilled nursing facility, home health agency, hospice, carrier [physician/supplier Part B items], and durable medical equipment).

Medicare Administrative Claims

The data sources for these analyses include Medicare administrative claims and enrollment information for patients with hospitalizations between April 1, 2012 and March 31, 2015 (2016 reporting period). The period for public reporting of the THA/TKA measure aligns with the 90-day THA/TKA complication measure. Medicare administrative claims for the 12 months prior to and during the index admission are used for risk adjustment.

The datasets also contain price-standardized payments for Medicare patients across all Medicare settings, services, and supplies (that is, inpatient, outpatient, SNF, home health agency, hospice, physician/clinical laboratory/ambulance services, and durable medical equipment, prosthetics/orthotics, and supplies). The CMS Standardization Methodology for Allowed Amount for 2006 through 2016 was applied to the claims to calculate the measures.

Medicare Enrollment Database (EDB)

This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on enrollment, date of birth, post-discharge mortality status, and dual-eligibility. These data have previously been shown to accurately reflect patient vital status (Fleming et al., 1992).

Medicare Fee Schedules

Fee schedules are lists of pre-determined reimbursement amounts for certain services and supplies (e.g. physician services, independent clinical labs, ambulance services, durable medical equipment) and are used by Medicare in the calculation of payment to providers. We used the applicable fee schedules when calculating payments for claims that occurred in each care setting.

Federal Register Final Rules for Medicare Prospective Payment Systems and Payment Policies

Certain data necessary to calculate payments (e.g. annual base payments and conversion factors, DRG weights, wage indexes, and average length of stay) were taken from applicable Federal Register Final Rules.

CMS-published Wage Index Data

Wage index data not published in Federal Register Final Rules (such as the wage index data for Renal Dialysis Facilities) were obtained through the CMS website.

The American Community Survey (2008-2012)

The American Community Survey data is collected annually and an aggregated 5-years data was used to calculate the AHRQ socioeconomic status (SES) composite index score.

Reference

Fleming, C., Fisher, E., Chang, C., Bubolz, T., & Malenka, D. (1992). Studying Outcomes and Hospital Utilization in the Elderly: The Advantages of a Merged Data Base for Medicare and Veterans Affairs Hospitals. Medical Care, 30(5), 377-391.

146637| 135548| 146313 Attachment1 146637| 135548| 146313

Level

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Facility

#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

Setting

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Inpatient/Hospital

#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

Numerator Statement

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313

#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)

146637| 135548| 146313

Numerator Details

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

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#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)

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Denominator Statement

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Exclusions

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

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#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)

146637| 135548| 146313

Risk Adjustment

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Statistical risk model

118210| 135560| 109921| 135810| 141015| 146637| 146313

118210| 135560| 109921| 135810| 141015| 146637| 146313

#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

146637| 135548| 146313

146637| 135548| 146313

Stratification

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

N/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)

The measure is not stratified.

Type Score

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The PN risk-standardized payment (RSP) is most meaningful when presented in the context of an PN outcome measure, such as the publicly reported AMI mortality measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

#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)

Continuous variable Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Hospitals are classified as having a less than average, no different than average, or greater than average payment as compared to national average payment for an episode. Accordingly, a classification of lower than average payment should not be interpreted as better care. The THA/TKA risk-standardized payment (RSP) is most meaningful when presented in the context of a THA/TKA outcome measure, such as the publicly reported THA/TKA complication measure. This is because a measure of payments to hospitals that is aligned with a quality measure facilitates profiling hospital value (payments and quality).

Algorithm

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

118210| 135560| 109921| 135810| 141015| 146637| 146313 118210| 135560| 109921| 135810| 141015| 146637| 146313

#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)

146637| 135548| 146313 146637| 135548| 146313

Submission Items

#2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

5.1 Identified measures: 0468 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following pneumonia hospitalization

0506 : Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization

0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization

2158 : Medicare Spending Per Beneficiary (MSPB) Hospital

2436 : Hospital-level, risk-standardized payment associated with a 30-day episode-of-care for heart failure (HF)

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)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 118210| 135560| 109921| 135810| 141015| 146637| 146313

5b.1 If competing, why superior or rationale for additive value: N/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)

5.1 Identified measures: 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)

1609 : ETG Based HIP/KNEE REPLACEMENT cost of care measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: 146637| 135548| 146313

5b.1 If competing, why superior or rationale for additive value: N/A

Appendix F: Pre-Evaluation Comments

No comments have been received as of June 17, 2021.

