All-Cause Admissions and Readmissions Measures

FINAL REPORT

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NATIONAL QUALITY FORUM

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Executive Summary

Unnecessary admissions and avoidable readmissions to acute care facilities are the subject of ever-increasing scrutiny and are an important focus for quality improvement by the healthcare system. Previous studies have shown that nearly 1 in 5 Medicare patients is readmitted to the hospital within 30 days of discharge, including many patients returning via the emergency room, costing upwards of $26 billion annually.[1,2]

In this project, the All-Cause Admissions and Readmissions Standing Committee (the Committee) reviewed 18 measures, 16 of which were ultimately endorsed by the NQF Board of Directors. Endorsement of these 16 measures marks the first time that the NQF portfolio includes measures examining community-level readmissions, pediatric readmissions, and readmission measures in the Post Acute Care and Long Term Care settings, in addition to hospital and health plan readmission measures. Adding these measures to the NQF admissions and readmissions portfolio is a critical step toward promoting care coordination and shared accountability across the care continuum.

At the start of the Consensus Development Process (CDP), the Committee reviewed 18 submitted measures, 15 of which were recommended for endorsement by the Committee. The Committee was unable to reach consensus on 3 measures—0327: Risk-Adjusted Average Length of Inpatient Hospital Stay, 2496: Standardized Readmission Ratio (SRR) for dialysis facilities, and 2512: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals (LTCHs). Per the CDP, all 18 measures were moved to NQF Member vote where none of the measures was approved by the NQF Member Councils. The measures then progressed to the Consensus Standards Approval Committee (CSAC) review.

The CSAC reviewed the recommendations of the Committee and the results of NQF Member voting period and requested that NQF staff undertake additional consensus-building for all of the measures under consideration in this project. To this end, NQF held an All-Member Web-Meeting, where more than 130 individuals participated and provided feedback for the CSAC's consideration. When polled, participants ranked adjustment for sociodemographic status (SDS) as the highest priority issue for measures in this project. After detailed review of all 18 measures included in the project and the comments received, CSAC approved 17 measures for endorsement.[a] Throughout review of the admission and readmission measures, several overarching issues emerged that were factored into the endorsement recommendations. More detail on the issues raised can be found in the overarching issues section of this report.

The CSAC did not recommend measure 0327 for endorsement. CSAC noted that this measure did not meet consensus from either the Committee or the membership, and agreed that there was concern about the potential for unintended consequences, specifically, incentivizing early discharge.

[a] The CSAC originally endorsed Measure 2496: Standardized Readmission Ratio (SRR) for dialysis facilities in November 2014; however, the measure received an appeal. The measure is currently still under review and pending an endorsement decision by the NQF Executive Committee.

The NQF Board of Directors' Executive Committee ratified the CSAC recommendation to endorse the all-cause admissions and readmissions measures with the condition that that the Admission and Readmission Standing Committee would determine which measures would be re-evaluated during the SDS trial period. The Board also required a 1-year look back on the endorsed readmission measures, including an update on the status of the endorsed measures in the SDS trial period as well as any available information on the use of the measures.

The topic of adjustment for SDS has been an important discussion at NQF, in addition to the measurement community at large. This project marks the first time that NQF will require that measure developers examine the relationship between SDS factors for their measures and consider updating their measures if there is an appropriate conceptual and empirical relationship, as a condition of endorsement. The Admission and Readmission Standing Committee will actively oversee this process to ensure that stakeholder concerns on this topic are thoughtfully considered using a data-driven approach.

The 16 endorsed measures are:

- 0505: Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization
- 0695: Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI)
- 2375: PointRight OnPoint-30 SNF Rehospitalizations
- 2380: Rehospitalization During the First 30 Days of Home Health
- 2393: Pediatric All-Condition Readmission Measure
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- 2505: Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health
- 2510: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)
- 2512: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals (LTCHs)
- 2513: Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) following Vascular Procedures
- 2514: Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate
- 2515: Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery
- 2539: Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

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

Introduction

Unnecessary admissions and avoidable readmissions to acute care facilities are the subject of ever-increasing scrutiny and are an important focus for quality improvement by the healthcare system. Previous studies have shown that nearly 1 in 5 Medicare patients is readmitted to the hospital within 30 days of discharge, including many patients returning via the emergency room, costing upwards of $26 billion annually.[1,2] Multiple entities across the healthcare system, including hospitals, post-acute care facilities, skilled nursing facilities, and others, all have a responsibility to ensure high quality care transitions to reduce unplanned readmissions to the hospital and unnecessary admissions.

While unnecessary admissions have been trending downward, with the total number of admissions for adults declining 6.2% and the total for children declining nearly 40% between 2005 and 2010, there remains potential for improvement. For example, rates of admissions across conditions have not uniformly improved. Rates of unnecessary admissions for short-term diabetes complications (23%) and hypertension (33%) have increased during the same time period, while other conditions have experienced declines in the hospital admission rates, such as angina without a procedure (50%), congestive heart failure (21%), and dehydration (38%). This variation in unnecessary admission rates across conditions highlights an opportunity to improve overall performance.[3]

Further, one report by the Robert Wood Johnson Foundation suggests that communities and health systems with higher underlying admission rates also have higher readmission rates, since patients in these communities are more likely to rely on the hospital as a site of care in general.[4] Other risk factors may also include environmental and patient characteristics, including sociodemographic factors.[5,6] A 2013 Medicare Payment Advisory Commission (MedPAC) report suggests that to succeed in reducing readmissions, policies must encourage hospitals to look beyond their walls and improve care coordination (i.e., medication reconciliation, use of case managers, discharge planning) across providers. The report suggests that reducing avoidable readmissions by 10% could achieve a savings of $1 billion or more.[7]

NQF has undertaken projects addressing admissions and readmissions that are condition or setting specific. Past measure endorsement projects have included the consideration of 6 condition-specific readmission measures, as well as measures of acute care hospitalization from home health and community settings. NQF's most recent work in this area, which concluded in April 2012, was the Readmissions Endorsement Maintenance project that resulted in the endorsement of 2 new all-cause readmission measures.

In addition to measure endorsement projects, NQF has pursued other work related to admissions and readmissions. The NQF-convened Measure Applications Partnership (MAP) recommended that measures of readmissions should be part of a suite of measures promoting a system of patient-centered care coordination. This recommendation supports the notion that multiple entities and individuals are jointly accountable for reducing avoidable readmissions, and performance assessments should include measures of both avoidable admissions and readmissions.[8] As the healthcare system moves towards a model of greater accountability, using readmission measures in conjunction with quality measures addressing admission and length of stay can achieve important improvements in quality.

National Quality Strategy

The National Quality Strategy (NQS) serves as the overarching framework for guiding and aligning public and private efforts across all levels (local, state, and national) to improve the quality of healthcare in the U.S.[9] The NQS establishes a 3-part aim of better care, affordable care, and healthy people/communities, focusing on 6 priorities to achieve those aims: *Safety, Person and Family Centered Care, Communication and Care Coordination, Effective Prevention and Treatment of Illness, Best Practices for Healthy Living,* and *Affordable Care*.[10]

Improvement efforts for admissions, readmissions, and length of stay are consistent with the NQS triple aim and align with several of the NQS priorities, including:

- **Making care safer by reducing harm caused in the delivery of care**. The Centers for Medicare & Medicaid Services reported in February 2013 that the 30-day, all-cause readmission rate dropped to 17.8%, or 70,000 fewer readmissions in the last quarter of 2012, after averaging 19% for the past 5 years.[11] The MedPAC June 2013 Report to Congress indicated that, at a national level, all-cause readmissions for the three reported conditions (Heart Failure, Acute Myocardial Infarction, and Pneumonia) decreased more over the 3-year measurement period than for all conditions, since implementation of the Hospital Readmissions Reduction Program.[12]
- **Promoting effective communication and coordination of care**. Readmissions are events that are associated with gaps in follow-up care. Researchers have estimated that inadequate care coordination, including inadequate management of care transitions, was responsible for $25 to $45 billion in wasteful spending in 2011 as a result of avoidable complications and unnecessary hospital readmissions.[13]

NQF Portfolio of Performance Measures for All-Cause Admissions and Readmissions

Prior to endorsing the measures in this project, NQF's admissions and readmissions portfolio contained 12 measures (see Appendix B) examining admission, readmission, and length of stay. Three of these measures were evaluated by the Admission and Readmission Standing Committee during this project. Due to the high volume of measures in the portfolio as well as NQF's cyclical measure review process, the remaining measures will be evaluated at a later date.

Table 1. NQF-Endorsed Admission and Readmission Measures (as of October 2013)

	Admissions and Readmissions Portfolio	Measures in Other NQF Portfolios
Admissions	3	12
Readmissions	6	3
Total	9	15

Use of Measures in the Portfolio

The admissions and readmissions portfolio of measures is growing rapidly. While some of the oldest measures in the portfolio have been endorsed since 2008, many of the condition-specific and all-cause

measures have been developed in the last 2 years. Due to the ever-increasing scrutiny on potentially unnecessary admissions and readmissions, these measures play an important part in quality improvement within the healthcare system. As such, several of the measures in the portfolio are in use for federal programs, including the Home Health Quality Reporting Program, Ambulatory Surgical Center Quality Reporting Program, the Hospital Inpatient Quality Reporting Program, and Hospital Readmission Reduction Program.

All-Cause Admissions and Readmissions Measure Evaluation

On May 5-6, 2014, the All-Cause Admissions and Readmissions Standing Committee evaluated 15 new measures and 3 measures undergoing maintenance review against NQF's standard evaluation criteria. The Committee's discussion and ratings by the criteria are summarized in the evaluation tables beginning on page 26.

Table 2. All-Cause Admissions and Readmissions Summary

	Maintenance	New	Total
Measures under consideration	8	15	23
Measures withdrawn from consideration	5	0	5
Measures endorsed	2	14	16
Measures not endorsed	1	0	1
Measures under review	0	1	1

Continuous Commenting

NQF is working to improve its rigorous committee review process by making it more meaningful and effective. This begins with its varied stakeholders participating earlier and more frequently in its work, which will help NQF get to better measures faster. To facilitate stakeholder participation, NQF is piloting continuous commenting on measures in this project. During this project, stakeholders had the opportunity to comment on measures at any point in the endorsement process—as opposed to a 30-day period after Committee deliberations—giving stakeholders a stronger voice in endorsement discussions, and decisions, from beginning to end.

A complete table of comments submitted pre- and post-evaluation, along with the responses to each comment and the actions taken by the Standing Committee, is posted to the project page on the NQF website. In addition, the major comment themes are highlighted in the Overarching Issues section below.

Overarching Issues

Throughout review of the admission and readmission measures, several overarching issues emerged that were factored into the endorsement recommendations for multiple measures and are not repeated in detail in Appendix A.

Adjustment for Sociodemographic Factors and the NQF Trial Period

The Committee reviewed the measures submitted in this project under the NQF measure evaluation guidance which indicated that factors associated with disparities in care (i.e., race, ethnicity, sociodemographic factors) should not be included in risk adjustment models. In a concurrent NQF project, an Expert Panel on Risk Adjustment for Sociodemographic Factors was charged with reviewing this guidance and developing a set of recommendations on the inclusion of sociodemographic status (SDS) and other factors, such as poverty, and limited English proficiency in risk adjustment for outcome and resource use performance measures. In May 2014, this expert panel recommended that the restriction on the use of SDS factors in risk-adjustment models be lifted. The NQF Board of Directors met on July 23, 2014, and approved the implementation of a trial period for adjusting performance measures using sociodemographic factors where appropriate. Despite the new guidance from the NQF Board of Directors, projects that were already in progress when the guidance took effect were subject to preexisting criteria, guidance, and policy.

NQF Member and public comments focused heavily on the perceived importance of risk adjustment, specifically the effects of SDS on readmission measures. Although one commenter provided support for the prior NQF policy, the majority of commenters raised strong concern with moving forward with endorsement of these outcome measures without SDS adjustment. Commenters encouraged the Committee to defer endorsement recommendations until measure developers had a chance to test and update their measures. Those commenters noted that, if an endorsement recommendation on these measures was required, the validity of the measures should be questioned due to the lack of SDS adjustment. Commenters also suggested that, if the measures were to be endorsed, the Standing Committee should limit endorsement to 1 year.

While the Committee continued to base its evaluation on the current NQF guidance, Committee members cautioned that differences in readmissions performance across hospitals are influenced by many different factors. These include differences driven, in part, by variation in hospital quality and the availability of community resources. Throughout the evaluation process, Committee members reiterated that readmissions are not uniquely a measure of hospital quality, but rather a measure of health system and community health quality. The Committee encouraged measure developers to consider SDS adjustment, and requested that measure developers test the effect of these factors, and update the measure, if appropriate.

NQF Members and the public also continued to express concerns and noted that endorsing these measures without appropriate SDS adjustment may cause unintended consequences for providers treating vulnerable populations. The CSAC considered the comments received and the Member voting results and requested NQF undertake additional consensus building to better understand the issues stakeholders were raising.

On October 20, 2014, NQF held an all-Member web meeting, inviting all Member stakeholders to participate in a discussion about the measures under review. The call provided an opportunity for NQF Members to voice their concerns and provide feedback for the CSAC's consideration. Based on a polling of call participants, the highest priority issues with respect to the measures in this project was

adjustment for SDS. Members argued that without adjustment for SDS, the measures may not accurately reflect provider performance and thus would not meet NQF's standards for scientific validity. These same Members agreed that SDS adjustment needs to be considered before endorsing the measures.

The CSAC considered this feedback, as well as the information from the Committee deliberations and the NQF Member and public comment period, when making final endorsement decisions during their November meeting. The CSAC agreed to endorse the measures, which were then unanimously ratified by the NQF Executive Committee of the Board with the condition that that the Admission and Readmission Standing Committee would determine which measures would be re-evaluated during the SDS trial period. The Executive Committee also requested that after 1 year an update be provided on the measures' progress in the SDS trial period as well as any available information on the measure application in federal programs. The measures were endorsed only with these conditions to ensure that the concerns expressed throughout the consensus process were addressed.

In response to the Executive Committee's request that the All-Cause Admissions and Readmissions Committee determine which measures should enter the trial period for consideration of SDS adjustment, the Committee reconvened on January 26, 2015. During this call the Committee deliberated as to whether there is a conceptual relationship between the outcome being measured and SDS risk factors. The Committee determined that 15 of the 16 measures recommended by the Executive Committee should be re-evaluated in the trial period for consideration of SDS adjustment.

Evidence Requirements for Outcome Measures

The NQF measure evaluation criteria require different reviews of evidence depending on the type of measure being evaluated. For structure and process measures, the NQF endorsement criteria require Committees to review and rate the quantity, quality, and consistency of the body of evidence showing that the measured healthcare structure or process leads to desired health outcomes with benefits that outweigh any harm to patients.

Improving health outcomes is a central goal of healthcare treatments and services (e.g., health, function, survival, symptom control). Thus, outcomes, such as admissions and readmissions, are viewed as particularly useful quality indicators, since they integrate multiple care processes and disciplines involved in patient care. Further, once outcomes are measured and reported, many that were not thought to be modifiable tend to improve. This suggests that measurement stimulates identification and adoption of effective healthcare processes that can improve health outcomes for patients. For these reasons, health outcomes do not necessarily require empirical evidence linking them to a known process or structure of care. Although such evidence is desirable, in accordance with the 2011 recommendations of an NQF-convened Evidence Task Force, a Committee may judge an outcome measure to have met the evidence subcriterion if the developer has provided a plausible rationale supporting the linkages between the measured health outcome and at least 1 healthcare structure, process, intervention, or service.

Several Committee members raised concern about the lack of evidence required to demonstrate the linkage between readmissions and at least 1 healthcare structure, process, intervention, or service. The

Committee members noted that a systematic review of evidence would enhance the review process and recommended that future updates to the evidence criterion should be considered by NQF.

During the post-meeting comment period, commenters also raised concerns about the conditions required for an outcome measure to meet NQF's evidence subcriterion. Some commenters suggested that the current guidance does not provide sufficient rigor for a measure that is publicly reported and may affect provider reimbursement. These commenters urged NQF to require measure developers to submit empirical analysis to assess the linkage between the outcome and at least one process or structure, which would provide a stronger indication of whether the outcome can be improved.

Acknowledging the concerns expressed by commenters and some Committee members, the Committee recognizes that the term "evidence" may not accurately reflect the underlying justification for their recommendations on measures of readmission. Therefore, in order to ensure greater clarity regarding the Committee's intent in recommending these measures for endorsement, this report replaces the word "evidence" with "rationale" where appropriate.

Provider Attribution

During the post-meeting comment period, commenters expressed concern over the way performance is attributed for some of the readmission measures, including 2380: Rehospitalization During the First 30 Days of Home Health, 2505: Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health, and 2496: Standardized Readmission Ratio (SRR) for dialysis facilities.

Commenters noted that home health agencies may not be the appropriate locus of responsibility for hospital readmissions, noting that there is limited evidence on the interventions that home health agencies can take to influence re-hospitalization or ED use. Similarly, commenters questioned whether it would be appropriate to hold dialysis facilities accountable for readmissions given their relatively limited role in management of care transitions.

Upon review of these comments, the Committee agreed to uphold their initial endorsement decisions, concluding that this issue had been discussed and addressed to their satisfaction at the in-person meeting. The Committee noted that care transition measures need to be developed and implemented in order to promote coordination and shared accountability across the care continuum. These include setting-specific admissions and readmissions measures that address the unique needs related to post-acute care. The Committee concluded that readmission measurement should reinforce that all stakeholders have a responsibility to collaborate to improve performance on this important issue of healthcare quality, noting that while many settings may not have been historically responsible for admissions and readmissions into hospitals, solving this quality problem requires new roles for stakeholders .