Appendix G: Post-Evaluation Comments

Three post-evaluation comments were submitted by one member organization for NQF #2431, NQF #2436, and NQF #2579. The submitted comments and the developer's responses are provided below.

NQF #2431 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Acute Myocardial Infarction (AMI)

Standing Committee Recommendation: Recommended for Endorsement

Comment ID#: 7803

Commenter: Koryn Rubin, American Medical Association (AMA)

Council / Public: Health Professionals Council

Comment Period: Post-Evaluation Commenting Period

Date Comment was Submitted: 9/24/2021

Developer Response Required? Yes ☒ No ☐

Level of Support: Member Does Not Support

Themes: Reliability/Minimum Reliability Thresholds, Social Risk and Risk Adjustment, Cost and Quality Correlation

Comment

The American Medical Association (AMA) is concerned that this measure does not meet the scientific acceptability criteria and asks that the Standing Committee reconsider the current recommendation to continue endorsement of this measure. Specifically, the testing results, particularly for measure score reliability, empirical validity, and the risk adjustment approach, do not provide the information needed to ensure that the measure produces the desired results.

Regarding the measure score reliability, we are concerned that the signal-to-noise value ranged from 0.298 to 0.594, and we do not support the current threshold of 0.4 used by CMS. The AMA believes that the minimum acceptable threshold should be 0.7, and the measure as specified does not meet this expectation.

The AMA strongly supports the tenet that cost must be assessed within the context of the quality of care provided; yet the developer was unable to demonstrate that this measure correlates to any one quality measure within the hospital quality programs. This is particularly concerning since the submission clearly states that cost should not be evaluated alone, and specific references are made to quality measures (e.g., mortality, readmissions) on which comparisons could be made. We are very troubled that this testing was not provided, and we do not believe that cost measures against which no quality measure can be empirically assessed should achieve endorsement.

The AMA does not believe that the current risk adjustment model is adequate due to the R-squared result of 0.078, nor is the measure adequately tested and adjusted for social risk factors. It is unclear to us why the developer would test social risk factors after adjusting for clinical risk factors rather than assessing the impact of both clinical and social risk factors in the model at the same time. These variations in how risk adjustment factors are examined could also impact how each variable (clinical or social) perform in the model and remain unanswered questions.

The AMA requests that these gaps in testing be addressed prior to endorsement of this measure. We appreciate the Committee's consideration of our comments.

Developer Response

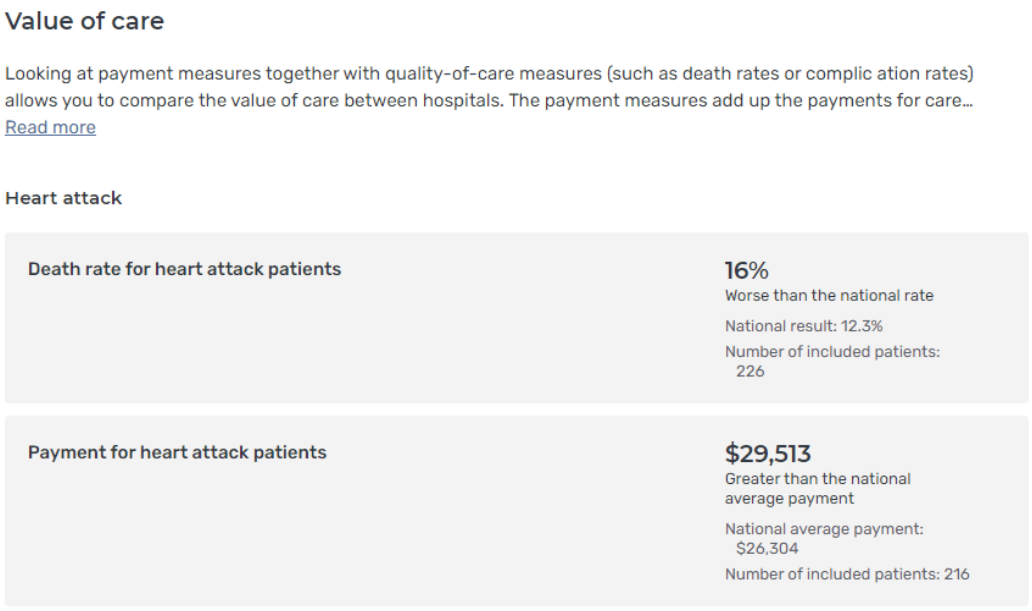
CORE's NQF submission fully satisfies NQF criteria for endorsement. NQF's Scientific Methods Panel (SMP) determined the measure is scientifically sound and passed the measure on both validity and reliability. The Cost and Efficiency Standing Committee voted in favor of re-endorsement of this measure. The developer notes that each of these issues was already addressed by the Standing Committee during the measure's review.

In our testing attachment, we provide split-sample reliability. To calculate split-sample reliability, we randomly sampled half of patients within each hospital from a three-year measurement period, calculated the measure for each hospital, and repeated the calculation using the second half of patients. Thus, each hospital is measured twice, but each measurement is made using an entirely distinct set of patients. To the extent that the calculated measures of these two subsets agree, we have evidence that the measure is assessing an attribute of the hospital, not of the patients. As a metric of agreement, we calculated the intra-class correlation coefficient (Shrout & Fleiss, 1979). For this measure, the split-sample reliability for hospitals with at least 25 cases was 0.681, which falls within the thresholds currently under consideration by the Scientific Methods Panel (SMP).

References:

Shrout P, Fleiss J. Intraclass correlations: uses in assessing rater reliability. Psychological Bulletin, 1979, 86, 420-3428.

We agree with the AMA that costs need to be assessed within the context of quality of care and have stated so in our submission. Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Accordingly, measure scores are reported together with a quality signal (in this case mortality for the same condition) as an indication of the value of care. (CMS' mortality measures for these conditions were recently re-endorsed by NQF in the fall 2020 cycle.) An example for one hospital is shown below; this hospital has payments that are greater than the national average and quality that is worse than the national rate, suggesting low-value care.



In addition, each spring, hospitals receive a detailed report of all the patients included in the measure, along with detailed breakdowns of post-acute care costs. Therefore, the payment measures provide an opportunity for hospitals to explore the drivers of costs for their patients and assess the payment measure results in the context of the quality of care they provide to patients.

As noted earlier, the SMP reviewed this measure, including an assessment of the risk model, and rated it high for validity.

Quasi-R2: For a traditional linear model (i.e., ordinary least squares regression), R2 is interpreted as the amount of variation in the observed outcome that is explained by the predictor variables (patient-level risk factors). Generalized linear models (GLMs), however, do not output an R2 that is akin to the R2 of a traditional linear model. To provide the NQF Committee with a statistic that is conceptually similar, we produced a "quasi-R2" by regressing the total payment outcome on the predicted outcome (Jones et al, 2010). Specifically, we regressed the total payment on the payment predicted by the patient-level risk factors. This regression produces a quasi-R2 that indicates the percent of the variation in payment can be explained by patient-level risk factors. The quasi-R2 results are consistent with R2s from other patient-level risk adjustment models for healthcare payment (Pope et al., 2011). Additional model performance results (predictive ratios, calibration) support the validity of the risk model for this measure.

Social Risk Factors: It is a standard and acceptable practice to test the incremental effects of social risk factors within a clinical risk model, as increased risk from a single social risk factor may be in part or completely explained by a clinical risk factor already in the model.

The payment measures are meant to be reported along with readmission and mortality measures for the same conditions, and those measures, which were recently recommended for re-endorsement, do

not include adjustment for social risk factors. Note that the payment measures are not used in a pay-for-performance program.

We do not dispute that there can be differences in unadjusted, observed outcomes based on social risk – our own results presented in the testing attachment show, for example, that for the low AHRQ SES variable, mean observed payments are slightly higher for patients with the social risk factor compared with patients without the social risk factor; for the dual eligibility variable, however, observed payments are lower for patients with the social risk factor (note that due to past feedback from NQF, we did not test any race-related variables). We also note that our results presented in the testing attachment show that payment ratios estimated with models that adjust for either social risk factor are significantly lower than one. The question we are trying to address with our analyses is the impact of adjusting for social risk factors on this particular measure score (risk-standardized payment). Our results show that differences in mean payments are very small, and the correlations between risk-standardized payments for models with and without the social risk factors are near 1.

References:

Jones AM. Models for Health Care. Health, Econometrics and Data Group (HEDG) Working Papers. 2010.

Pope, G. C., Kautter, J., Ingber, M. J., Freeman, S., Sekar, R., & Newhart, C. RTI International, (2011). Evaluation of the CMS-HCC risk adjustment model (Final Report). pp.6.