Hospital Volume

Several measures submitted to this project use hierarchical logistic regression models using empirical Bayes estimates to estimate risk-adjusted readmission rates. This type of model is often used when the underlying data have a hierarchical structure (e.g., patients clustered within hospitals). Some Committee members expressed concern that Bayes estimates may pull performance scores toward the overall

average for low-volume facilities based on the variability in the estimate. The Committee agreed that while this is a concern, further study should be undertaken on approaches for measuring low-volume providers to ensure reliable and valid indicators of quality.

Planned Readmissions

The Committee noted that not all readmissions are markers of poor quality. The Committee stressed that readmission measures should acknowledge that planned readmissions, such as planned two-stage procedures, should be excluded. Without the exclusion of these planned readmissions, the experts noted that there might be potential for unintended consequences for patients whose care may be inappropriately delayed until after the 30-day window.

Relationship Between Admissions and Readmissions

During the post-meeting comment period, commenters observed that care transition improvement efforts and other community-oriented activities to reduce readmissions can also lead to reduced admissions as continuity of care is improved and other health benefits are achieved in the community. Commenters noted that this may lead to the appearance of higher readmission rates in these communities as the measure denominator (i.e., admissions) may decrease more quickly than the numerator (i.e., readmissions), when in fact the communities' quality improvement efforts have worked as intended, resulting in these communities being penalized for their success.

The Committee discussed these potential unintended consequences and urged CMS to monitor these issues in the future as the measures are implemented. The Committee also recommended that CMS consider pairing readmissions measures with measures of admissions per 1,000 beneficiaries or other countervailing factors to ensure that provider performance is appropriately assessed.

Related and Competing Measures

Resolving issues around harmonizing measures and handling competing measures remains a key challenge in NQF measure endorsement projects. The current quality landscape contains a proliferation of measures, including measures that could be considered duplicative or overlapping, and others that measure similar, but not identical, concepts and/or patient populations.

The Committee used existing guidance in their review of two pairs of measures within this project that NQF staff identified as competing measures. Competing measures are defined as measures that address the same measure focus and target population. Competing measures are conceptually similar, but may differ slightly in their technical specifications. The following pairs of measures within this project were flagged as competing measures.

1. 2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery [CMS] and 2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate [STS]
2. 2375 PointRight OnPoint-30 SNF Rehospitalizations [AHCA] and 2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) [CMS]

After the in-person meeting, the Standing Committee convened two more times via conference calls on May 16 and August 6, 2014, to review the recommended measures that were identified by staff as competing and to assess the pairs of measures for superiority by weighing each measure's strengths and weaknesses across all NQF evaluation criteria. After reviewing information provided by the developers, the Committee agreed that there was no clearly superior measure for the competing CABG and Skilled Nursing Facilities readmission measures and that the benefits of endorsing both outweighed the potential burden of endorsing two similar measures. The full discussion about competing measures, as well as final recommendations regarding measure harmonization, is detailed in Appendix A.

Review of Dry Run Results for Measure 1789

Measure 1789: Hospital-Wide All-Cause Unplanned Readmission Measure (HWR) (CMS) estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmissions for any eligible condition within 30 days of hospital discharge for patients age 18 and older. The measure results in a single summary risk-adjusted readmission rate for conditions or procedures that fall within 5 specialties: surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology.

As follow-up to the initial endorsement of measure 1789, NQF requested the developer bring the results of the CMS dry run, updates to the planned readmission algorithm, and updates on progress toward harmonization with measure 1768: Plan All-Cause Readmissions (PCR) (NCQA) to the Admissions and Readmissions Standing Committee for review. The review of CMS's dry run included an analysis of the distribution of performance between hospitals with varying proportions of low socioeconomic status (SES) patients, and the proportion of measure result variation that is attributable to providers compared to patients. NQF encouraged hospitals to provide feedback in their use of the measure, as part of an effort to help foster strategic dialogue on measure use and usability as well as identify any unintended consequences.

The Standing Committee reviewed the dry run results from CMS and did not note any concerns about the scientific acceptability of the measure properties.

Summary of Measure Evaluation

The following brief summaries of the measures and the evaluation highlight the major issues that were considered by the Committee. Details of the Committee's discussion and ratings of the criteria are included in Appendix A.

Measures Endorsed

0505: Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization. (Centers for Medicare & Medicaid): Endorsed; Recommended for inclusion in the SDS trial period

Description: *The measure estimates a hospital-level, 30-day, risk-standardized readmission rate (RSRR) for patients discharged from the hospital with a principal diagnosis of acute myocardial infarction (AMI). The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission. A specified set of planned readmissions do not count as readmissions. The target*

population is patients age 18 years and older. ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims*

This measure has been NQF-endorsed since 2008. Since its last endorsement, the developer has made several changes to the measure: changing the reporting period from 1 year to 3 years to accommodate a large proportion of hospitals that do not have a sufficient volume of AMI cases over a 1 year period; excluding patients who are discharged against medical advice; expanding to include VA hospitals; and updating the measure algorithm to further define a planned versus unplanned readmission. In general, the Committee did not have any issues with the measure specifications and agreed that AMI readmissions are important to measure and report. The Committee expressed caution that statistical confidence intervals should be used when reporting this measure and linking performance to a payment program to ensure that statistically significant differences in provider performance are identified. This measure is currently used in the CMS Hospital Inpatient Quality Reporting Program and the Medicare Hospital Readmission Reduction Program. In general, comments were supportive of this measure. Specifically, comments supported updates to the measure, including changing the target age range to 18 and older and adding certain planned readmissions as acceptable exclusions. Some commenters had concerns about changing the reporting period from 1 to 3 years, noting that while this change does improve the stability of the measure, it may be difficult for hospitals to track improvement in a timely manner.

0695: Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI) (American College of Cardiology): Endorsed; Recommended for inclusion in the SDS trial period

Description: *This measure estimates a hospital-level, risk-standardized readmission rate (RSRR) following PCI for Medicare fee-for-service (FFS) patients who are 65 years of age or older. The outcome is defined as unplanned readmission for any cause within 30 days following hospital stays. The measure includes both patients who are admitted to the hospital (inpatients) for their PCI and patients who undergo PCI without being admitted (outpatient or observation stay)***.** ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims, Electronic Clinical Data: Registry*

This measure has been NQF-endorsed since 2011. Since its last endorsement, the developer has made several changes: re-specification of variables to reflect changes in the data collection form that occurred when the CathPCI Registry was updated from V.3 to V.4; a revised strategy to link the CathPCI Registry dataset to the Medicare claims dataset using Social Security numbers; and lastly, a revised strategy for identifying and removing planned readmissions from the outcome. In general, the Committee did not have any issues with the measure specifications and agreed that PCI readmissions are important to measure and report. This measure is currently reported on Hospital Compare. Commenters were generally supportive of this measure. However, several commenters expressed concern around the lack of SDS adjustment and its effects on the measure. Others recommended harmonizing the age range of this measure with measure 0505.

2375: PointRight OnPoint-30 SNF Rehospitalizations (American Health Care Association): Endorsed; Recommended for inclusion in the SDS trial period

Description: *PointRight OnPoint-30 is an all-cause, risk adjusted rehospitalization measure. It provides the rate at which all patients (regardless of payer status or diagnosis) who enter skilled nursing facilities (SNFs) from acute care hospitals and are subsequently rehospitalized during their SNF stay, within 30 days from their admission to the SNF.* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Post Acute/Long Term Care Facility: Nursing Home/Skilled Nursing Facility;* ***Data Source:*** *Electronic Clinical Data*

This measure is a new submission to NQF. The Committee generally agreed that this measure fills an important area of measurement and noted that 13% to 22% of patients were readmitted from skilled nursing facilities, demonstrating a significant performance gap. While the Committee ultimately agreed to recommend the measure for endorsement, the principal concern raised was the lack of exclusions for planned readmissions from this measure. The developer noted that the planned/unplanned variable was not available in the Long Term Care Minimum Data Set (MDS) at the time of measure development, and the benefits of the MDS data used to calculate the measure outweigh its current limitations. For example, the MDS includes patients beyond those with Medicare fee-for-service coverage, and the use of MDS allows for a more rapid turnaround of the data to SNFs. The measure is currently used by AHCA as part of its Quality Improvement Recognition Program. This measure received several comments regarding harmonization with measure 2510; the full Committee discussion on these comments can be found in Appendix A.

2380: Rehospitalization During the First 30 Days of Home Health (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *Percentage of Home Health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their Home Health stay were admitted to an acute care hospital during the 30 days following the start of the Home Health stay;* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Home Health;* ***Data Source:*** *Administrative claims*

This measure is a new submission to NQF. There was agreement among Committee members that there are certain strategies Home Health Agencies (HHA) can undertake to reduce hospital readmissions, including care coordination and a variety of Home Health care-specific, evidence-based strategies. However, several Committee members remained concerned that there may not be a strong process-outcome linkage to support measuring these types of readmissions, recognizing that HHAs may have fewer resources to significantly affect outcomes and prevent readmissions. This measure is indicated for use in combination with measure 2505: Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health. CMS plans to publicly report the measure on Home Health Compare starting in 2015. This measure received several comments regarding harmonization with measure 0171; the full Committee discussion on these comments can be found in Appendix A.

2393: Pediatric All-Condition Readmission Measure (Center of Excellence for Pediatric Quality Measurement): Endorsed; Recommended for inclusion in the SDS trial period

Description: *This measure calculates case-mix-adjusted readmission rates, defined as the percentage of admissions followed by 1 or more readmissions within 30 days, for patients less than 18 years old. The measure covers patients discharged from general acute care hospitals, including children's hospitals.* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims*

This measure is a new measure submission to NQF. The measure was commissioned and developed as part of the AHRQ/CMS Pediatric Quality Measures Program. Measuring and reducing readmissions has become a widespread focus in pediatrics, but to date no readmission measures for use for children and adolescents have been publicly available. The Committee discussed several challenges with this measure, specifically, concerns with its usability for an all-payer data set since the measure was tested using the Medicaid MAX Dataset. Additional concerns were raised on the reliability of the measure as the measure is highly dependent on case volume. During discussion of this measure, the Committee encouraged the developer to consider SDS factors in the measure's risk adjustment in future measure testing and updates. Ultimately, the Committee agreed there is a shortage of quality outcome measures in pediatrics and subsequently agreed that this outcome was important to measure and report. In general, comments received on this measure were supportive. Commenters noted that the developers should conduct additional testing to examine the preventability and relatedness of readmissions in this population. There were also concerns about the adequacy of the measure's risk adjustment methodology. While the measure that was submitted to NQF does not distinguish between related and unrelated admissions, the Committee agreed that the measure is a good start for measuring pediatric readmissions, and was satisfied with the measure's reliability. Committee members encouraged future submission of measures that consider the preventability of readmissions.

2414: Pediatric Lower Respiratory Infection Readmission Measure (Center of Excellence for Pediatric Quality Measurement): Endorsed; Recommended for inclusion in the SDS trial period

Description: *This measure calculates case-mix-adjusted readmission rates, defined as the percentage of admissions followed by 1 or more readmissions within 30 days, following hospitalization for lower respiratory infection (LRI) in patients less than 18 years old. The measure covers patients discharged from general acute care hospitals, including children's hospitals****; Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims*

This measure is a new submission to NQF. The measure was commissioned and developed as part of the AHRQ/CMS Pediatric Quality Measures Program. Currently, there are no readmission measures for use within the pediatric population. Overall, the Committee recommended this measure for endorsement due to its importance to measure and report. Committee members acknowledged that this measure impacts a large number of patients, accounting for a vast number of readmissions, indicating that the measure addresses a high priority area. Similar to measure 2393, Committee members noted that the reliability of the measure was highly dependent on case volume, as it is in the adult population. Since lower respiratory infections are seasonal, the Committee was concerned about the measure's ability to account for this factor. However, the developers explained that this should not be an issue since the

data are collected annually, as opposed to monthly. The Committee recommended this measure for endorsement. Comments were similar to those submitted on measure 2393, with some commenters supporting the measure and others expressing concerns about the measure's lack of consideration for the preventability or relatedness of the readmission, as well as the adequacy of the risk adjustment model. Two commenters also expressed concerns about the exclusion of specialty and non-acute care hospitals, with one arguing that this may unintentionally exclude academic pediatric hospitals from the measure. The developer clarified that the measure includes pediatric academic hospitals only. Non-acute care hospitals (e.g., rehabilitation hospitals) and specialty hospitals (e.g., those focused on care of specific conditions such as orthopedic conditions or congenital anomalies) are excluded.

2502: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities (IRFs) (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *This measure estimates the risk-standardized rate of unplanned, all-cause readmissions for patients (Medicare fee-for-service [FFS] beneficiaries) discharged from an Inpatient Rehabilitation Facility (IRF) who were readmitted to a short-stay acute care hospital or a Long-Term Care Hospital (LTCH), within 30 days of an IRF discharge. The measure is based on data for 24 months of IRF discharges to non-hospital, post-acute levels of care or to the community.;* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Post Acute/Long Term Care Facility: Inpatient Rehabilitation Facility;* ***Data Source:*** *Administrative claims, Other*

This measure is a new submission to NQF. The Committee noted that the process-outcome linkage cited by the developer was based on hospital readmissions not inpatient rehabilitation facility readmissions. The developer explained that the evidence base for readmissions after post-acute care is very limited, noting that this measure will provide some insights into how care transitions are managed for this patient population. The Committee expressed some concerns as to why transfers were being excluded and cautioned that this could lead to unintended consequences, including potential 'gaming' of the measure by providers. Ultimately, the Committee agreed that the measure addresses a high priority area and recommended the measure for endorsement. The Committee received 8 comments on this measure, many of which questioned why the developer did not use data from tools such as the Inpatient Rehabilitation Facility-Patient Assessment Instrument (IRF-PAI). Commenters noted that including detailed data from such an instrument would likely improve the risk adjustment model and would be helpful in characterizing and understanding readmission patterns. Additional comments recommended the exclusion of 1) patients who died as well as 2) planned readmissions to improve the risk adjustment model. Other commenters questioned whether it was appropriate that the measure combines data from IRFs and LTCHs because of differences in patient population, and recommended that the data be stratified by the type of provider. CMS plans to use this measure as part of the Inpatient Rehabilitation Facility Quality Reporting Program.

2503: Hospitalizations per 1,000 Medicare fee-for-service (FFS) Beneficiaries (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *Number of hospital discharges from an acute care hospital (PPS or CAH) per 1,000 FFS Medicare beneficiaries at the state and community level by quarter and year;* ***Measure Type:*** *Outcome;*

Level of Analysis: *Population: Community, Population: State;* ***Setting of Care:*** *Other;* ***Data Source:*** *Administrative claims, Other*

This measure is a new submission to NQF. While Committee members found the rationale to be clear and the measure focus to be a high priority, particularly in terms of Medicare FFS beneficiaries, the Committee was concerned about the lack of risk adjustment in the measure. While the developer noted that the measure is intended to be used only to compare regions/states with themselves over time, the Committee was concerned that the measure may be used to compare regions that may have very different underlying populations. The Committee was unable to reach consensus on overall suitability for endorsement during its in-person meeting due to concerns with usability. As such, the Committee agreed to revisit this measure after the 30-day Member and public comment period. Comments were generally supportive of the measure, noting that these types of measures help providers and communities understand areas in need of improvement. These commenters reiterated that the measure passed all of the must-pass subcriteria and contended that the Committee should recommend the measure for endorsement. Other commenters noted that the measure should be risk-adjusted to appropriately assess differences in community performance. Finally, commenters also encouraged the measure developer to expand the measure to include Medicaid patients. After adjudicating the comments, the Committee took a second vote on this measure and voted to recommend the measure for endorsement.

2504: 30-day Rehospitalizations per 1,000 Medicare fee-for-service (FFS) Beneficiaries (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *Number of rehospitalizations occurring within 30 days of discharge from an acute care hospital (prospective payment system [PPS] or critical access hospital [CAH]) per 1,000 FFS Medicare beneficiaries at the state and community level by quarter and year;* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Population: Community, Population: State;* ***Setting of Care:*** *Other;* ***Data Source:*** *Administrative claims, Other*

This measure is a new submission to NQF. Similar to measure 2503, the Committee expressed concerns over the lack of risk adjustment in the measure and that the measure does not exclude planned readmissions. The developers noted that the measure is only intended to measure communities/states against themselves over time and thus risk adjustment was not necessary. While the Committee recognized the importance of this measure focus and the ability to reduce high costs associated with readmissions among Medicare FFS beneficiaries, the Committee was unable to reach consensus on Overall Suitability for Endorsement. As such, the Committee agreed to revisit this measure after the 30-day Member and public comment period. NQF received several comments similar to those on measure 2503 in support of the measure, noting that these types of measures help providers and communities understand areas in need of improvement. These commenters noted that the measure passed all of the must-pass subcriteria and urged the Committee to recommend the measure for endorsement. After adjudicating the comments, the Committee took a second vote on this measure and voted to recommend the measure for endorsement.