NQF Committee Response

Thank you for your comments. During the Standing Committee's initial review of the measures under consideration, concern was raised regarding the signal-to-noise reliability statistics for entities with low case volume. The Committee acknowledged challenges with achieving reliability thresholds for measure score reliability while balancing the trade-off of including more facilities or providers within the measure to promote transparency across the healthcare system. The Standing Committee also considered the Scientific Methods Panel's (SMP) decision to pass the measure on reliability and their input on the reliability testing results when voting to recommend these measures for endorsement.

The Standing Committee also acknowledges the commenter's concern that cost and resource use measures can be influenced by care received in a healthcare setting but also by clinical processes and social risk factors (SRFs). While the developer did test for the impact of SRFs in the risk models for these measures, some of the measures did not include SRFs in the final model. While the Standing Committee notes that it is important to maximize the predictive value of a risk adjustment model, elements of a risk model should be included based on a conceptual and empirical rationale. In light of the SMP's input regarding the validity testing and the approach to the risk adjustment modeling, the majority of the Standing Committee voted to recommend endorsement of these measures.

Lastly, the Standing Committee and NQF recognize that cost and resource use measures should be used in the context of and reported with quality measures. The Standing Committee discussed the relationship between cost and quality measures, emphasizing the importance of reporting performance to demonstrate improvements in cost while ensuring similar or higher levels of care quality.

Additionally, the current NQF cost and efficiency endorsement criteria do not require specifications or testing of a paired quality measure.

NQF #2436 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Heart Failure (HF)

Standing Committee Recommendation: Recommended for Endorsement

Comment ID#: 7804

Commenter: Koryn Rubin, American Medical Association (AMA)

Council / Public: Health Professionals Council

Comment Period: Post-Evaluation Commenting Period

Date Comment was Submitted: 9/24/2021

Developer Response Required? Yes ☒ No ☐

Level of Support: Member Does Not Support

Themes: Reliability/Minimum Reliability Thresholds, Social Risk and Risk Adjustment, Cost and Quality Correlation

Comment

The American Medical Association (AMA) is concerned that this measure does not meet the scientific acceptability criteria and asks that the Standing Committee reconsider the current recommendation to continue endorsement of this measure. Specifically, the testing results, particularly for measure score reliability, empirical validity, and the risk adjustment approach, do not provide the information needed to ensure that the measure produces the desired results.

Regarding the measure score reliability, we are concerned that the signal-to-noise value ranged from 0.528 & 0.801, and we do not support the current threshold of 0.4 used by CMS. The AMA believes that the minimum acceptable threshold should be 0.7, and the measure as specified does not meet this expectation.

The AMA strongly supports the tenet that cost must be assessed within the context of the quality of care provided; yet the developer was unable to demonstrate that this measure correlates to any one quality measure within the hospital quality programs. This is particularly concerning since the submission clearly states that cost should not be evaluated alone, and specific references are made to quality measures (e.g., mortality, readmissions) on which comparisons could be made. We are very troubled that this testing was not provided, and we do not believe that cost measures against which no quality measure can be empirically assessed should achieve endorsement.

The AMA does not believe that the current risk adjustment model is adequate due to the R-squared result of 0.031, nor is the measure adequately tested and adjusted for social risk factors. It is unclear to us why the developer would test social risk factors after adjusting for clinical risk factors rather than assessing the impact of both clinical and social risk factors in the model at the same time. These variations in how risk adjustment factors are examined could also impact how each variable (clinical or social) perform in the model and remain unanswered questions.

The AMA requests that these gaps in testing be addressed prior to endorsement of this measure. We appreciate the Committee's consideration of our comments.

Developer Response

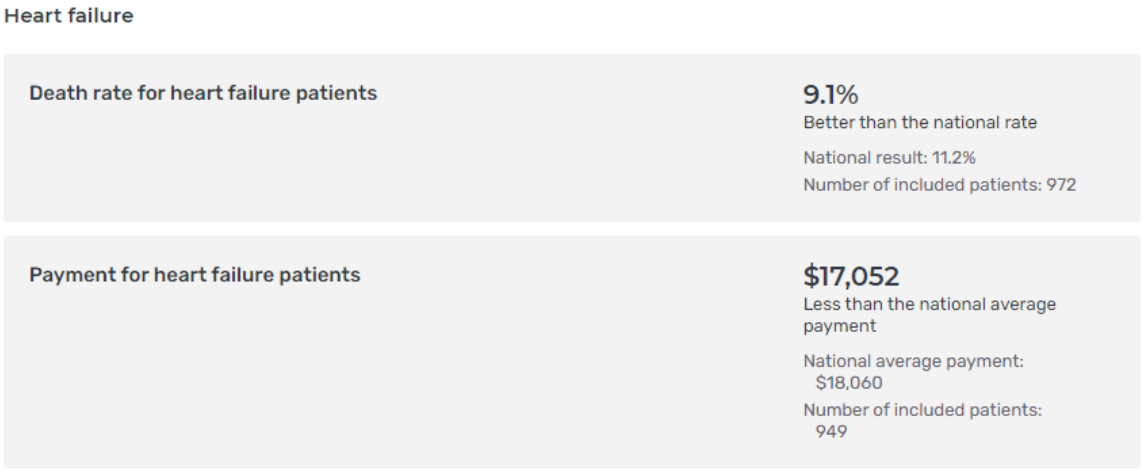
CORE's NQF submission fully satisfies NQF criteria for endorsement. NQF's Scientific Methods Panel (SMP) determined the measure is scientifically sound and passed the measure on both validity and reliability. The Cost and Efficiency Standing Committee voted in favor of re-endorsement of this measure (14 voted yes, out of 15 members). The developer notes that each of these issues were already addressed by the Standing Committee during the measure's review.

In our testing attachment, we provided split-sample reliability. To calculate split-sample reliability, we randomly sampled half of patients within each hospital from a three-year measurement period, calculated the measure for each hospital, and repeated the calculation using the second half of patients. Thus, each hospital is measured twice, but each measurement is made using an entirely distinct set of patients. To the extent that the calculated measures of these two subsets agree, we have evidence that the measure is assessing an attribute of the hospital, not of the patients. As a metric of agreement, we calculated the intra-class correlation coefficient (Shrout & Fleiss, 1979). For this measure, the split-sample reliability was 0.781, which falls within the thresholds currently under consideration by the Scientific Methods Panel (SMP).

References:

Shrout P, Fleiss J. Intraclass correlations: uses in assessing rater reliability. Psychological Bulletin, 1979, 86, 420-3428.

We agree with the AMA that costs need to be assessed within the context of quality of care and have stated so in our submission. Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Accordingly, measure scores are reported together with a quality signal (in this case mortality for the same condition) as an indication of the value of care. (CMS' mortality measures for these conditions were recently re-endorsed by NQF in the fall 2020 cycle.) An example for one hospital is shown below; this hospital has payments that are less than the national average and quality that is better than the national rate, suggesting high-value care.



In addition, each spring, hospitals receive a detailed report of all the patients included in the measure, along with detailed breakdowns of post-acute care costs. Therefore, the payment measures provide an opportunity for hospitals to explore the drivers of costs for their patients and assess the payment measure results in the context of the quality of care they provide to patients.

As noted earlier, the SMP reviewed this measure, including an assessment of the risk model, and rated it high for validity.

Quasi-R2: For a traditional linear model (i.e., ordinary least squares regression), R2 is interpreted as the amount of variation in the observed outcome that is explained by the predictor variables (patient-level risk factors). Generalized linear models (GLMs), however, do not output an R2 that is akin to the R2 of a traditional linear model. In order to provide the NQF Committee with a statistic that is conceptually similar, we produced a "quasi-R2" by regressing the total payment outcome on the predicted outcome (Jones et al, 2010). Specifically, we regressed the total payment on the payment predicted by the patient-level risk factors. This regression produces a quasi-R2 that indicates the percent of the variation in payment can be explained by patient-level risk factors. The quasi-R2 results are consistent with R2s from other patient-level risk adjustment models for healthcare payment (Pope et al, 2011). Additional model performance results (predictive ratios, calibration) support the validity of the risk model for this measure.

Social Risk Factors: It is a standard and acceptable practice to test the incremental effects of social risk factors within a clinical risk model, as increased risk from a single social risk factor may be in part or completely explained by a clinical risk factor already in the model.

The payment measures are meant to be reported along with readmission and mortality measures for the same conditions, and those measures, which were recently recommended for re-endorsement, do not include adjustment for social risk factors. Note that the payment measures are not used in a pay-for-performance program.