2505: Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *Percentage of Home Health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their Home Health stay used an emergency department but were not admitted to an acute care hospital during the 30 days following the start of the Home Health stay;* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Home Health;* ***Data Source:*** *Administrative claims*

This measure is a new submission to NQF. Several Committee members expressed caution that there is limited evidence on the interventions that Home Health Agencies (HHA) can undertake to influence ED use. Given the heterogeneity of the services provided by HHAs and the variation in performance among HHAs, the Committee generally agreed that there is a plausible rationale that processes can be undertaken by HHAs to improve performance on this measure. The developer noted that HHAs have varied approaches to scheduling follow-up visits, medication reconciliation, and patient education—all factors that influence the likelihood of ED use. Ultimately, the measure was recommended for endorsement; however, Committee members cautioned that HHAs may have limited ability to influence returns to the emergency department. CMS plans to publicly report this measure on Home Health Compare starting in 2015. The Committee received 6 comments on this measure suggesting that the appropriate level of analysis was not clearly indicated as the home health facility and that the metric should not be applied to the emergency department (ED). Commenters requested that the developer make explicit in the specifications that the level of analysis for this measure shall be the home health agency and not the ED. Commenters stressed that appropriate risk adjustment for this measure is critical to prevent unintended consequences stemming from potential disincentives to treat patients who may be at higher risk of rehospitalization and/or ED use. This measure received several comments regarding harmonization with measure 0173; the full Committee discussion on these comments can be found in Appendix A.

2510: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *This measure estimates the risk-standardized rate of all-cause, unplanned, hospital readmissions for patients who have been admitted to a Skilled Nursing Facility (SNF) (Medicare fee-for-service [FFS] beneficiaries) within 30 days of discharge from their prior proximal hospitalization. The prior proximal hospitalization is defined as an admission to an IPPS, CAH, or a psychiatric hospital. The measure is based on data for 12 months of SNF admission;* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Post-Acute/Long-Term Care Facility: Nursing Home/Skilled Nursing Facility;* ***Data Source:*** *Administrative claims, Other*

This measure is a new submission to NQF. The Committee agreed that there is a performance gap, with performance ranging from 11.9% to 41.9%, signaling an opportunity for improvement in the number of readmissions from SNFs to acute care hospitals. There was concern that the evidence presented by the developers related to studies of acute care transfers rather than transfers from SNFs. Ultimately, the Committee recommended the measure for endorsement and noted that the reliability and validity

testing results were generally sufficient. CMS is considering the use of this measure for public reporting. This measure received several comments regarding harmonization with measure 2375 (PointRight OnPoint-30 SNF Rehospitalizations); the full Committee discussion on these comments can be found in Appendix A.

2512: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals (LTCHs) (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *This measure estimates the risk-standardized rate of unplanned, all-cause readmissions for patients (Medicare fee-for-service [FFS] beneficiaries) discharged from a Long-Term Care Hospital (LTCH) who were readmitted to a short-stay, acute care hospital or a Long-Term Care Hospital (LTCH), within 30 days of an LTCH discharge. The measure is based on data for 24 months of LTCH discharges to non-hospital, post-acute levels of care or to the community*. ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Post Acute/Long Term Care Facility: Long Term Acute Care Hospital;* ***Data Source:*** *Administrative claims, Other*

This measure is a new submission to NQF. The Committee raised concern about the validity of the measure as it includes both readmissions to a short-stay, acute care hospital or a Long-Term Care Hospital (LTCH). There was concern that these are two different patient populations are not conceptually aligned. The Committee questioned whether 30 days was the appropriate time frame for this patient population; as one Committee Member noted, LTCH patients are typically sicker and may have fewer short-term episodes. The Committee discussed several unintended consequences during review of this measure. These include potential gaming of the measure by transferring or redirecting patients with higher acuity or greater complexity to avoid penalty and the potential for "double jeopardy" since the same readmission may be counted against both the hospital and the LTCH. The measure passed the following criteria: importance to measure, scientific acceptability, and feasibility. However, the Committee was unable to reach consensus on overall suitability for endorsement due to concerns with usability. As such, the Committee agreed to revisit this measure after the 30-day Member and public comment period. Several commenters were supportive of the measure, noting that the measure addresses an important care transition for a high-priority patient population. One commenter noted that the measure might be best suited for measurement of accountable care delivery systems. Another commenter noted that the measure should take into consideration the unique patient population in a long-term care hospital and not co-mingle the patient population of short-stay, acute care hospitals. After adjudicating the comments, the Committee took a second vote on this measure and again failed to reach consensus. This measure then proceeded through NQF Member vote and CSAC approval, where the CSAC reviewed all of the Standing Committee's deliberations, the Member and public comments, the Member voting results, and feedback from the all-Member call. The CSAC subsequently voted to endorse the measure. CMS plans to publicly report the measure in the Long-Term Care Hospital Quality Reporting Program.

2513: Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) following Vascular Procedures (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *This measure estimates hospital risk-standardized, 30-day unplanned readmission rates following hospital stays with one or more qualifying vascular procedures in patients who are 65 years of age or older and either admitted to the hospital (inpatients) for their vascular procedure(s) or receive their procedure(s) at a hospital but are not admitted as an inpatient (outpatients). Both scenarios are hereafter referred to as "hospital stays."* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims*

This measure is a new submission to NQF. Overall, the Committee agreed that the measure was important to measure and report, as vascular procedures affect large numbers of patients. During the discussion, the Committee expressed concerns regarding the use of this measure for outpatient quality reporting. They noted that care setting was not included in the risk adjustment model, and questioned whether there are differences in risk associated with performing outpatient versus inpatient procedures. The developer noted that care setting would not be an appropriate risk factor to adjust for, as the procedure most often defines the risk, not the setting. The Committee generally accepted the developer's rationale and recommended the measure for endorsement. CMS plans to publicly report the measure in the Inpatient Quality Reporting Program or Outpatient Quality Reporting Program. The Committee reviewed comments raising concerns over the heterogeneity of the patient population covered by this measure. The commenters noted that the measure combines 3 different types of surgical intervention performed by multiple physician specialties and in 2 different settings.

2514: Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate (The Society of Thoracic Surgeons): Endorsed; Recommended for inclusion in the SDS trial period

Description: *Risk-adjusted percentage of Medicare fee-for-service beneficiaries age 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization;* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims, Electronic Clinical Data: Registry*

This measure is a new submission to NQF. Committee members agreed that the measure addresses a high-priority area, noting that coronary artery bypass graft (CABG) surgery is a procedure that adds significant costs to Medicare and is also a high-volume procedure. Members of the Committee questioned the specifications of the measure, specifically the inclusion of patients with Ventricular Assist Devices (VADs). The developers explained that VAD implantations during CABG surgeries are often unplanned and may be impacted by the quality of the CABG operation and perioperative care. The Committee agreed with this rationale, but noted that there is a very high likelihood that high-risk heart failure patients will need a VAD placement following CABG surgery. Consequently, some members of the Committee were concerned that including CABG plus VAD in this particular patient population could lead to a higher risk of penalizing tertiary and quaternary care centers that treat patients with advanced heart failure. The developer noted that the STS database has been modified so that ventricular assist devices are now tracked as to whether it was a planned or unplanned insertion. As such, the developer

plans to update the measure once these data become available. The Committee accepted this plan and recommended the measure for endorsement. This measure received several comments regarding harmonization with measure 2515; the full Committee discussion on these comments can be found in Appendix A.

2515: Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery (Centers for Medicare & Medicaid Services): Endorsed; Recommended for inclusion in the SDS trial period

Description: *The measure estimates a hospital-level, risk-standardized readmission rate (RSRR), defined as unplanned readmission for any cause within 30 days from the date of discharge of the index CABG procedure, for patients 18 years and older discharged from the hospital after undergoing a qualifying isolated CABG procedure. The measure was developed using Medicare fee-for-service (FFS) patients 65 years and older and was tested in all-payer patients 18 years and older. An index admission is the hospitalization for a qualifying isolated CABG procedure considered for the readmission outcome.* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims*

This measure is a new submission to NQF. Committee members agreed that this measure addresses a high-priority area, noting that coronary artery bypass graft (CABG) surgery is a procedure for which Medicare incurs significant costs and is also a high-volume procedure. Data submitted by the developer cited the annual preventable CABG readmissions costs to Medicare as $151 million. Committee members noted that since this measure is based on claims data, it is highly feasible. While the Committee was concerned about how this measure would distinguish between low and high performers, they found the measure to be comprehensive enough for public reporting and recommended it for endorsement. CMS is considering the use of this measure for public reporting. This measure received several comments regarding harmonization with measure 2514; the full Committee discussion on these comments can be found in Appendix A.

2539: Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy (Centers for Medicare & Medicaid Services): Endorsed; Not Recommended for inclusion in the SDS trial period

Description: *Rate of risk-standardized, all-cause, unplanned hospital visits within 7 days of an outpatient colonoscopy among Medicare fee-for-service (FFS) patients age 65 and older;* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Ambulatory Care: Ambulatory Surgery Center (ASC), Ambulatory Care: Clinician Office/Clinic, Other;* ***Data Source:*** *Administrative claims*

This measure is a new submission to NQF. During the discussion, the Committee questioned why polypectomy was included in the risk adjustment model, since polypectomy could cause a readmission, and inclusion in the model would negate that effect. As such, the Committee recommended that this measure should be used in conjunction with other measures of polypectomy rates or adenoma detection rates. Ultimately, the Committee agreed that the measure was usable for quality improvement and accountability purposes. CMS plans to publicly report the measure in the Hospital Outpatient Quality Reporting Program and/or Ambulatory Surgery Center Quality Reporting Program. Commenters were supportive of increased focus on the quality of colonoscopy and the development of

this measure. Concern was raised that the planned readmission exclusions and risk adjustment variables included in this measure are not sufficient for the clinical condition and may result in reluctance of endoscopists to scope patients with significant comorbidities.

An appeal was received on this measure. The CSAC and NQF Executive Committee reviewed the appeal and agreed to uphold the endorsement decision. More information on the appeal is available in Appendix A.

Measure Under Review

2496: Standardized Readmission Ratio (SRR) for dialysis facilities (Centers for Medicare & Medicaid Services): Under Review

Description: *The Standardized Readmission Ratio (SRR) is defined as the ratio of the number of index discharges from acute care hospitals that resulted in an unplanned readmission to an acute care hospital within 30 days of discharge for Medicare-covered dialysis patients treated at a particular dialysis facility to the number of readmissions that would be expected given the discharging hospitals and the characteristics of the patients as well as the national norm for dialysis facilities. Note that in this document, "hospital" always refers to acute care hospital.* ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Dialysis Facility;* ***Data Source:*** *Administrative claims*

This measure is a new submission to NQF. There was strong agreement that this is a high impact area of measurement, and there is opportunity for improvement with the overall readmissions rate at approximately 30% percent and the readmissions rate for hemodialysis patients at approximately 36%. A few members of the Committee were concerned that the dialysis unit is not the appropriate accountable entity for this measure, noting that dialysis units can not compel Nephrologists to see patients immediately after acute care discharges. Others on the Committee argued that, while the locus of accountability may not be the dialysis facility at present, this measure and improvement efforts tied to the measure might be the type of impetus needed to improve care for this vulnerable population. These members also noted that with patients spending 9 to 12 hours in these units during the week, more could be done to improve care for these patients. During the in-person discussion, the measure passed each of the criteria – importance to measure, scientific acceptability, usability, and feasibility. However, the Committee was unable to reach consensus on Overall Suitability for Endorsement. As such, the Committee agreed to revisit this measure after the 30-day Member and public comment period. There was one supportive comment, arguing that this measure addresses an important high priority for measurement with sufficient room for improvement in the care processes of dialysis units. The remaining comments raised concern about the measure specifications, specifically the numerator and denominator, as well as the attribution, temporal logic, risk adjustment, testing, and intended use (see Appendix A). After adjudicating the comments, the Committee took a second vote on this measure and again did not reach consensus. This measure then proceeded through NQF Member vote and CSAC approval, where the CSAC reviewed all of the Standing Committee's deliberations, particularly the supportive votes at the in-person meeting on the individual subcriteria, the Member and public comments, the Member voting results, and feedback from the all-Member call. While acknowledging the various concerns raised by stakeholders on this measure, the CSAC endorsed measure 2496 and generally agreed that when this measure is used in conjunction with NQF-endorsed measure 1463:

Standardized Hospitalization Ratio for Admissions, dialysis facilities and hospitals would be incentivized to work together to coordinate care and reduce avoidable readmissions. CMS plans to use this measure for public reporting.

One appeal was received on this measure. The NQF Board Executive Committee reviewed the appeal and requested that NQF bring together the appellant and the measure developer to explore opportunities for a shared path forward. NQF will engage in further consensus building regarding this measure and the measure will come back to the Executive Committee when those efforts are complete.

NQF will submit an addendum to this report for measure 2496 when the Executive Committee has reviewed the consensus building efforts and makes a final endorsement decision.

Measure Not Recommended

0327: Risk-Adjusted Average Length of Inpatient Hospital Stay (Premier, Inc): Not Endorsed

Description: *The average (geometric mean) hospital length of stay in days relative to the expected geometric mean length of stay of any well defined population of inpatients over a specified time interval****;*** ***Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility, Behavioral Health/Psychiatric : Inpatient, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility, Post Acute/Long Term Care Facility : Long Term Acute Care Hospital, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility;* ***Data Source:*** *Administrative claims*

This measure has been NQF-endorsed since 2008. The Committee noted that this measure represents an important area of measurement and there continues to be a performance gap and large variation in hospital performance. Members of the Committee were concerned that the limited information presented by the developer on validity and reliability testing made the assessment of scientific acceptability difficult. Others noted that the measure has been endorsed for some time with broad use. The Committee did express caution that the risk adjustment model incorporates sociodemographic variables; however, some members agreed that this approach was appropriate for this measure focus. Ultimately, the Committee failed to reach consensus on scientific acceptability and agreed to revisit overall suitability for endorsement after the 30-day Member and public comment period. Commenters noted that the measure as specified can be applied to inpatient rehabilitation facilities (IRFs), which they argued should be excluded from this measure due to the large variation in length of stay at these facilities. In addition, commenters suggested that there should be a method to adjust for outliers. Several commenters believed that 0327 should be considered as an efficiency measure rather than a true quality measure, and that it should be paired with quality measures to avoid unintended consequences, such as reduction of length of stay at the expense of sufficient and appropriate care. Some commenters also suggested that the measure has limited usability given its lack of specificity, and that the measure should enable providers to “drill down” to assess length of stay by diagnosis-related group. After adjudicating the comments, the Committee took a second vote on this measure and again did not reach consensus. The CSAC reviewed all of the Standing Committee’s deliberations, the Member and public comments, the Member voting results, and feedback from the all-Member call. The CSAC subsequently voted to remove endorsement from the measure.

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Appendix A: Details of Measure Evaluation

Measures Endorsed

Measure Not Endorsed

Measure Under Review

Measures Withdrawn from Consideration

Measures Endorsed

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

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

Submission | Specifications

Description: The measure estimates a hospital-level 30-day risk-standardized readmission rate (RSRR) for patients discharged from the hospital with a principal diagnosis of acute myocardial infarction (AMI). The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission. A specified set of planned readmissions do not count as readmissions. The target population is patients aged 18 years and older. CMS annually reports the measure for individuals who are 65 years and older and are either Medicare fee-for-service (FFS) beneficiaries hospitalized in non-federal hospitals or patients hospitalized in Department of Veterans Affairs (VA) facilities.

Numerator Statement: The outcome for this measure is 30-day readmission. We define readmission as an inpatient admission for any cause, with the exception of certain planned readmissions, within 30 days from the date of discharge from the index AMI admission. If a patient has more than one unplanned admission within 30 days of 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, then no readmission is counted, regardless of whether a subsequent unplanned readmission takes place. This is because it is not clear whether such readmissions are appropriately attributed to the original index admission or the intervening planned readmission.

Denominator Statement: The target population for this measure is patients aged 18 years and older hospitalized for AMI. The measure is currently publicly reported by CMS for those 65 years and older who are either Medicare FFS beneficiaries admitted to non-federal hospitals or patients admitted to VA hospitals.

The measure includes admissions for patients discharged from the hospital with a principal diagnosis of AMI and with a complete claims history for the 12 months prior to admission.

As noted above, this measure can also be used for an all-payer population aged 18 years and older. We have explicitly tested the measure in both patients aged 18+ years and those aged 65+ years.

Exclusions: For all cohorts, the measure excludes admissions for patients:

-discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);

-admitted and then discharged on the same day (because it is unlikely these are clinically significant AMIs);

-admitted with AMI within 30 days of discharge from a qualifying index admission (Admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as a readmission and an index admission. The next eligible admission after the 30-day time period following an index admission will be considered another index admission.)

For Medicare FFS patients, the measure additionally excludes admissions for patients:

-without at least 30 days post-discharge enrollment in FFS Medicare (because the 30-day readmission outcome cannot be assessed in this group).

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims

Measure Steward: Centers for Medicare & Medicaid

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-19; N-0** 1b. Performance Gap: **H-9**; **M-10**; **L-0**; **I-0;** 1c. Impact: **H-14**; **M-5**; **L-0**; **I-0**

Rationale:

- The Committee agreed that measuring AMI readmissions is a high priority. Members noted that AMI is one of the most common principal hospital discharge diagnosis among Medicare beneficiaries, and was the sixth most expensive condition billed to Medicare in 2008.
- The Committee reviewed the extensive body of evidence provided by the developer in the measure evidence forms and agreed there is a demonstrable relationship between hospital quality initiatives and reduction of readmissions.
- The Committee agreed that there was still an opportunity for improvement in this measure. The developer noted that since implementation of this measure, the developers have seen national declines in AMI readmissions over a 3-year period. The developers attribute the decline to improvements around quality of care for AMI patients.