We do not dispute that there are differences in unadjusted, observed outcomes based on social risk – our own results presented in the testing attachment show, for example, that for the dual eligibility variable, mean observed payments are higher for patients with the social risk factor compared with patients without the social risk factor (note that due to past feedback from NQF, we did not test any race-related variables). The question we are trying to address with our analyses is the impact of adjusting for social risk factor on this particular measure score (risk-standardized payment). Our results show that differences in mean payments are very small, and the correlations between adjusted and unadjusted risk-standardized payments are near 1.

In addition, adjusting for social risk factors would likely remove an important hospital-level effect. A 2019 study, described in the testing attachment and authored by the developer, showed that differences in hospital-level payments for heart failure and pneumonia were associated with hospital characteristics independently from patient characteristics (Krumholz et al, 2019). The study design held constant the social determinants of health that were not expected to change between the two admissions and compared the same people at two different hospitals so that behaviors, social context, and demographic characteristics, including race/ethnicity, were the same. The authors compared payments for the same Medicare patient for two admissions for the same condition—one admission to a low-payment hospital and one admission to a high-payment hospital—and found that patients who were admitted to hospitals with the highest payment profiles incurred higher costs than when they were admitted to hospitals with the lowest payment profiles. The findings suggest that variations in payments to hospitals are, at least in part, associated with the hospitals independently of non-time-varying patient characteristics.

References:

Jones AM. Models for Health Care. Health, Econometrics and Data Group (HEDG) Working Papers. 2010.

Krumholz, H. M., Wang, Y., Wang, K., Lin, Z., Bernheim, S. M., Xu, X., Desai, N. R., & Normand, S.T. 2019.

Association of Hospital Payment Profiles With Variation in 30-Day Medicare Cost for Inpatients With Heart Failure or Pneumonia. JAMA network open, 2(11), e1915604.

Pope, G. C., Kautter, J., Ingber, M. J., Freeman, S., Sekar, R., & Newhart, C. RTI International, (2011). Evaluation of the CMS-HCC risk adjustment model (Final Report). pp.6.

NQF Committee Response

Thank you for your comments. During the Standing Committee's initial review of the measures under consideration, concern was raised regarding the signal-to-noise reliability statistics for entities with low case volume. The Committee acknowledged challenges with achieving reliability thresholds for measure score reliability while balancing the trade-off of including more facilities or providers within the measure to promote transparency across the healthcare system. The Standing Committee also considered the Scientific Methods Panel's (SMP) decision to pass the measure on reliability and their input on the reliability testing results when voting to recommend these measures for endorsement.

The Standing Committee also acknowledges the commenter's concern that cost and resource use measures can be influenced by care received in a healthcare setting but also by clinical processes and social risk factors (SRFs). While the developer did test for the impact of SRFs in the risk models for these measures, some of the measures did not include SRFs in the final model. While the Standing Committee notes that it is important to maximize the predictive value of a risk adjustment model, elements of a risk model should be included based on a conceptual and empirical rationale. In light of the SMP's input regarding the validity testing and the approach to the risk adjustment modeling, the majority of the Standing Committee voted to recommend endorsement of these measures. Lastly, the Standing Committee and NQF recognize that cost and resource use measures should be used in the context of and reported with quality measures. The Standing Committee discussed the relationship between cost and quality measures, emphasizing the importance of reporting performance to demonstrate improvements in cost while ensuring similar or higher levels of care quality. Additionally, the current NQF cost and efficiency endorsement criteria do not require specifications or testing of a paired quality measure.

NQF #2579 Hospital-Level, Risk-Standardized Payment Associated With a 30-Day Episode of Care for Pneumonia (PN)

Standing Committee Recommendation: Recommended for Endorsement

Comment ID#: 7805

Commenter: Koryn Rubin, American Medical Association (AMA)

Council / Public: Health Professionals Council

Comment Period: Post-Evaluation Commenting Period

Date Comment was Submitted: 9/24/2021

Developer Response Required? Yes ☒ No ☐

Level of Support: Member Does Not Support

Themes: Reliability/Minimum Reliability Thresholds, Social Risk and Risk Adjustment, Cost and Quality Correlation

Comment

The American Medical Association (AMA) is concerned that this measure does not meet the scientific acceptability criteria and asks that the Standing Committee reconsider the current recommendation to continue endorsement of this measure. Specifically, the testing results, particularly for empirical validity and the risk adjustment approach, do not provide the information needed to ensure that the measure produces the desired results.

The AMA does not believe that the current risk adjustment model is adequate due to the R-squared result of 0.076, nor is the measure adequately tested and adjusted for social risk factors. It is unclear to us why the developer would test social risk factors after adjusting for clinical risk factors rather than assessing the impact of both clinical and social risk factors in the model at the same time. These variations in how risk adjustment factors are examined could also impact how each variable (clinical or social) perform in the model and remain unanswered questions.

The AMA strongly supports the tenet that cost must be assessed within the context of the quality of care provided; yet the developer was unable to demonstrate that this measure correlates to any one quality measure within the hospital quality programs. This is particularly concerning since the submission clearly states that cost should not be evaluated alone, and specific references are made to quality measures (e.g., mortality, readmissions) on which comparisons could be made. We are very troubled that this testing was not provided, and we do not believe that cost measures against which no quality measure can be empirically assessed should achieve endorsement.

The AMA requests that these gaps in testing be addressed prior to endorsement of this measure. We appreciate the Committee's consideration of our comments.

Developer Response

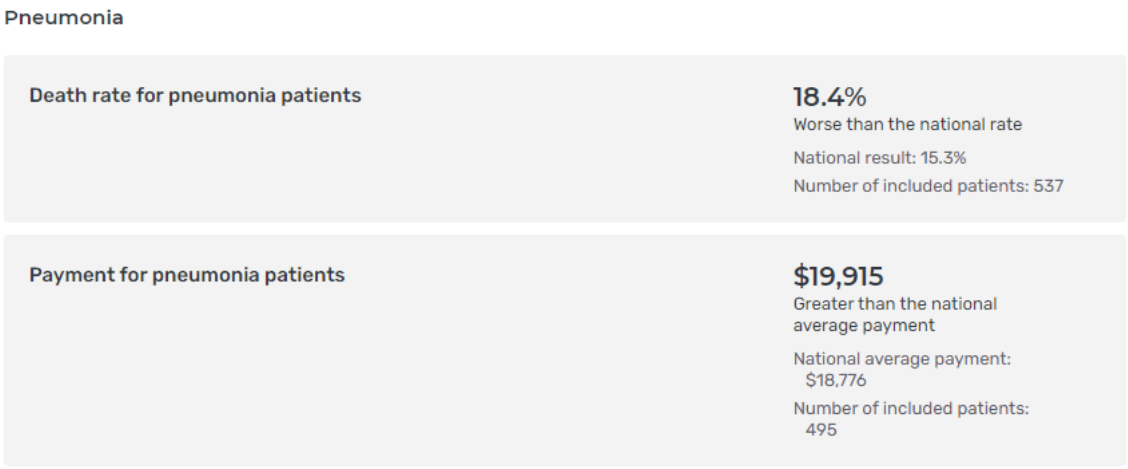
CORE's NQF submission fully satisfies NQF's criteria for endorsement. NQF's Scientific Methods Panel (SMP) determined the measure is scientifically sound and passed the measure on both validity and reliability. The Cost and Efficiency Standing Committee voted in favor of re-endorsement of this measure (15 voted yes out of 15 members). The developer notes that each of these issues was already addressed by the Standing Committee during the measure's review.

In our testing attachment, we provided split-sample reliability. To calculate split-sample reliability, we randomly sampled half of patients within each hospital from a three-year measurement period, calculated the measure for each hospital, and repeated the calculation using the second half of patients. Thus, each hospital is measured twice, but each measurement is made using an entirely distinct set of patients. To the extent that the calculated measures of these two subsets agree, we have evidence that the measure is assessing an attribute of the hospital, not of the patients. As a metric of agreement, we calculated the intra-class correlation coefficient (Shrout & Fleiss, 1979). For the pneumonia measure, the split-sample reliability was 0.815, which falls within the thresholds currently under consideration by the Scientific Methods Panel (SMP).

References: Shrout P, Fleiss J. Intraclass correlations: uses in assessing rater reliability. Psychological Bulletin, 1979, 86, 420-3428.

We agree with the AMA that costs need to be assessed within the context of quality of care and have stated so in our submission. Results of the measure alone do not necessarily reflect the quality of care provided by hospitals but simply whether the total episode payments are greater than or less than would be expected for an average hospital with a similar case mix. Accordingly, measure scores are reported together with a quality signal (in this case mortality for the same condition) as an indication of

the value of care. (CMS' mortality measures for these conditions were recently re-endorsed by NQF in the fall 2020 cycle.) An example for one hospital is shown below; this hospital has payments that are greater than the national average and quality that is worse than the national rate, suggesting low-value care.