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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: **H-3**; **M-16**; **L-0**; **I-0** 2b. Validity: **H-4**; **M-15**; **L-0**; **I-0**

Rationale:

- The Committee noted that the interclass correlation coefficient (ICC) provided by the developer (0.38, interpreted as “fair agreement”) was comparable to other outcome measures of quality. The developer noted that the split sample, which was used to conduct reliability testing, contained 2-years of data, rather than 3-years (as the measure is specified). When extrapolating the data to 3-years the ICC increased to 0.48 that can be interpreted as “moderate agreement”.
- The Committee agreed that the testing results provided by the developer demonstrated the measure had good reliability, showing a correlation of 0.98 between the medical record model and the administrative claims model.
- The Committee agreed that the model indicated good discrimination, and further discussed performance of the model when used in an all-payer data set, noting that the C statistic was slightly higher at 0.67, when compared to the Medicare Population. The developer explained that the models typically perform better in all-payer data sets. The developer hypothesized that since younger populations generally have less comorbidity, the covariates may be more powerful predictors of severity when compared to the Medicare population.

3. Feasibility: H-18; M-1; 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:

- All data elements are in defined fields in electronic claims and these data are routinely collected as part of the billing process.

4. Use and Usability: H-4; M-14; L-0; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- This measure is currently in use for a number of federal programs including the Hospital Inpatient Quality Reporting Program and the Hospital Readmissions Reduction Program.
- The Committee agreed that while there has been improvement nationally in AMI Readmissions, there is still potential for unintended consequences when the measure is tied to a payment program. The Committee suggested that public reporting and payment programs should include confidence interval estimates to ensure statistically significant differences in performance are used to identify quality differences.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-17**; **N-2**

6. Member and Public Comment

- Commenters were generally supportive of this measure and the updates to the specifications, including the removal of certain planned readmissions and adjustment of the target population to capture patients 18 years and older.
- However, some commenters suggested that while changing the reporting period from one to three years does improve the stability of the measure, the increased lag time in obtaining performance results may reduce hospitals' ability to detect the impact of newly-implemented processes of care for readmissions in a timely manner.
- Other commenters noted that this measure does not capture patients who are admitted for another clinical condition but have an in-hospital AMI, expressing concern that this could result in the exclusion of patients who have a post-operative AMI.
- Two comments noted that CMS recently signaled its intention to change the algorithm for identifying planned readmissions. Commenters argued that this information should have been included as part of the measure submission reviewed by the Standing Committee.
- Finally, two commenters suggested that the all-cause approach to measuring readmissions limits this measure's ability to accurately identify differences in performance that are related to the quality of cardiac care.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-14; N-0; A-3

Decision: Approved for continued endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for continued endorsement

0695 Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI)

Submission | Specifications

Description: This measure estimates a hospital-level risk-standardized readmission rate (RSRR) following PCI for Medicare Fee-for-Service (FFS) patients who are 65 years of age or older. The outcome is defined as unplanned readmission for any cause within 30 days following hospital stays. The measure includes both patients who are admitted to the hospital (inpatients) for their PCI and patients who undergo PCI without being admitted (outpatient or observation stay). A specified set of planned readmissions do not count as readmissions. The measure uses clinical data available in the National Cardiovascular Disease Registry (NCDR) CathPCI Registry for risk adjustment and Medicare claims to identify readmissions. Additionally, the measure uses direct patient identifiers including Social Security Number (SSN) and date of birth to link the datasets.

A hospital stay is when a patient is admitted to the hospital (inpatient) for PCI or receives a procedure at a hospital, but is not admitted as an inpatient (outpatient).

The primary update to this measure since it was last reviewed by the National Quality Forum (NQF) is a more comprehensive specification of planned readmission. Additionally, the updated measure includes a re-specification of variables to reflect changes in the data collection form that occurred when the CathPCI Registry was updated from Version 3.04 (Version 3) to Version 4.3.1 (Version 4). Finally, the measure has been updated to use direct identifiers including SSN and date of birth to link the CathPCI Registry data with corresponding administrative claims data. These updates are described within this application and in the accompanying report re-specifying Hospital 30-Day Readmission Following Percutaneous Coronary Intervention Measure (see Appendix attachment).

Numerator Statement: The outcome for this measure is 30-day all-cause readmission. We define readmission as an acute care inpatient hospital admission for any cause, with the exception of certain planned readmissions, within 30 days from the discharge date of the index PCI hospitalization or PCI outpatient claim end date (hereafter referred to as discharge). If a patient has more than one unplanned admission within 30 days of 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, then no readmission is counted, regardless of whether a subsequent unplanned readmission takes place. We use this approach because it would potentially be unfair to attribute an unplanned readmission that follows a planned readmission back to the care received during the initial index admission. For more details on how planned readmissions were identified and removed from the outcome, please refer to the Specifications Report in the attached Appendix.

Denominator Statement: The target population for this includes hospital stays for patients who are 65 years of age or older who receive a PCI and who have matching records in the CathPCI Registry and Medicare claims.

Exclusions: The following exclusions were applied to data during the merging of NCDR CathPCI and Medicare datasets:

1. Patients younger than 65 years of age.

Rationale: Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of PCI patients. Additionally, patients younger than 65 in the NCDR CathPCI dataset will not have corresponding data in the Medicare claims dataset to obtain the readmission outcome.

2. Patient stays with duplicate fields (NCDR CathPCI and Medicare datasets).

Rationale: Two or more patient stays that have identical information for SSN, admission date, discharge date, and hospital MPN are excluded to avoid making matching errors upon merging of the two datasets.

3. Unmatched patient stays.

Rationale: The measure requires information from both the CathPCI Registry and corresponding Medicare claims data. Accordingly, the measure cannot be applied to patient stays that are not matched in both datasets.

Exclusions applied to the linked dataset:

1. Patients not enrolled in Medicare FFS at the start of the episode of care.

Rationale: Readmission data are currently available only for Medicare FFS patients.

2. Not the first claim in the same claim bundle.

Rationale: Multiple claims from an individual hospital can be bundled together. To ensure that the selected PCI is the index PCI, we exclude those PCI procedures that were not the first claim in a specific bundle. Inclusion of additional claims could lead to double counting of an index PCI procedure.

3. Instances when PCI is performed more than 10 days following admission.

Rationale: Patients who undergo PCI late into their hospitalization represent an unusual clinical situation in which it is less likely that the care delivered at the time of or following the PCI would be reasonably assumed to be associated with subsequent risk of readmission.

4. Transfers out.

Rationale: Patient stays in which the patient received a PCI and was then transferred to another hospital are excluded because the hospital that performed the PCI procedure does not provide discharge care and cannot fairly be held responsible for their outcomes following discharge.

5. In-hospital deaths (the patient dies in the hospital).

Rationale: Subsequent admissions (readmissions) are not possible.

6. Discharges Against Medical Advice (AMA).

Rationale: Physicians and hospitals do not have the opportunity to deliver the highest quality care.

7. PCI in which 30-day follow-up is not available.

Rationale: Patients who are not enrolled for 30 days in fee-for-service Medicare following their hospital stay are excluded because there is not adequate follow-up data to assess readmissions.

8. Admissions with a PCI occurring within 30-days of a prior PCI already included in the cohort.

Rationale: We do not want to count the same admission as both an index admission and an outcome.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims, Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-20**; **N-0** 1b. Performance Gap: **H-17**; **M-4**; **L-0**; **I-0;** 1c. Impact: **H-18**; **M-3**; **L-0**; **I-0**

Rationale:

- Committee members agreed that the rationale provided by the developer supported a relationship between the outcome and at least one process, noting that numerous studies have demonstrated that differences in both PCI technique and subsequent hospital care affect patient outcomes following PCI.
- The Committee noted that with an interquartile performance range of 10.9 percent to 12.6 percent, there is an opportunity for improvement.
- The Committee agreed this is a high impact measure that affects a large number of patients since it is one of the most common cardiac procedures in the country. In 2005, nearly 1.2 million PCIs were performed in the US with approximately one in five resulting in a readmission.

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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: **H-5**; **M-16**; **L-0**; **I-0** 2b. Validity: **H-2**; **M-18**; **L-0**; **I-0**

Rationale:

- The Committee discussed the fact that the measure is based on clinical data, which is audited using annual onsite chart reviews and data abstraction.
- In terms of reliability, the measure developers used as a test-retest approach, similar to that of measure 0505. The interclass correlation coefficient (ICC) in this measure is 0.37, which is interpreted as “fair agreement”.
- The Committee discussed the validity of the measure and specifically the hierarchical logistical regression model which had a C-statistic of 0.66. Members agreed that this value was generally good for measures examining readmissions. The model discrimination was similar in both development and validation sets.
- The Committee noted missing data for ejection fraction in approximately 29 percent of observations as a threat to validity. The committee considered this to be a high number of missing data, and noted that the missing data was imputed into the median of corresponding groups, which some agreed was not ideal.

- The developer explained that patients without information on ejection fraction before a PCI are typically those that are treated in an emergency case. Given this, the missing information is not random and generally represents highly comorbid patients. To handle this concern, the developer used a dummy variable for missing ejection fraction to account the severity of these patients. The Committee was generally comfortable with this response by the developer.

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3. Feasibility: H-6; M-13; L-3; I-0

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

Rationale:

- The Committee noted that the measure is based on a hybrid of clinical and administrative electronic claims and it is feasible. The administrative data is to identify which patients are readmitted and the clinical data is based on the CathPCI registry.

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4. Use and Usability: H-3; M-14; L-3; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- Committee members noted that the measure is reported hospitals participating in ACC Voluntary Public Reporting Program as well as Hospital Compare.

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5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-20**; **N-0**

6. Member and Public Comment

- Comments were generally supportive of this measure, particularly regarding the inclusion of a planned readmissions algorithm.
- Some commenters noted that measure 0505 applies to patients aged 18 and older, whereas this measure applies only to patients aged 65 and older, suggesting that the age ranges of these measures should be harmonized.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-14; N-0; A-3

Decision: Approved for continued endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for continued endorsement

2375 PointRight OnPoint-30 SNF Rehospitalizations

Submission | Specifications

Description: PointRight OnPoint-30 is an all-cause, risk adjusted rehospitalization measure. It provides the rate at which all patients (regardless of payer status or diagnosis) who enter skilled nursing facilities (SNFs) from acute hospitals and are subsequently rehospitalized during their SNF stay, within 30 days from their admission to the SNF.

Numerator Statement: The numerator is the number of patients sent back to any acute care hospital (excluding emergency room only visits) during their SNF stay within 30 days from a SNF admission, as indicated on the MDS 3.0 discharge assessment during the 12 month measurement period.

Denominator Statement: The denominator is the number of all admissions, regardless of payer status and diagnosis, with an MDS 3.0 admission assessment to a SNF from an acute hospital during the target rolling 12 month period.

Exclusions: The denominator has 2 different exclusions: individual level and provider level. At the individual level the exclusion is related to incomplete assessments. At the provider level the exclusion is related to the amount of data necessary to calculate the measure that is missing. Payer status and clinical conditions are not used for any exclusion.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

Type of Measure: Outcome

Data Source: Electronic Clinical Data

Measure Steward: American Health Care Association

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-23; N-1**; 1b. Performance Gap: **H-15**; **M-9**; **L-0**; **I-0;** 1c. Impact: **H-19**; **M-4**; **L-0**; **I-0**

Rationale:

- The Committee noted that there is a significant performance gap across providers, noting data presented by the developer that shows performance variation from a low of 13 percent to a high of 22 percent readmissions across states.
- The Committee also noted that there are processes that skilled nursing facilities can undertake that would improve performance on this measure.

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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: **H-4**; **M-13**; **L-5**; **I-2** 2b. Validity: **H-1**; **M-17**; **L-6**; **I-0**

Rationale:

- Members of the Committee expressed concern that the measure does not exclude planned readmissions from the measure. Given the lack of planned readmission exclusions, some argued that the measure may not be actionable at the facility level or allow for appropriate accountability.
    - The developer responded to these concerns by noting that the measure is developed using data from the minimum data set (MDS). At the time of the development of this measure, this dataset did not collect information on whether a readmission was planned or unplanned. Subsequently, CMS has added this variable to the MDS dataset; however, it is currently missing 82 percent of the time.
    - The developer also noted this measure is stronger with the use of the MDS data versus claims data since a measure specified using claims would only be applicable to the Medicare fee-for-service population. The developer argued that this dataset allows for a more comprehensive analysis of readmissions from SNFs.
    - The developer also noted that the strength in not using claims is that there is quicker turn-around in providing results back to SNFs.
- Committee members agreed that having this measure specified to include more than Medicare fee-for-service was beneficial and discussed whether the measure could be stratified based on payer class. The developer clarified that MDS does not have reliable data for payer class.

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3. Feasibility: H-14; M-8; L-2; I-0

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

Rationale:

- The Committee agreed that the data elements are routinely generated and used during care delivery and noted, that all data elements are defined fields in an electronic clinical data ((e.g., clinical registry, nursing home MDS, home health OASIS)

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4. Use and Usability: H-5; M-14; L-5; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- Overall, the Committee agreed that this measure is usable but did note that the measure may be more susceptible to gaming through increased coding intensity and improvement.
- This measure is currently in use by the American Health Care Association (AHCA) as part of their Quality Improvement Recognition Program, LTC Trend Tracker, and AHCA Quality Initiative.

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5. Related and Competing Measures

- This measure directly competes with measure 2510: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM).
- The Committee discussed measure 2510 and measure 2375 and noted the principal differences between these measures were their data sources, their adjustment for planned readmissions, their treatment of readmissions that may occur once the patient is discharged from the SNF, and identification of patient characteristics that impact risk adjustment.

- Measure 2510 focuses on coordination of care within SNFs by measuring the number of SNF patients readmitted to a hospital within 30 days of a prior acute-care hospitalization. The measure includes readmissions for patients who have been discharged by the SNF, as long as those readmissions occur within 30 days of the prior hospitalization. This measure is specified to use administrative claims data and is limited to Medicare fee-for-service patients. During the discussion, Committee members noted that measure 2510's approach to capturing readmissions after SNF discharge is consistent with other CMS readmission measures, and can be easily implemented since the measure is applicable in nearly all facilities. The Committee discussed CMS's approach for identifying readmissions that are likely to have been planned, and agreed that these readmissions should be removed from the numerator and the denominator.
- Measure 2375 takes a slightly different approach to assessing facility care by measuring only readmissions that occur during a SNF stay. The measure is specified to use the Minimum Data Set (MDS), and therefore can assess readmissions for all patients in SNFs, including Medicare Advantage patients as well as those covered by Medicaid and commercial insurance. As such, measure 2375 provides more timely performance feedback and may be well-suited for internal quality improvement. During the discussion, Committee members noted that measure 2375 makes use of 33 different clinical variables, including demographic, comorbidity, and treatment characteristics as part of the risk-adjustment model.
- The Developers argued that since these measures use distinct data sources with differing strengths and weaknesses, harmonization is not meaningfully possible. However, the Developers did identify one area for potential harmonization, the minimum volume for reporting the measure. At present, measure 2375 does not report rates for any facility with fewer than 30 qualifying discharges. In contrast, measure 2510 does not report rates for any facility with fewer than 25 qualifying discharges.
- During the 30-day post-meeting Member and public comment period, commenters reiterated that measure 2375 lacked adjustment for planned readmissions, and while measure 2510 does exclude some planned readmissions, commenters noted the measure lacks robust risk adjustment since it relies on administrative claims to capture patient severity. Commenters suggested harmonizing these two measures into one measure that combines data from both the Minimum Data Set (MDS) and claims. These commenters suggested that MDS data in measure 2375 may enable a more robust risk adjustment methodology, but argued that the type of "planned readmission" algorithm used by CMS could strengthen the measure. One commenter also encouraged CMS to exclude acute psychiatric inpatient stays from the index admission.
- Overall the Committee agreed with the developer's assessment that it was unlikely full harmonization across both measures could be obtained, and that the two measures were capable of supporting multiple quality needs when operating in tandem, serving complementary purposes. However, some Members suggested that measure 2375 should consider eliminating planned readmissions, similar to measure 2510, and expressed concern that endorsing multiple measures could be confusing for consumers and patients.
- The Committee voted to recommend both measures for endorsement (Yes-11, No-7), noting that the measures were capable of supporting multiple quality needs when operating in tandem and serve complementary purposes.

Standing Committee Recommendation for Endorsement: **Y-22**; **N-2**

6. Member and Public Comment

- Commenters noted that measure 2375 lacked adjustment for planned readmissions, an issue discussed by the Committee. One comment urged the Committee to reconsider the decision to endorse two similar measures, 2375 and 2510. They suggested harmonizing these two measures into one hybrid measure combining data from both the Minimum Data Set (MDS) and claims. These commenters suggested that MDS data in measure 2375 may enable a more robust risk adjustment methodology, but argued that the measure could be strengthened by the type of "planned readmission" algorithm used by CMS. One commenter also encouraged CMS to exclude acute psychiatric inpatient stays from the index admission.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2380 Rehospitalization During the First 30 Days of Home Health

Submission | Specifications

Description: Percentage of Home Health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their Home Health stay were admitted to an acute care hospital during the 30 days following the start of the Home Health stay.

Numerator Statement: Number of Home Health stays for patients who have a Medicare claim for an admission to an acute care hospital in the 30 days following the start of the Home Health stay.

Denominator Statement: Number of Home Health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the Home Health stay. A Home Health stay is a sequence of Home Health payment episodes separated from other Home Health payment episodes by at least 60 days.

Exclusions: The measure denominator excludes several types of Home Health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following Home Health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another Home Health agency within a Home Health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of Home Health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of Home Health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Home Health

Type of Measure: Outcome

Data Source: Administrative claims

Measure Steward: Centers for Medicare and Medicaid Services

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-18; N-4**; 1b. Performance Gap: **H-7**; **M-13**; **L-0**; **I-2**; 1c. Impact: **H-8**; **M-14**; **L-0**; **I-0**

Rationale:

- The Committee noted that there is opportunity for improvement, with 13.3 percent of Home Health patients experiencing an unplanned readmission in the first 30 days of care.
- There was agreement among Committee members that certain strategies can be implemented in the home health setting to reduce readmissions, including care coordination, physician follow-up, hospital discharge planning, and a variety of Home Health-specific evidence-based strategies.

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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: **H-2**; **M-17**; **L-3**; **I-0** 2b. Validity: **H-0**; **M-18**; **L-4**; **I-0**

Rationale:

- During the Committee workgroup call, the Committee requested additional information to justify the exclusion of acute care hospitalizations occurring within five days of the start of a Home Health stay. The developer provided additional analyses in which they outlined the rationale for this exclusion:
    - The five-day timeframe enables a substantial proportion of Home Health patients to be captured in the measure denominator—the developer noted that the measure as specified (with a 5-day delay) captures 90 percent of patients who begin Home Health within 30 days of hospital discharge. Unlike post-acute care in many other settings, the

patient returns to their home after hospital discharge, resulting in some gap between hospital discharge and the initial visit from a HHA.
    - The Medicare Conditions of Participation for HHAs require Home Health care to begin within 48 hours of hospital discharge or on the physician-ordered start of care date (which is usually within 1 to 3 calendar days of hospital discharge).
- The developer provided split-half reliability testing, which assesses the consistency with which measured entities are assigned performance scores. The testing results showed that 80 percent of the agencies were grouped into the same performance category, demonstrating a "high level of internal consistency." The Committee voiced concern that there was no additional reliability statistics provided, specifically an intraclass correlation coefficient (ICC) to determine reliability.
    - This issue was also discussed during the workgroup call, and the developer provided additional explanation to the Committee at the in-person meeting, noting that an ICC would not be appropriate for assessing measure reliability since CMS intends to publicly report this measure using a categorical reporting method. This categorical reporting method does not attempt to distinguish between high and low performing agencies by comparing agencies' risk-adjusted rates; rather, each Home Health agency is classified into a performance category based on each Home Health agency's expected and observed rates.
- The mean differences in performance were consistently positive, ranging from 3.6 to 5.6 percent; however, the developer did not provide any additional description of how the correlations demonstrate validity of the performance score.

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3. Feasibility: H-10; M-10; L-1; I-1

(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 required data elements are routinely generated and used during care delivery and all data elements are in defined fields in electronic claims.

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4. Use and Usability: H-2; M-15; L-4; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee noted that CMS plans to publicly report this measure on Home Health Compare starting in 2015. This plan was finalized in the CMS Home Health Prospective Payment System final rule for CY2014.
    - This measure is intended to be used in combination with measure 2505: Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health. However, the Committee noted that there was limited explanation as to how they would be used in combination.

5. Related and Competing Measures

- This measure competes directly with measure 0171 Acute Care Hospitalization—Percentage of Home Health stays in which patients were admitted to an acute care hospital during the 60 days following the start of the Home Health stay.
- The measure specifications for measure 0171 and measure 2380 were harmonized along several measure dimensions, including Data source, Population, Denominator Exclusions, Numerator, and Risk Adjustment methodology.
- The developers of this measure contended that there are differences that justify having two separate measures. Whereas measure 0171 evaluates patient admission to an acute care hospital during the 60 days following the start of a Home Health stay (regardless of whether or not this stay was preceded by an inpatient hospitalization), measure 2380 evaluates readmission to the hospital within 30 days after starting Home Health care for patients who were recently discharged from an inpatient setting. Home Health agencies can track their performance on both utilization measures to gain an accurate picture of how much acute care is being used by their patients. Additionally, measure 2380 is an outcome measure that assesses the efficacy of care coordination as patients transition from inpatient acute care to outpatient Home Health services. In contrast, measure 0171 assesses the efficacy of clinical care provided to all patients, as indicated by rates of hospitalization after entry into Home Health services.
- These are distinct domains of care under the CMS Quality Strategy and reflect related but distinct care quality concepts. This is not the only setting in which CMS has developed paired readmission and hospitalization measures. Such measures exist for end-stage renal disease (ESRD), and such pairings are being considered in other care settings as well.
- According to NQF guidance, since measure 0171 was not evaluated in this project the Committee will not make a recommendation with regards to these 2 competing measures. A recommendation may be made at a later date.

Standing Committee Recommendation for Endorsement: **Y-16**; **N-6**

6. Member and Public Comment

- Commenters expressed concerns with the Committee's recommendation of measure 2380, citing the measure's similarity to the already-endorsed measure 0171. Commenters noted that these measures have different time windows, urging the Committee to consider whether one time window is more clinically meaningful than the other and requesting that CMS synthesize the two measures into one.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2393 Pediatric All-Condition Readmission Measure

Submission | Specifications

Description: This measure calculates case-mix-adjusted readmission rates, defined as the percentage of admissions followed by 1 or more readmissions within 30 days, for patients less than 18 years old. The measure covers patients discharged from general acute care hospitals, including children's hospitals.

Numerator Statement: The numerator consists of hospitalizations at general acute care hospitals for patients less than 18 years old that are followed by 1 or more readmissions to general acute care hospitals within 30 days. Readmissions are excluded from the numerator if the readmission was for a planned procedure or for chemotherapy.

The measure outcome is a readmission rate, defined as the percentage of index admissions with 1 or more readmissions within 30 days. The readmission rate, unadjusted for case-mix, is calculated as follows:

number of index admissions with 1 or more readmissions within 30 days/

total number of index admissions

Denominator Statement: Hospitalizations at general acute care hospitals for patients less than 18 years old.

Exclusions: EXCLUSIONS FROM THE NUMERATOR (READMISSIONS) AND DENOMINATOR (INDEX HOSPITALIZATIONS)

We exclude certain hospitalizations from the measure entirely (i.e., from the numerator and denominator) based on clinical criteria or for issues of data completeness or quality that could prevent assessment of eligibility for the measure cohort or compromise the accuracy of readmission rates. Hospitalizations are excluded from the measure if they meet any of the following criteria:

1. The hospitalization was at a specialty or non-acute care hospital.

Rationale: The focus of the measure is admissions to hospitals that provide general pediatric acute care. Records for admissions to specialty and non-acute care hospitals are therefore omitted from the dataset. Because hospital type cannot be determined for records with missing data in the hospital type variable, these records are also removed from the dataset.

2. Records for the hospitalization contain incomplete data for variables needed to assess eligibility for the measure or calculate readmission rates, including hospital type, patient identifier, admission date, discharge date, disposition status, date of birth, primary ICD-9 or principal ICD-10 diagnosis codes, or gender.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records. Hospital identifiers are needed to determine the hospital at which index admissions occurred. The disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for Membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date. Because gender is 1 of the variables used for case-mix adjustment, episodes of care with missing or inconsistent gender cannot be evaluated in the measure.

3. Records for the hospitalization contain data of questionable quality for calculating readmission rates, including

a. Inconsistent date of birth across records for a patient.

b. Discharge date prior to admission date.

c. Admission or discharge date prior to date of birth.

d. Admission date after a disposition status of death during a prior hospitalization.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service. A valid disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for Membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date.

4. Codes other than ICD-9 or ICD-10 codes are used for the primary procedure.

Rationale: ICD-9 or ICD-10 procedure codes are necessary for applying clinical exclusions.

5. The patient was older than 18 years, 29 days at the time of admission.

Rationale: This age exclusion limits the population to pediatric patients and prevents inclusion of records that overlap with adult readmission measures. Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the focus of the measure is pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge. Because the subsequent observation period for readmissions is 30 days, a patient's hospitalization is ineligible for inclusion in the measure as a readmission if the patient was older than 18 years, 29 days at the start of the readmission.

6. The hospitalization was for obstetric care, including labor and delivery.

Rationale: Hospitalizations for obstetric conditions are excluded because care related to pregnancy does not generally fall within the purview of pediatric providers.

7. The primary ICD-9 or principal ICD-10 diagnosis code was for a mental health condition.

Rationale: Hospitalizations for mental health conditions are excluded because we found that hospitals with high readmission rates for mental health hospitalizations tend to have low readmission rates for hospitalizations for other conditions, and vice versa. We describe this analysis in detail in Section 2b.3 of the Measure Testing Submission Form.

8. The hospitalization was for birth of a healthy newborn.

Rationale: Hospitalizations for birth of healthy newborns are excluded because these hospitalizations, unlike all others, are not for evaluation and management of disease.

EXCLUSIONS FROM THE DENOMINATOR ONLY (INDEX HOSPITALIZATIONS ONLY)

We also apply further exclusions to the denominator only (i.e., these hospitalizations are excluded from index hospitalizations but could still meet criteria for readmissions). Hospitalizations are excluded from the denominator only if they meet any of the following criteria:

9. The patient was 18 years old or older at the time of discharge.

Rationale: Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the measure covers pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge.

10. The discharge disposition was death.

Rationale: A patient must be discharged alive from an index admission in order to be readmitted. Therefore, any record with a discharge disposition of death cannot serve as an index admission.

11. The discharge disposition was leaving the hospital against medical advice.

Rationale: A discharge disposition of leaving against medical advice indicates that a patient left care before the hospital determined that the patient was ready to leave.

12. The hospital has less than 80% of records with complete patient identifier, admission date, and discharge date or less than 80% of records with complete primary ICD-9 or principal ICD-10 diagnosis codes. (Records for these hospitals are still assessed as possible readmissions, but readmission rates are not calculated for these hospitals due to their lack of complete data.)

Rationale: Readmission rates are not calculated for hospitals missing large amounts of data for the above variables because these hospitals have limited data to accurately apply measure cohort exclusions and calculate case-mix-adjusted readmission rates. Assessing eligibility for the measure cohort and performing case-mix adjustment requires information on admission dates, end-of-service dates, and diagnosis codes. Identifying readmissions requires information on admission dates and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records.

13. The hospital is in a state not being analyzed.

Rationale: A claims database used for readmission analysis may contain records for hospitals located in states that are not included in the database (because covered patients may sometimes be admitted to out-of-state hospitals). Records for these out-of-state hospital admissions are not excluded from the measure dataset because these records may meet criteria for being counted as readmissions as part of an in-state hospital's readmission rate. However, readmission rates are not calculated for out-of-state hospitals due to the lack of complete data for these hospitals.

14. Thirty days of follow-up data are not available for assessing readmissions.

Rationale: Identifying readmissions within 30 days requires a full 30 days of follow-up data.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims

Measure Steward: Center of Excellence for Pediatric Quality Measurement

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STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-21; N-1**; 1b. Performance Gap: **H-1**; **M-20**; **L-0**; **I-0;** 1c. Impact: **H-7**; **M-13**; **L-2**; **I-0**

<u>Rationale</u>:

- The Committee noted that there is not a large evidence base to support a rationale between healthcare processes and structures, such as care coordination, discharge planning, and medication reconciliation, and decreased pediatric readmission rates. However, the Committee agreed there are gaps in quality metrics for pediatric population, and subsequently agreed this outcome was important to measure and report.

- The Committee emphasized the potential for this measure to improve disparities in care, particularly for Black and Hispanic patients.
- The Committee agreed this measure was high priority given that that readmission occurs in 2 to 6 percent of hospitalizations for children, costing $2.8 billion for children with 4 or more hospitalizations, over a one year period.

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

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

2a. Reliability: **H-3**; **M-17**; **L-2**; **I-0** 2b. Validity: **H-0**; **M-19**; **L-3**; **I-0**

<u>Rationale</u>:

- The Committee expressed concern that the measure was tested using Medicaid data but is specified for use in an all-payer dataset, noting that testing was not provided to demonstrate how the measure performs outside of the Medicaid population.
- The Committee noted that the reliability of the measure was highly dependent on case volume. The developer provided additional analyses where they used a minimum threshold of 100 index hospitalizations per year. When the threshold is applied the developers concluded that reliability for this measure improves for hospitals with higher case volumes.
    - The developers acknowledged that this will be a consideration on how the measure is implemented. The developers hypothesize that, most likely, hospitals reporting pediatric readmission rates will be hospitals with a large volume of pediatric patients.
    - The developers also explained that small volumes of pediatric patients are a global challenge for pediatric measurement.
- The Committee acknowledged the lack of pediatric measures with which to correlate this measure with is a threat to validity. The developer noted that they were unable to assess how performance on this measure correlated with performance on other measures due to the unavailability of other pediatric inpatient measures for comparison.
- The Committee also noted that 10 percent of the hospitalizations were missing key data thus excluding them from the measure. Additionally, the Committee discussion highlighted the exclusion of specialty hospitals (Cancer, Orthopedic, Shriners Hospitals, and hospitals that do not provide acute care).
- During the discussion the Committee highlighted the importance of included socio-demographic factors in the risk adjustment model, especially for pediatric populations.

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3. Feasibility: H-3; M-18; 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)

<u>Rationale</u>:

- The Committee discussed that the measure faces challenges in terms of implementation.
    - With regards to the use of Medicaid claims, the Committee expressed concerns that Medicaid claims are challenging to use as they vary from state to state and the Committee noted that the developer experienced model fitting issues when tested in the New York State database. The developer noted that they provided technical assistance to sites that had issues and anticipate the measure will be used for Medicaid programs to examine within-state comparisons.

- The Committee also noted the challenge that children's health is covered by a number of insurance plans, spread among Medicaid and private insurance. The developer explained that Medicaid covers approximately one-third of hospitalized children and agreed that their analysis found higher readmission rates among children covered by Medicaid. Some Members noted that comparisons to children covered by private insurance versus Medicaid are not always analogous. The developer agreed that in future iterations of this measure they would potentially adjust for insurance status.

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4. Use and Usability: H-0; M-14; L-8; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee noted that the reliability of the measure was highly dependent on case volume (similar to adult population) and questioned the usability of the measure given the smaller number of hospital that have a large enough pediatric population.
- While Committee members expressed concern about the lack of adjustment for sociodemographic factors for measures in this project, Members were particularly concerned about the unintended consequences that could result from lack of this adjustment for this pediatric measure.

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5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-17**; **N-5**

6. Member and Public Comment

- Six comments were submitted on measure 2393; several of these comments were supportive of the Committee's recommendation for endorsement, noting the importance of improving quality measurement in pediatric care. However, a number of specific concerns were raised about aspects of the measure. These included:
  - Concerns about the measure's lack of a methodology to exclude unpreventable readmissions or readmissions unrelated to the index admission, and the lack of testing to support the absence of such exclusions
  - Concerns about the adequacy of the measure's risk adjustment methodology, which some commenters suggested should incorporate additional factors, including principal diagnosis, acuity, and complex chronic diagnosis.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-14; N-0; A-3

Decision: Approved for endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2414 Pediatric Lower Respiratory Infection Readmission Measure

Submission | Specifications

Description: This measure calculates case-mix-adjusted readmission rates, defined as the percentage of admissions followed by 1 or more readmissions within 30 days, following hospitalization for lower respiratory infection (LRI) in patients less than 18 years old. The measure covers patients discharged from general acute care hospitals, including children's hospitals.

Numerator Statement: The numerator consists of hospitalizations at general acute care hospitals for LRI in patients less than 18 years old that are followed by 1 or more readmissions to general acute care hospitals within 30 days. Readmissions are excluded from the numerator if the readmission was for a planned procedure or for chemotherapy.

The measure outcome is a readmission rate, defined as the percentage of index admissions with 1 or more readmissions within 30 days. The readmission rate, unadjusted for case-mix, is calculated as follows:

number of index admissions with 1 or more readmissions within 30 days/

total number of index admissions

Denominator Statement: Hospitalizations at general acute care hospitals for LRI in patients less than 18 years old.

Exclusions: EXCLUSIONS FROM THE NUMERATOR (READMISSIONS) AND DENOMINATOR (INDEX HOSPITALIZATIONS)

We exclude certain hospitalizations from the measure entirely (i.e., from the numerator and denominator) based on clinical criteria or for issues of data completeness or quality that could prevent assessment of eligibility for the measure cohort or compromise the accuracy of readmission rates. Hospitalizations are excluded from the measure if they meet any of the following criteria:

1. The hospitalization was at a specialty or non-acute care hospital.

Rationale: The focus of the measure is admissions to hospitals that provide general pediatric acute care. Records for admissions to specialty and non-acute-care hospitals are therefore omitted from the dataset. Because hospital type cannot be determined for records with missing data in the hospital type variable, these records are also removed from the dataset.

2. Records for the hospitalization contain incomplete data for variables needed to assess eligibility for the measure or calculate readmission rates, including hospital type, patient identifier, admission date, discharge date, disposition status, date of birth, primary ICD-9 or principal ICD-10 diagnosis codes, and gender.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records. Hospital identifiers are needed to determine the hospital at which index admissions occurred. The disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for Membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date. Because gender is 1 of the variables used for case-mix adjustment, episodes of care with missing or inconsistent gender cannot be evaluated in the measure.

3. Records for the hospitalization contain data of questionable quality for calculating readmission rates, including

a. Inconsistent date of birth across records for a patient.

b. Discharge date prior to admission date.

c. Admission or discharge date prior to date of birth.

d. Admission date after a disposition status of death during a prior hospitalization.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service. A valid disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for Membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date.

4. Codes other than ICD-9 or ICD-10 codes are used for the primary procedure.

Rationale: ICD-9 or ICD-10 procedure codes are necessary for applying clinical exclusions.