In addition, each spring, hospitals receive a detailed report of all the patients included in the measure, along with detailed breakdowns of post-acute care costs. Therefore, the payment measures provide an opportunity for hospitals to explore the drivers of costs for their patients and assess the payment measure results in the context of the quality of care they provide to patients.

As noted earlier, the SMP reviewed this measure, including an assessment of the risk model, and rated it high for validity.

Quasi-R2: For a traditional linear model (i.e., ordinary least squares regression), R2 is interpreted as the amount of variation in the observed outcome that is explained by the predictor variables (patient-level risk factors). Generalized linear models (GLMs), however, do not output an R2 that is akin to the R2 of a traditional linear model. In order to provide the NQF Committee with a statistic that is conceptually similar, we produced a "quasi-R2" by regressing the total payment outcome on the predicted outcome (Jones et al, 2010). Specifically, we regressed the total payment on the payment predicted by the patient-level risk factors. This regression produces a quasi-R2 that indicates the percent of the variation in payment can be explained by patient-level risk factors. The quasi-R2 results are consistent with R2s from other patient-level risk adjustment models for healthcare payment (Pope et al, 2011). Additional model performance results (predictive ratios, calibration) support the validity of the risk model for this measure.

Social Risk Factors: It is a standard and acceptable practice to test the incremental effects of social risk factors within a clinical risk model, as increased risk from a single social risk factor may be in part or completely explained by a clinical risk factor already in the model.

The payment measures are meant to be reported along with readmission and mortality measures for the same conditions, and those measures, which were recently recommended for re-endorsement, do not include adjustment for social risk factors. Note that the payment measures are not used in a pay-for-performance program.

We do not dispute that there are differences in unadjusted, observed outcomes based on social risk – our own results presented in the testing attachment show, for example, that for the dual eligibility variable, mean observed payments are higher for patients with the social risk factor compared with patients without the social risk factor (note that due to past feedback from NQF, we did not test any race-related variables). The question we are trying to address with our analysis is the impact of adjusting for social risk factor on this particular measure score (risk-standardized payment). Our results show that differences in mean payments are very small, and the correlations between adjusted and unadjusted risk-standardized payments are near 1.

In addition, adjusting for social risk factors would likely remove an important hospital-level effect. A 2019 study, described in the testing attachment and authored by the developer, showed that differences in hospital-level payments for heart failure and pneumonia were associated with hospital characteristics independently from patient characteristics (Krumholz et al, 2019). The study design held constant the social determinants of health that were not expected to change between the two admissions and compared the same people at two different hospitals so that behaviors, social context, and demographic characteristics, including race/ethnicity, were the same. The authors compared payments for the same Medicare patient for two admissions for the same condition—one admission to a low-payment hospital and one admission to a high-payment hospital—and found that patients who were admitted to hospitals with the highest payment profiles incurred higher costs than when they were admitted to hospitals with the lowest payment profiles. The findings suggest that variations in payments to hospitals are, at least in part, associated with the hospitals independently of non-time-varying patient characteristics.

References:

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NQF Committee Response

Thank you for your comments. During the Standing Committee's initial review of the measures under consideration, concern was raised regarding the signal-to-noise reliability statistics for entities with low case volume. The Committee acknowledged challenges with achieving reliability thresholds for measure

score reliability while balancing the trade-off of including more facilities or providers within the measure to promote transparency across the healthcare system. The Standing Committee also considered the Scientific Methods Panel's (SMP) decision to pass the measure on reliability and their input on the reliability testing results when voting to recommend these measures for endorsement.

The Standing Committee also acknowledges the commenter's concern that cost and resource use measures can be influenced by care received in a healthcare setting but also by clinical processes and social risk factors (SRFs). While the developer did test for the impact of SRFs in the risk models for these measures, some of the measures did not include SRFs in the final model. While the Standing Committee notes that it is important to maximize the predictive value of a risk adjustment model, elements of a risk model should be included based on a conceptual and empirical rationale. In light of the SMP's input regarding the validity testing and the approach to the risk adjustment modeling, the majority of the Standing Committee voted to recommend endorsement of these measures. Lastly, the Standing Committee and NQF recognize that cost and resource use measures should be used in the context of and reported with quality measures. The Standing Committee discussed the relationship between cost and quality measures, emphasizing the importance of reporting performance to demonstrate improvements in cost while ensuring similar or higher levels of care quality. Additionally, the current NQF cost and efficiency endorsement criteria do not require specifications or testing of a paired quality measure.

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