5. The patient was older than 18 years, 29 days at the time of admission.

Rationale: This age exclusion limits the population to pediatric patients and prevents inclusion of records that overlap with adult readmission measures. Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the focus of the measure is pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge. Because the subsequent observation period for readmissions is 30 days, a patient's hospitalization is ineligible for inclusion in the measure as a readmission if the patient was older than 18 years, 29 days at the start of the readmission.

6. The hospitalization was for obstetric care, including labor and delivery.

Rationale: Hospitalizations for obstetric conditions are excluded because care related to pregnancy does not generally fall within the purview of pediatric providers.

7. The primary ICD-9 or principal ICD-10 diagnosis code was for a mental health condition.

Rationale: Hospitalizations for mental health conditions are excluded because we found that hospitals with high readmission rates for mental health hospitalizations tend to have low readmission rates for hospitalizations for other conditions, and vice versa. We describe this analysis in detail in Section 2b.3 of the Measure Testing Submission Form.

8. The hospitalization was for birth of a healthy newborn.

Rationale: Hospitalizations for birth of healthy newborns are excluded because these hospitalizations, unlike all others, are not for evaluation and management of disease.

EXCLUSIONS FROM THE DENOMINATOR ONLY (INDEX HOSPITALIZATIONS ONLY)

We also apply further exclusions to the denominator only (i.e., these hospitalizations are excluded from index hospitalizations but could still meet criteria for readmissions). Hospitalizations are excluded from the denominator only if they meet any of the following criteria:

9. The patient was 18 years old or greater at the time of discharge.

Rationale: Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the measure covers pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge.

10. The discharge disposition was death.

Rationale: A patient must be discharged alive from an index admission in order to be readmitted. Therefore, any record with a discharge disposition of death cannot serve as an index admission.

11. The discharge disposition was leaving the hospital against medical advice.

Rationale: A discharge disposition of leaving against medical advice indicates that a patient left care before the hospital determined that the patient was ready to leave.

12. The hospital has less than 80% of records with complete patient identifier, admission date, and discharge date or less than 80% of records with complete primary ICD-9 or principal ICD-10 diagnosis codes. (Records for these hospitals are still assessed as possible readmissions, but readmission rates are not calculated for these hospitals due to their lack of complete data.)

Rationale: Readmission rates are not calculated for hospitals missing large amounts of data for the above variables because these hospitals have limited data to accurately apply measure cohort exclusions and calculate case-mix-adjusted readmission rates. Assessing eligibility for the measure cohort and performing case-mix adjustment requires information on admission dates, end-of-service dates, and diagnosis codes. Identifying readmissions requires information on admission dates and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records.

13. The hospital is in a state not being analyzed.

Rationale: A claims database used for readmission analysis may contain records for hospitals located in states that are not included in the database (because covered patients may sometimes be admitted to out-of-state hospitals). Records for these out-of-state hospital admissions are not excluded from the measure dataset because these records may meet criteria for being counted as readmissions as part of an in-state hospital's readmission rate. However, readmission rates are not calculated for out-of-state hospitals due to the lack of complete data for these hospitals.

14. Thirty days of follow-up data are not available for assessing readmissions.

Rationale: Identifying readmissions within 30 days requires a full 30 days of follow-up data.

15. The hospitalization does not have a primary ICD-9 or principal ICD-10 LRI diagnosis or does not have a secondary ICD-9 or additional ICD-10 LRI diagnosis plus a primary ICD-9 or principal ICD-10 diagnosis of asthma, respiratory failure, or sepsis/bacteremia.

Rationale: This measure focuses on readmissions following hospitalization for LRI. Episodes of care that do not meet the case definition for an LRI hospitalization are therefore excluded from index admissions.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims

Measure Steward: Center of Excellence for Pediatric Quality Measurement

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STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-19**; **N-2**; 1b. Performance Gap: **H-3**; **M-18**; **L-0**; **I-0;** 1c. Impact: **H-12**; **M-8**; **L-1**; **I-0**

Rationale:

- The Committee agreed that the rationale provided by the developer demonstrated readmissions can be improved through key processes, discharge planning, and care transitions.
- Committee members noted gaps in quality metrics for the pediatric population, and agreed that this outcome was important to measure and report.
- The Committee noted that the measure impacts a large number of pediatric patients and accounts for a large number of readmissions in hospitals. In addition, it noted that respiratory tract infections are one of the most common indications for hospitalization in Pediatrics, making it a high priority measure.

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

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

2a. Reliability: **H-1**; **M-18**; **L-2**; **I-0** 2b. Validity: **H-0**; **M-20**; **L-1**; **I-0**

<u>Rationale</u>:

- Similar to measure 2393, Committee members noted that the reliability of the measure was highly dependent on case volume, which is similar to the adult population. The measure was found to be highly reliable at hospitals with an adequate sample size, but did not perform as well in those with a lower sample size. The Committee questioned the usability of the measure given the smaller number of hospitals that have a large enough pediatric population. The Committee noted that data used to assess validity was a 1-year data sample from Boston Children's Hospital and that sensitivity and specificity for identifying eligible readmissions were 87.0 percent and 99.7 percent, respectively.
- The Committee questioned whether seasonality would affect the measure, noting that lower respiratory infections are seasonal. The developer explained that seasonality should not be an issue and is accounted for as the measure is collected annually as opposed to monthly.
- The Committee agreed the measure had good predictive ability with a C-statistic of 0.71, which is interpreted as “substantial agreement.”

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3. Feasibility: H-3; M-17; 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)

<u>Rationale</u>:

- All data elements are in defined fields in electronic claims and these data are routinely collected as part of the billing process.
- One concern was that the measure is based on Medicaid data and there is heterogeneity of Medicaid claims across states.

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4. Use and Usability: H-0; M-17; L-4; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

<u>Rationale</u>:

- The Committee suggested that this pediatric readmission measure should be considered in the context of pediatric admissions.

- While the Committee expressed concern on the lack of sociodemographic adjustment for the measures in this project, Members were particularly concerned about the unintended consequences that may result from lack of this adjustment for this pediatric measure.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-18**; **N-3**

6. Member and Public Comment

- Six comments were submitted on measure 2414; comments were similar to those submitted on measure 2393, with some commenters supporting the measure and others expressing concerns about the measure's lack of a methodology to exclude unpreventable and unrelated readmissions, as well as the adequacy of the risk adjustment model.
- Two commenters also expressed concerns about the exclusion of specialty and non-acute care hospitals, with one arguing that this could exclude academic pediatric hospitals from the measure.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-14; N-0; A-3

Decision: Approved for endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2502 All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities (IRFs)

Submission | Specifications

Description: This measure estimates the risk-standardized rate of unplanned, all-cause readmissions for patients (Medicare fee-for-service [FFS] beneficiaries) discharged from an Inpatient Rehabilitation Facility (IRF) who were readmitted to a short-stay acute-care hospital or a Long-Term Care Hospital (LTCH), within 30 days of an IRF discharge. The measure is based on data for 24 months of IRF discharges to non-hospital post-acute levels of care or to the community.

A risk-adjusted readmission rate for each facility is calculated as follows:

Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates.

Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate.

For this measure, readmissions that are usually for planned procedures are excluded. Please refer to Appendix Tables A1-A5 for a list of planned procedures.

The measure specifications are designed to harmonize with CMS' hospital-wide readmission (HWR) measure to a great extent. The HWR (NQF #1789) estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmissions within 30 days of a hospital discharge, similar to this IRF readmission measure.

Numerator Statement: The numerator is mathematically related to the number of patients in the target population who have the event of an unplanned readmission in the 30- day post-discharge window. The measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. Instead, the numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix.

Denominator Statement: The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded IRF stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of readmissions that would be expected for that patient population at the average IRF. The measure includes all the IRF stays in the measurement period that are observed in national Medicare FFS data and do not fall into an excluded category.

Exclusions: The measure excludes some IRF patient stays; some of these exclusions result from data limitations.

The following are the measure's denominator exclusions, including the rationale for exclusion:

1. IRF patients who died during the IRF stay.

Rationale: A post-discharge readmission measure is not relevant for patients who died during their IRF stay.

2. IRF patients less than 18 years old.

Rationale: IRF patients under 18 years old are not included in the target population for this measure. Pediatric patients are relatively few and may have different patterns of care from adults.

3. IRF patients who were transferred at the end of a stay to another IRF or short-term acute care hospital.

Rationale: Patients who were transferred to another IRF or short-term acute-care hospital are excluded from this measure because the transfer suggests that either their IRF treatment has not been completed or that their condition worsened, requiring a transfer back to the acute care setting. The intent of the measure is to follow patients deemed well enough to be discharged to a less intensive care setting (i.e., discharged to less intense levels of care or to the community).

4. Patients who were not continuously enrolled in Part A FFS Medicare for the 12 months prior to the IRF stay admission date, and at least 30 days after IRF stay discharge date.

Rationale: The adjustment for certain comorbid conditions in the measure requires information on acute inpatient bills for 1 year prior to the IRF admission, and readmissions must be observable in the observation window following discharge. Patients without Part A coverage or who are enrolled in Medicare Advantage plans will not have complete inpatient claims in the system.

5. Patients who did not have a short-term acute-care stay within 30 days prior to an IRF stay admission date.

Rationale: This measure requires information from the prior short-term acute-care stay in the elements used for risk adjustment.

6. IRF patients discharged against medical advice (AMA).

Rationale: Patients discharged AMA are excluded because these patients have not completed their full course of treatment in the opinion of the facility.

7. IRF patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer.

Rationale: Consistent with the HWR Measure, patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer are excluded because these patients were identified as following a very different trajectory after discharge, with a particularly high mortality rate.

8. IRF stays with data that are problematic (e.g., anomalous records for hospital stays that overlap wholly or in part or are otherwise erroneous or contradictory).

Rationale: This measure requires accurate information from the IRF stay and prior short-term acute-care stays in the elements used for risk adjustment. No-pay IRF stays involving exhaustion of Part A benefits are also excluded.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility

Type of Measure: Outcome

Data Source: Administrative claims, Other

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

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-21; N-3**; 1b. Performance Gap: **H-3**; **M-13**; **L-8**; **I-0;** 1c. Impact: **H-6**; **M-13**; **L-3**; **I-0**

Rationale:

- The Committee noted that the process-outcome linkage cited by the developer was based on Hospital Readmissions as opposed to Inpatient Rehabilitation Facilities. The developer explained that the evidence base around readmissions after post-acute care is very limited, noting that this measure will provide some insights into how care transitions occur for this patient population.
- Analysis provided by the developer showed variation in readmission rates by facilities. The risk-standardized readmission rate (RSRR) ranged from 11.1 percent to 16.1 percent across all IRFs based on 2010 and 2011 data. The Committee agreed that these data indicated a reasonable range of improvement possible even within the compressed range of this measure.
- Committee expressed a desire to have the measure be able to distinguish different clinical cohorts, noting that that the variation in performance would be reduced more if the measure could distinguish how facilities are doing by clinical cohort. The developer confirmed that clinical cohorts are indeed included as part of the risk adjustment model, and were added in an effort to prevent gaming of the measure.
- The Committee agreed that the measure was high priority, noting that 13.5 percent of patients are readmitted from an IRF.

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

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

2a. Reliability: **H-3**; **M-16**; **L-4**; **I-0** 2b. Validity: **H-1**; **M-16**; **L-6**; **I-1**

<u>Rationale</u>:

- The Committee expressed concern with the developer's use of shrinkage estimators. Members noted that quality differences for low volume hospitals may not be able to be detected because small volume hospitals may be pulled closer to the mean performance of all hospitals in the population. While the developer explained that shrinkage estimators provide a more stable estimate of performance, the Committee argued that for public reporting and accountability this methodology may not be ideal. Ultimately the developer concluded that while shrinkage does occur; the measure can still distinguish a large proportion of hospitals that vary in size.
- The Committee raised an issue around the 24-month time period for the data. The measure is based on 24 months of Medicare fee-for-service claims data and Committee members questioned whether a 24-month evaluation was something that could be acted on in a timely fashion.
- The Committee questioned why transfers were excluded from the measure. The developer explained that issues regarding transfers might need to be evaluated as a separate measure. Several Committee members disagreed and concluded that this exclusion could lead to unintended consequences where facilities are transferring patients towards the end of their stay, who may not be ready for discharge, knowing that it would not count against them as a readmission.
- The developers provided Split Sample reliability testing, which involved calculating the level of agreement between facilities scored. Agreement was evaluated using intraclass correlations (ICC) and the developers calculated an ICC of 0.39, indicating agreement between facilities' Standardized Risk Ratios.

3. Feasibility: H-18; M-6; 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)

<u>Rationale</u>:

- The required data elements are routinely generated and used during care delivery and are in defined fields in electronic claims.

4. Use and Usability: H-1; M-14; L-8; I-1

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

<u>Rationale</u>:

- The Committee noted that CMS is developing this readmission measure in order to publicly report this measure as part of the Inpatient Rehab Facility Quality Reporting Program.
- The developer noted that at this time, CMS is working to establish procedures for public reporting, including procedures that provide the opportunity for IRFs to review their data before it is made public.

- The Committee noted that transfers being excluded may lead to unintended consequences and some degree of gaming the measure.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-16**; **N-8**

6. Member and Public Comment

- The Committee received eight comments, many of which questioned why the developer did not use patient-level data from the Patient Assessment Instrument or the FIM® Instrument, which specifically looks at functional status. Commenters noted that including patient-level data would likely improve the risk adjustment model and would be helpful in characterizing and understanding readmission patterns. Additionally, commenters recommended the exclusion of patients who died as well as planned readmissions to improve the risk-adjustment model.
- Other commenters questioned the appropriateness of combining data from IRFs and LTCHs, noting the differences between these patient populations and recommending that the data be split by type of provider. Commenters further suggested that additional provider-specific data should include information such as the presence of a teaching program and whether the institution is a rural provider. Commenters also questioned the usability of this measure, given that claims data are not readily available to hospitals and hospitals would not be able to replicate the data to be useful for quality improvement.
- Finally, one commenter argued that measuring 30 days post-discharge is too long of a time period, leading to a greater likelihood of counting readmissions that are unrelated to the initial condition or outside of the discharging hospital's control.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2503 Hospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries

Submission | Specifications

Description: Number of hospital discharges from an acute care hospital (PPS or CAH) per 1000 FFS Medicare beneficiaries at the state and community level by quarter and year.

Numerator Statement: Number of hospital discharges from an acute care hospital (PPS or CAH)

Denominator Statement: Medicare FFS beneficiaries, prorated based on the number of days of FFS eligibility in the time period (quarter or year).

Exclusions: None

Adjustment/Stratification:

Level of Analysis: Population : Community, Population : State

Setting of Care: Other

Type of Measure: Outcome

Data Source: Administrative claims, Other

Measure Steward: Centers for Medicare & Medicaid Services

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-22; N-2**; 1b. Performance Gap: **H-19**; **M-3**; **L-2**; **I-0;** 1c. Impact: **H-20**; **M-3**; **L-1**; **I-0**

Rationale:

- The Committee found the rationale to be clear, with data drawn from prior work on readmissions. Committee members acknowledged the importance of community events as compared to hospital events with respect to hospitalization rates; thus the need for a community-based measure.
- Committee members noted a wide variation in hospitalization rates among the Medicare FFS population.
- The Committee considered this to be a high-priority and high-impact measure given its impact on resource utilization, particularly in terms of the Medicare population. A study cited by the developer found that in 2004, almost 12 million Medicare fee-for-service (FFS) beneficiaries were hospitalized and one in five of these were readmitted within 30 days.

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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: **H-18**; **M-6**; **L-0**; **I-0**; 2b. Validity: **H-2**; **M-13**; **L-8**; **I-1**

Rationale:

- The reliability methods used by the developer included split-sample and test/retest approaches. According to data cited by the developer, correlation coefficients and quintile agreements suggested high reliability for annual and quarterly hospitalizations per 1000 beneficiaries when computed both at the state/territory and community levels.
- Committee members noted that admission rates are seasonal, with significant variation. The Committee expressed concerns about the validity results relying on Atul Gawande's article on variation between Miami, McAllen, El Paso, and Grand Junction. Since there was no other validity data provided, the measure was assessed to be moderate in terms of validity.
- Committee members expressed concern over the lack of risk adjustment for the measure noting that there are significant disparities in terms of race and ethnicity between communities.
- Several Committee members were concerned about how this measure would be used, specifically because this measure focuses on a single community's performance over time. Committee members were concerned that if the measure were to be NQF-endorsed and publicly-reported, there would inevitably be comparisons made between communities.

3. Feasibility: H-22; M-1; 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 required data elements are routinely generated and used during care delivery and all data elements are in defined fields in electronic claims

4. Use and Usability: H-5; M-7; L-12; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee had concerns about this measure being used without risk-adjustment, specifically because this would mean that all communities could improve the same amount without a standard. In addition, a few Committee members noted the issues of rural-urban accessibility and a needs assessment for each community. Developers explained that they did not risk-adjust because they did not want communities to compare themselves to other communities due to differing community characteristics.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-16**; **N-4**

6. Member and Public Comment

- NQF received twelve comments on measure 2503 and measure 2504 raising similar topics across both measures. Several commenters were supportive of the measure, noting that these types of measures help providers and communities understand areas in need of improvement.
- These commenters noted that the measure passed all of the must-pass sub-criteria and contended that the Standing Committee should recommend the measure.
- Other commenters noted that the measures should be risk adjusted to appropriately assess differences in community performance.
- Finally, commenters also encouraged the measure developer to expand the measure to include Medicaid patients.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2504 30-day Rehospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries

Submission | Specifications

Description: Number of rehospitalizations occurring within 30 days of discharge from an acute care hospital (prospective payment system (PPS) or critical access hospital (CAH)) per 1000 FFS Medicare beneficiaries at the state and community level by quarter and year.

Numerator Statement: Number of rehospitalizations within 30 days of discharge from an acute care hospital (PPS or CAH).

Denominator Statement: Medicare FFS beneficiaries, prorated based on the number of days of FFS eligibility in the time period (quarter or year).

Exclusions: None

Adjustment/Stratification:

Level of Analysis: Population : Community, Population : State

Setting of Care: Other

Type of Measure: Outcome

Data Source: Administrative claims, Other

Measure Steward: Centers for Medicare & Medicaid Services

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-21; N-1**; 1b. Performance Gap: **H-17**; **M-4**; **L-2**; **I-0;** 1c. Impact: **H-15**; **M-6**; **L-2**; **I-0**

Rationale:

- Committee members noted that there is evidence to support the rationale at the hospital level, but less evidence to support the rationale at the population level. However, they acknowledged that multiple entities in the community have a responsibility to help reduce the rates of readmissions back to the hospital.
- According to one study cited by the developer, there is substantial geographic variability suggesting significant opportunity for improvement.
- Committee members acknowledged that this is a high-priority issue due to the large number of patients affected and the high costs associated with re-hospitalizations among Medicare beneficiaries.

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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: **H-18**; **M-6**; **L-0**; **I-0** 2b. Validity: **H-4**; **M-12**; **L-7**; **I-1**

Rationale:

- The Committee noted that the measure was specified with an appropriate level of detail, with a clear numerator and denominator. In addition, Members acknowledged that the measure has high reliability due to large sample sizes.

- Committee members expressed concern over the lack of risk adjustment for the measure. They noted that there are significant disparities in terms of race and ethnicity between communities.
- A few Committee members observed that admission and readmission rates are related and explained that admission rates, not readmissions rates, were decreasing with community intervention. Developers explained that in the 14 community pilots, admission and readmission rates correlated almost exactly.

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3. Feasibility: H-20; M-2; L-2; 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 required data elements are routinely generated and used during care delivery and all data elements are in defined fields in electronic claims

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4. Use and Usability: H-4; M-11; L-9; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- Some Committee members argued that this measure should be limited to quality improvement interventions rather than accountability applications since the measure can only be used to compare communities to themselves over time. The Committee noted that planned admissions are not excluded from the measure. Members of the Committee were concerned that this may result in delays for needed care outside of the 30 day window.
- Similar to measure 2503, the Committee had concerns about this measure being used without risk-adjustment, specifically because this would mean that all communities could improve the same amount without a standard. In addition, a few Committee members noted the issues of rural-urban accessibility and a needs assessment for each community. Developers explained that they did not risk-adjust because they did not want communities to compare themselves to other communities due to differing community characteristics.

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5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-14**; **N-6**

6. Member and Public Comment

- NQF received twelve comments on measure 2503 and measure 2504 raising similar topics across both measures. Several commenters were supportive of the measure, noting that these types of measures help providers and communities understand areas in need of improvement.
- These commenters noted that the measure passed all of the must-pass sub-criteria and contended that it should be recommended by the Standing Committee.
- Other commenters noted that the measures should be risk adjusted to appropriately assess differences in community performance.

- Finally, commenters also encouraged the measure developer to expand the measure to include Medicaid patients.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Submission | Specifications

Description: Percentage of Home Health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their Home Health stay used an emergency department but were not admitted to an acute care hospital during the 30 days following the start of the Home Health stay.

Numerator Statement: Number of Home Health stays for patients who have a Medicare claim for outpatient emergency department use and no claims for acute care hospitalization in the 30 days following the start of the Home Health stay.

Denominator Statement: Number of Home Health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the Home Health stay. A Home Health stay is a sequence of Home Health payment episodes separated from other Home Health payment episodes by at least 60 days.

Exclusions: The measure denominator excludes several types of Home Health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following Home Health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another Home Health agency within a Home Health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of Home Health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of Home Health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Home Health

Type of Measure: Outcome

Data Source: Administrative claims

Measure Steward: Centers for Medicare and Medicaid Services

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: Y-16; N-6; 1b. Performance Gap: H-12; **M-8**; **L-1**; **I-1; 1c. Impact: H-2**; **M-14**; **L-5**; **I-1**

Rationale:

- The Committee noted the importance of post-acute care coordination and reduction of hospital readmissions, however Committee members noted there was not a strong rationale provided by the developer to demonstrate 1) whether there is a strong process-outcome linkage that demonstrates Home Health Agencies (HHA) have control in preventing readmissions and 2) that there are substantial savings to incur in reducing readmissions.
    - Regarding the Committee's concerns around the relationship between HHA quality and ED admission, the Committee further noted that none of the studies provided examined the relationship between ED use with and without Home Health use. The developer provided additional rationale to the Committee which suggested that because some hospital readmissions and ED visits may not be preventable, HHA should not be expected to achieve a 0 percent readmission rate or ED use without hospital readmission rate for their patients.
    - Regarding concerns around evidence linking HHA specific interventions that can impact ED utilization, the developer explained that HHA follow best practice guidelines in order to reduce hospitalization rate including medication reconciliation, education, and physical therapy when needed.
- The Committee noted a large performance gap ranging from 3.9 percent to 29.3 percent, but questioned how much the performance gap could be closed through quality improvement initiatives.

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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: **H-4**; **M-14**; **L-3**; **I-1** 2b. Validity: **H-0**; **M-17**; **L-4**; **I-0**

Rationale:

- The developer provided split-half reliability testing where 78 percent of the agencies were grouped into the same performance category, demonstrating a "high level of internal

consistency." The Committee voiced concern there were no additional reliability statistics provided, specifically an interclass correlation coefficient (ICC) to determine reliability.
    - This issue was also discussed during the workgroup call and the developer provided additional explanation noting that an ICC would not be appropriate for assessing measure reliability as CMS intends to publicly report this measure using a categorical reporting method. This categorical reporting method does not attempt to distinguish between high and low performing agencies by comparing agencies' risk-adjusted rates; rather, each Home Health agency is classified into a performance category based on each Home Health agency's expected and observed rates.
- The Committee noted that the correlations to the OASIS assessment that were used to demonstrate validity were not directly associated with ED care, and as such did not necessarily demonstrate construct validity.
    - The mean differences in performance were consistently positive, ranging from 3.5 percent to 6.5 percent; however no additional description of how the correlations demonstrate validity of the performance score was provided.

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3. Feasibility: H-10; M-10; 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 required data elements are routinely generated and used during care delivery and are in defined fields in electronic claims.

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4. Use and Usability: H-1; M-13; L-6; I-2

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee voiced concern that while the measure is specified at the facility level, it is not clear that the measure is constructed for use only in HHA. The Committee cautioned that the measure could unintentionally be interpreted as a performance measure for Emergency Departments. The developer reiterated that the measure is only intended for use in HHA.
- The Committee noted that CMS plans to publicly report this measure on Home Health Compare starting in 2015. This plan was finalized in the CMS Home Health Prospective Payment System final rule for CY2014. CMS intends to publish three general levels of performance for HHA on ED admission without hospitalization; better (lower) than expected, not different than expected, and worse (above) than expected. As noted in earlier discussion, the Committee expressed concerns that there is not a large body of peer-reviewed evidence that has been published on the relationship between Home Health care and ED use without hospitalization. The Committee highlighted that due to the large degree of variability in ED admission rates for HHAs, the high variability associated with expected rates, and the instability of the measure for smaller HHAs, that approval and implementation of this measure should potentially wait until further study is done.
- Committee members cautioned that for Home Health, returns to the emergency department may be beyond the control of the HHA.

- Additionally the Committee expressed concerns that smaller HHAs in under-performing regions would be categorized as 'worse than expected' due to small numbers of patients in the facility.

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5. Related and Competing Measures

- This measure directly competes with measure 0173: Emergency Department Use without Hospitalization—Percentage of Home Health stays in which patients used the emergency department but were not admitted to the hospital during the 60 days following the start of the Home Health stay.
- The measure specifications for measure 0173 and measure 2505 were harmonized along several measure dimensions, including Data source, Population, Denominator Exclusions, Numerator, and Risk Adjustment methodology.
- The developers of this measure argued that the measure differences justify having 2 measures. They further explained, whereas measure 0173 evaluates patient admission to an emergency department (without hospitalization) during the 60 days following the start of Home Health stay, measure 2505 evaluates admission to the emergency department (without hospital readmission) within 30 days after starting Home Health care for patients who were recently discharged from an inpatient setting. Home Health agencies can track their own performance on both utilization measures to gain an accurate picture of how much acute care is being used by their patients. As with the previously considered Home Health measures, it should be noted that measure 2505 is an outcome measure assessing the efficacy of care coordination as patients transition from inpatient acute care to outpatient Home Health services. In contrast, measure 0173 assesses the efficacy of clinical care provided to all patients as indicated by rates of hospitalization after entry into Home Health services. These are distinct domains of care under the CMS Quality Strategy and reflect related, but distinct care quality concepts.
- According to NQF guidance, since measure 0173 was not evaluated in this project the Committee will not make a recommendation with regards to these 2 competing measures. A recommendation may be made at a later date

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Standing Committee Recommendation for Endorsement: **Y-15**; **N-7**

6. Member and Public Comment

- The Committee received a number of comments questioning the appropriateness of holding home health agencies accountable for readmissions; these commenters suggested that many of the factors leading to hospital readmission are not within home health agencies' control.
- Commenters noted that when acute exacerbations of chronic conditions occur, a return to the ED may be warranted, and a follow-up visit to an ED does not necessarily constitute a failure of home health care.
- Commenters stressed that appropriate risk adjustment for this measure is necessary to prevent unintended consequences stemming from potential disincentives to treat patients who may be at higher risk of rehospitalization and/or ED use. Additionally, commenters requested that the developer make explicit in its specifications that the level of analysis for this measure is the home health agency and not the ED.
- Commenters also raised harmonization concerns, observing that this measure is similar to the already-endorsed measure 0173. Commenters noted that measure 2505 counts ED use during the first 30 days of home health, while measure 0173 counts ED use within the first 60 days of home health, urging the Committee to consider whether one of these time windows is more

clinically meaningful than the other and requesting that CMS synthesize the two measures into one.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Submission | Specifications

Description: This measure estimates the risk-standardized rate of all-cause, unplanned, hospital readmissions for patients who have been admitted to a Skilled Nursing Facility (SNF) (Medicare fee-for-service [FFS] beneficiaries) within 30 days of discharge from their prior proximal hospitalization. The prior proximal hospitalization is defined as an admission to an IPPS, CAH, or a psychiatric hospital. The measure is based on data for 12 months of SNF admissions.

A risk-adjusted readmission rate for each facility is calculated as follows:

Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates.

Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate.

For this measure, readmissions that are usually for planned procedures are excluded. Please refer to the Appendix, Tables 1 - 5 for a list of planned procedures.

The measure specifications are designed to harmonize with CMS' hospital-wide readmission (HWR) measure to the greatest extent possible. The HWR (NQF #1789) estimates the hospital-level, risk-standardize rate of unplanned, all-cause readmissions within 30 days of a hospital discharge and uses the same 30-day risk window as the SNFRM.

Numerator Statement: This measure is designed to capture the outcome of unplanned all-cause hospital readmissions (IPPS or CAH) of SNF patients occurring within 30 days of discharge from the patient's prior proximal acute hospitalization.

The numerator is more specifically defined as the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge from the prior proximal acute hospitalization. The numerator is mathematically related to the number of SNF stays where there was hospitalization readmission, but the measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. The numerator, as defined, includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix.

Hospital readmissions that occur after discharge from the SNF stay but within 30 days of the proximal hospitalization are also included in the numerator. Readmissions identified using the Planned

Readmission algorithm (see Section S.6) are excluded from the numerator. This measure does not include observation stays as a readmission (see Section S.6).

Denominator Statement: The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded SNF stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of SNF admissions within 1 day of a prior proximal hospital discharge during a target year, taking denominator exclusions into account. Prior proximal hospitalizations are defined as admissions to an IPPS acute-care hospital, CAH, or psychiatric hospital.

Exclusions: The following are excluded from the denominator:

1. SNF stays where the patient had one or more intervening post-acute care (PAC) admissions (inpatient rehabilitation facility [IRF] or long-term care hospital [LTCH]) which occurred either between the prior proximal hospital discharge and SNF admission or after the SNF discharge, within the 30-day risk window. Also excluded are SNF admissions where the patient had multiple SNF admissions after the prior proximal hospitalization, within the 30-day risk window.

Rationale: For patients who have IRF or LTCH admissions prior to their first SNF admission, these patients are starting their SNF admission later in the 30-day risk window and receiving other additional types of services as compared to patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions. Additionally, when patients have multiple PAC admissions, evaluating quality of care coordination is confounded and even controversial in terms of attributing responsibility for a readmission among multiple PAC providers. Similarly, assigning responsibility for a readmission for patients who have multiple SNF admissions subsequent to their prior proximal hospitalization is also controversial.

2. SNF stays with a gap of greater than 1 day between discharge from the prior proximal hospitalization and the SNF admission.

Rationale: These patients are starting their SNF admissions later in the 30-day risk window than patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions.

3. SNF stays where the patient did not have at least 12 months of FFS Medicare enrollment prior to the proximal hospital discharge (measured as enrollment during the month of proximal hospital discharge and the for 11 months prior to that discharge).

Rationale: FFS Medicare claims are used to identify comorbidities during the 12-month period prior to the proximal hospital discharge for risk adjustment. Multiple studies have shown that using lookback scans of a year or more of claims data provide superior predictive power for outcomes including rehospitalization as compared to using data from a single hospitalization (e.g., Klabunde et al., 2000; Preen et al, 2006; Zhang et al., 1999).

4. SNF stays in which the patient did not have FFS Medicare enrollment for the entire risk period (measured as enrollment during the month of proximal hospital discharge and the month following the month of discharge).

Rationale: Readmissions occurring within the 30-day risk window when the patient does not have FFS Medicare coverage cannot be detected using claims.

5. SNF stays in which the principal diagnosis for the prior proximal hospitalization was for the medical treatment of cancer. Patients with cancer whose principal diagnosis from the prior proximal hospitalization was for other diagnoses or for surgical treatment of their cancer remain in the measure.

Rationale: These admissions have a very different mortality and readmission risk than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions.

6. SNF stays where the patient was discharged from the SNF against medical advice.

Rationale: The SNF was not able to complete care as needed.

7. SNF stays in which the principal primary diagnosis for the prior proximal hospitalization was for "rehabilitation care; fitting of prostheses and for the adjustment of devices".

Rationale: Hospital admissions for these conditions are not for acute care.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

Type of Measure: Outcome

Data Source: Administrative claims, Other

Measure Steward: Centers for Medicare and Medicaid Services

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-23, 0-N**; 1b. Performance Gap: **H-18**; **M-6**; **L-0**; **I-0;** 1c. Impact: **H-19**; **M-5**; **L-0**; **I-0**

Rationale:

- The Committee agreed that there is a performance gap with performance ranging from 11.9 percent to 41.9 percent in the number of readmissions from the SNF to acute hospital.
- Some Committee members were concerned that the rationale presented by the developers related to studies done about acute care transfers and not transfers from SNF.
- Ultimately, the Committee agreed that processes that improve transitions, communications, and overall SNF care would improve performance on this measure.

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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: **H-5**; **M-18**; **L-1**; **I-0** 2b. Validity: **H-1**; **M-17**; **L-7**; **I-0**

Rationale:

- The Committee noted that the reliability testing results (interclass correlation coefficient – 0.56) was low, but within a generally acceptable range.
- In terms of validity, the Committee noted that the discrimination calibration with the C-statistics was 0.67. The group noted low correlation in the expected direction with the exception of pain management.
- Some Committee members raised concerns related to potential threats to validity. One member noted that the exclusion rate of approximately 20 percent appeared high.
    - The developer responded that the measure requires having 12 months of claims prior to the start of the hospitalization. In the case of new enrollees to the Medicare program and beneficiaries transitioning between Medicare fee-for-service and Medicare

Advantage, it is possible that a full 12 months of claims data may not be available. This lack of data would exclude them from the measured population.

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3. Feasibility: H-14; M-10; 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 required data elements are routinely generated and used during care delivery and are in defined fields in electronic claims.

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4. Use and Usability: H-1; M-16; L-7; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee expressed concern that using a shrinkage estimator limits the ability to understand performance for PAC/LTCs with low volume. For consumers, using the terms 'no different than average' for PAC/LTCs with low volumes of patients is not meaningful.

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5. Related and Competing Measures

- This measure directly competes with measure 2375: PointRight OnPoint-30 SNF Rehospitalizations.
- The Committee discussed measure 2510 and measure 2375 and noted the principal differences between these measures were their data sources, their adjustment for planned readmissions, their treatment of readmissions that may occur once the patient is discharged from the SNF, and identification of patient characteristics that impact risk adjustment.
- Measure 2510 focuses on coordination of care within SNFs by measuring the number of SNF patients readmitted to a hospital within 30 days of a prior acute-care hospitalization. The measure includes readmissions for patients who have been discharged by the SNF, as long as those readmissions occur within 30 days of the prior hospitalization. This measure is specified to use administrative claims data and is limited to Medicare fee-for-service patients. During the discussion, Committee members noted that measure 2510's approach to capturing readmissions after SNF discharge is consistent with other CMS readmission measures, and can be easily implemented since the measure is applicable in nearly all facilities. The Committee discussed CMS's approach for identifying readmissions that are likely to have been planned, and agreed that these readmissions should be removed from the numerator and the denominator.
- Measure 2375 takes a slightly different approach to assessing facility care by measuring only readmissions that occur during a SNF stay. The measure is specified to use the Minimum Data Set (MDS), and therefore can assess readmissions for all patients in SNFs, including Medicare Advantage patients as well as those covered by Medicaid and commercial insurance. As such, measure 2375 provides more timely performance feedback and may be well-suited for internal quality improvement. During the discussion, Committee members noted that measure 2375 makes use of 33 different clinical variables, including demographic, comorbidity, and treatment characteristics as part of the risk-adjustment model.

- The Developers argued that since these measures use distinct data sources with differing strengths and weaknesses, harmonization is not meaningfully possible. However, the Developers did identify one area for potential harmonization, the minimum volume for reporting the measure. At present, measure 2375 does not report rates for any facility with fewer than 30 qualifying discharges. In contrast, measure 2510 does not report rates for any facility with fewer than 25 qualifying discharges.
- During the 30-day post-meeting Member and public comment period, commenters reiterated that measure 2375 lacked adjustment for planned readmissions, and while measure 2510 does exclude some planned readmissions, commenters noted the measure lacks robust risk adjustment since it relies on administrative claims to capture patient severity. Commenters suggested harmonizing these two measures into one measure that combines data from both the Minimum Data Set (MDS) and claims. These commenters suggested that MDS data in measure 2375 may enable a more robust risk adjustment methodology, but argued that the type of "planned readmission" algorithm used by CMS could strengthen the measure. One commenter also encouraged CMS to exclude acute psychiatric inpatient stays from the index admission.
- Overall the Committee agreed with the developer's assessment that it was unlikely full harmonization across both measures could be obtained, and that the two measures were capable of supporting multiple quality needs when operating in tandem, serving complementary purposes. However, some members suggested that measure 2375 should consider eliminating planned readmissions, similar to measure 2510, and expressed concern that endorsing multiple measures could be confusing for consumers and patients.
- The Committee voted to recommend both measures for endorsement (Yes-11, No-7), noting that the measures were capable of supporting multiple quality needs when operating in tandem and serve complementary purposes.

Standing Committee Recommendation for Endorsement: **Y-19**; **N-5**

6. Member and Public Comment

- A number of commenters argued that this measure lacks adequate risk adjustment since it relies on administrative claims to capture patient severity.
- Commenters suggested harmonizing this measure with measure 2375, recommending development of a hybrid measure combining data from both the Minimum Data Set (MDS) and claims. These commenters suggested that MDS data in measure 2375 may enable a more robust risk adjustment methodology, but argued that the type of "planned readmission" algorithm used by CMS could strengthen the measure.
- One commenter also encouraged CMS to exclude acute psychiatric inpatient stays from the index admission.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2512 All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals (LTCHs)

Submission | Specifications

Description: This measure estimates the risk-standardized rate of unplanned, all-cause readmissions for patients (Medicare fee-for-service [FFS] beneficiaries) discharged from a Long-Term Care Hospital (LTCH) who were readmitted to a short-stay acute-care hospital or a Long-Term Care Hospital (LTCH), within 30 days of an LTCH discharge. The measure is based on data for 24 months of LTCH discharges to non-hospital post-acute levels of care or to the community.

A risk-adjusted readmission rate for each facility is calculated as follows:

Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates.

Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate.

For this measure, readmissions that are usually for planned procedures are excluded. Please refer to Appendix Tables A1-A5 for a list of planned procedures.

The measure specifications are designed to harmonize with CMS' hospital-wide readmission (HWR) measure to a great extent. The HWR (NQF #1789) estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmissions within 30 days of a hospital discharge, similar to this LTCH readmission measure.

Numerator Statement: The numerator is mathematically related to the number of patients in the target population who have the event of an unplanned readmission in the 30- day post-discharge window. The measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. Instead, the numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix.

Denominator Statement: The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded LTCH stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of readmissions that would be expected for that patient population at the average LTCH. The measure includes all the LTCH stays in the measurement period that are observed in national Medicare FFS data and do not fall into an excluded category.

Exclusions: The measure excludes some LTCH patient stays; some of these exclusions result from data limitations.

The following are the measure's denominator exclusions, including the rationale for exclusion:

1.LTCH patients who died during the LTCH stay.

Rationale: A post-discharge readmission measure is not relevant for patients who died during their LTCH stay.

2.LTCH patients less than 18 years old.

Rationale: LTCH patients under 18 years old are not included in the target population for this measure. Pediatric patients are relatively few and may have different patterns of care from adults.

3.LTCH patients who were transferred at the end of a stay to another LTCH or short-term acute-care hospital.

Rationale: Patients who were transferred to another LTCH or short-term acute-care hospital are excluded from this measure because the transfer suggests that either their LTCH treatment has not been completed or that their condition worsened, requiring a transfer back to the acute care setting. The intent of the measure is to follow patients deemed well enough to be discharged to a less intensive care setting (i.e., discharged to less intense levels of care or to the community).

4.Patients who were not continuously enrolled in Part A FFS Medicare for the 12 months prior to the LTCH stay admission date, and at least 30 days after LTCH stay discharge date.

Rationale: The adjustment for certain comorbid conditions in the measure requires information on acute inpatient bills for 1 year prior to the LTCH admission, and readmissions must be observable in the observation window following discharge. Patients without Part A coverage or who are enrolled in Medicare Advantage plans will not have complete inpatient claims in the system.

5.Patients who did not have a short-term acute-care stay within 30 days prior to an LTCH stay admission date.

Rationale: This measure requires information from the prior short-term acute-care stay in the elements used for risk adjustment.

6.LTCH patients discharged against medical advice (AMA).

Rationale: Patients discharged AMA are excluded because these patients have not completed their full course of treatment in the opinion of the facility.

7.LTCH patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer.

Rationale: Consistent with the HWR Measure, patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer are excluded because these patients were identified as following a very different trajectory after discharge, with a particularly high mortality rate.

8.LTCH stays with data that are problematic (e.g., anomalous records for hospital stays that overlap wholly or in part or are otherwise erroneous or contradictory).

Rationale: This measure requires accurate information from the LTCH stay and prior short-term acute-care stays in the elements used for risk adjustment. No-pay LTCH stays involving exhaustion of Part A benefits are also excluded.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Post Acute/Long Term Care Facility : Long Term Acute Care Hospital

Type of Measure: Outcome

Data Source: Administrative claims, Other

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

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-20; N-4**; 1b. Performance Gap: **H-14**; **M-10**; **L-0**; **I-0;** 1c. Impact: **H-12**; **M-12**; **L-0**; **I-0**

Rationale:

- The Committee noted that the evidence provided by the developer in support of the rationale was based on Hospital readmissions as opposed to Long Term Care Facility readmissions. The developer explained that the evidence base around readmissions after post-acute care is very limited, noting that this measure is a first step in providing insight into how care transitions occur for this patient population.
- The Committee agreed that the measure addresses a high-priority issue, noting that data provided by the developer showed the unadjusted readmission rate was 26 percent for patients readmitted from a Long-Term Care Hospital (LTCH).

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

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

2a. Reliability: **H-4**; **M-19**; **L-1**; **I-0** 2b. Validity: **H-0**; **M-17**; **L-7**; **I-0**

<u>Rationale</u>:

- The Committee raised concerns about why the measure is specified to include readmissions to both short-stay acute-care hospitals and LTCHs. There was concern that these are two different patient populations and not conceptually aligned.
- The Committee questioned whether the appropriate time frame for this patient population was 30-days. As one Committee Member noted, LTCH patients are typically sicker and may have fewer short term episodes.
- The developers provided split sample reliability testing, which involved calculating the level of agreement between scores calculated for different samples from the same facilities. Agreement was evaluated using an intraclass correlation coefficient (ICC), and the developers calculated an ICC of 0.57, indicating a modest level of consistency in the standardized risk ratios assigned to facilities.
- It was noted during workgroup discussion that the developer cited their Technical Expert Panel (TEP)'s agreement on the measurement approach as a demonstration of face validity; however, no description or systematic account of the TEP's assessment was provided to the Committee. The Committee agreed that the validity of the measure construct was moderate based on prior validity testing for similar readmission measures.
- The Committee noted that observation stays to an ED would not be counted in this measure.
- Committee members questioned whether patients who were discharged to Hospice would be counted in this measure. The developer confirmed that hospice patients would be captured, as the measure logic does not distinguish between final care settings. The developer noted that patients who are in Hospice are less likely to be readmitted and should not have a negative effect on performance scores.

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3. Feasibility: H-13; M-10; 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)

<u>Rationale</u>:

- Committee members agreed that in future iterations of the measure, it would be desirable to provide the outcome following discharge from a LTCH facility, as doing so would provide more information for facilities to use in quality improvement activities.

- The Committee agreed that all data elements are in defined fields in electronic claims and that these data are routinely collected as part of the billing process.

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4. Use and Usability: H-0; M-9; L-10; I-5

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee identified several potential unintended consequences that should be monitored as the measure is implemented:
    - LTCHs may redirect certain patients with higher acuity or greater complexity that may be more likely to have a subsequent readmission post LTCH discharge in order to avoid penalties.
    - Another potential unintended consequence is that LTCHs could increase the rate at which they transfer patients back to the acute care setting in order to exclude these transfers from the measure denominator.
    - The Committee noted that a readmission from an LTCH has potential for "double jeopardy" due to the readmission being counted as part of both the Inpatient Quality Reporting Program and the LTCH Quality Reporting Program. The developer acknowledged the potential for this to occur; however, the developer considered this to be an unusual occurrence.
- CMS is developing this readmission measure in order to publicly report it as part of the Long Term Care Hospital Quality Reporting Program. The developers noted that CMS is working to establish procedures for public reporting, providing the opportunity for LTCHs to review their data before it is made public.

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5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-10**; **N-10**

6. Member and Public Comment

- NQF received five comments on measure 2512. Several commenters were supportive of the measure, noting that the measure addresses an important care transition for a high-priority patient population. One commenter noted that the measure may be best suited for measurement of accountable care delivery systems. Another commenter suggested that the measure should take into consideration the unique patient population in a long term care hospital and not co-mingle the patient population of short-stay acute-care hospitals.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-9; N-5; A-3

Decision: Approved for endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2513 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) following Vascular Procedures

Submission | Specifications

Description: This measure estimates hospital risk-standardized 30-day unplanned readmission rates following hospital stays with one or more qualifying vascular procedure in patients who are 65 years of age or older and either admitted to the hospital (inpatients) for their vascular procedure(s) or receive their procedure(s) at a hospital but are not admitted as an inpatient (outpatients). Both scenarios are hereafter referred to as "hospital stays."

Numerator Statement: The outcome for this measure is 30-day all-cause unplanned readmission following a qualifying index hospital stay (see S.7-S.11 for more details). We define a readmission as a subsequent hospital inpatient admission within 30 days of either the discharge date (for inpatients) or claim end date (for outpatients – hereafter referred to as "discharge date") following a qualifying hospital stay. We do not count as readmissions any subsequent outpatient procedures or any subsequent admissions which are identified as "staged" or planned. If a patient has more than one unplanned readmission within 30 days of discharge from the index hospital stay, only the first one is counted as a readmission. The measure looks for a dichotomous yes or no outcome of whether each index hospital stay has an unplanned readmission within 30 days. (See S.6, Numerator Details, for more information.)

Denominator Statement: The target population for this measure includes inpatient and outpatient hospital stays for patients at least 65 years of age who receive one or more qualifying vascular procedure.

Exclusions: Hospital stays are excluded from the cohort if they met any of the following criteria:

1) Lack of follow-up in Medicare FFS for at least 30 days post-discharge. Hospital stays for patients without at least 30 days of enrollment in Medicare FFS after discharge from the index stay are excluded.

Rationale: We exclude these hospital stays because the 30-day readmission outcome cannot be assessed in this group.

2) Hospital stays for patients who leave hospital against medical advice (AMA). Hospital stays for patients who are discharged AMA are excluded.

Rationale: We exclude hospital stays for patients who are discharged AMA because providers in these circumstances do not have the opportunity to deliver full care and prepare the patient for discharge.

3) Hospital stays with a qualifying vascular procedure that occur within 30 days of a previous hospital stay with a qualifying vascular procedure. Subsequent hospital stays with a qualifying vascular procedure within 30 days of discharge from an index hospital stay will not be counted as another index hospital stay.

Rationale: Qualifying vascular procedures occurring within 30 days of discharge from an index hospital stay fall within the 30-day readmission assessment period during which no new hospital stay can be counted as an index hospital stay. They are considered readmissions. Any vascular hospital stay is either an index stay or a potential readmission, but not both.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims

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

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-20; N-1**; 1b. Performance Gap: **H-4**; **M-17**; **L-0**; **I-0;** 1c. Impact: **H-16**; **M-5**; **L-0**; **I-0**

Rationale:

- The Committee noted that vascular surgery and readmissions was identified as one of the seven conditions which account for nearly 30 percent of potentially preventable readmissions within 15 days following discharge and that these conditions were responsible for $182 million in spending on readmissions.
- The Committee agreed there was a performance gap on this measure, noting that the interquartile range was between 12.9 and 14.3 percent.
- The Committee agreed that multiple factors impact readmission rates as illustrated in the measure information form (i.e., improved discharge planning, reconciling patient medications, and improving communications with outpatient providers can reduce readmission rates) which supports the process-outcome linkage.

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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: **H-2**; **M-19**; **L-0**; **I-0** 2b. Validity: **H-0**; **M-20**; **L-0**; **I-1**

Rationale:

- The Committee noted that the measure uses Hierarchical Linear Modeling which accounts for patient characteristics and well as facility level characteristics. The model also includes 8 procedure categories which were based on both anatomical location at neck, thoracic, abdominal and limb as well as an "unspecified" category. The developers also included both endovascular procedures and conventional open procedures.
- The Committee noted, that the interclass correlation coefficient (ICC) provided by the developer (0.40, interpreted as "moderate agreement") was comparable to other outcome measures of quality.
- The Committee agreed the systematic face validity testing provided by the developer demonstrated the TEP agreed with overall validity of the measure as specified, concluding the measure could be used to distinguish quality.
- The Committee agreed that the model indicated good discrimination (C-statistic was 0.67) indicating the ability to distinguish high-risk patients from low-risk patients.

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3. Feasibility: H-17; M-4; 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:

- All data elements are in defined fields in electronic claims and that these data are routinely collected as part of the billing process.

4. Use and Usability: H-1; M-11; L-4; I-4

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee expressed some uncertainty around implementation of the measure. The developers noted that CMS is considering use of this measure in public reporting in the Inpatient Quality Reporting Program or Outpatient Quality Reporting Program.
- The Committee recognized that providing a breakdown of the anatomical procedures, instead of an overall vascular readmission rate would be helpful for quality improvement. The developers agreed and noted that in future iterations of the measures that could be a possibility.
- The Committee noted that timeliness of feedback provided by CMS was important for quality improvement. CMS commented that they are working on providing raw data (instead of waiting for risk-adjusted score) to the hospitals on a quarterly basis to hospitals.
- The Committee expressed concerns regarding the use of this measure for outpatient quality reporting. It questioned whether there is a difference in risk associated with performing an outpatient vs. inpatient procedure and noted that care setting was not included in the risk adjustment model. The developer noted that in order for the measure to be clinically coherent, inpatient and outpatient vascular procedures were included in this measure and that care setting would not be an appropriate risk factor to adjust for, as the procedure most often define the risk, not the setting. The developer further noted that there is no additional risk undertaken during an outpatient procedure.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-14**; **N-6**

6. Member and Public Comment

- NQF received three comments on measure 2513, each raising concerns over the heterogeneity of the patient population covered by the measure.
- Commenters noted that the measure combines three different sites of surgery, two different surgical approaches performed by multiple physician specialties, and two different settings.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-14; N-0; A-3

Decision: Approved for endorsement

8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Submission | Specifications

Description: Risk-adjusted percentage of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.

Numerator Statement: Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.

Denominator Statement: Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) during the designated 3-year measurement period and are discharged alive.

Exclusions: Exclusion – Rationale

- The patient is age <65 years on date of discharge according to CMS or STS data – Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of CABG patients.
- There is a CMS record but no matching STS record – STS data elements are required for identifying the cohort and for risk adjustment.
- There is an STS record but not matching CMS record – Medicare data are required for ascertaining 30-day readmission status, especially readmissions to a hospital other than the CABG hospital
- CABG is not a stand-alone procedure – Inclusion of combination procedures complicates risk adjustment by adding multiple relatively rare cohorts with potentially distinct characteristics and outcomes.
- The patient died prior to discharge from acute care setting – Patient is not at risk of subsequent readmission.
- The patient leaves against medical advice (AMA). – Physicians and hospitals do not have the opportunity to deliver the highest quality care.
- The patient does not retain Medicare fee-for-service (FFS) A and B for at least two months after discharge – Beneficiaries who switch to a Medicare advantage plan are unlikely to file inpatient claims which are required for ascertaining 30-day readmission status.
- The index CABG episode is >365 days. – These patients were excluded for consistency with previous CMS readmission measures. These records may inaccurate admission and discharge dates. If not, including them would complicate risk adjustment by adding a relatively rare cohort with potentially distinct characteristics and outcomes.
- Not the first eligible CABG admission per patient per measurement period. – Simplifies statistical analysis. Also, repeat CABG procedures are very rare and so loss of information is minimal.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims, Electronic Clinical Data : Registry

Measure Steward: The Society of Thoracic Surgeons

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-22**; **N-0;** 1b. Performance Gap: **H-6**; **M-16**; **L-0**; **I-0;** 1c. Impact: **H-5**; **M-17**; **L-0**; **I-0**

Rationale:

- The Committee agreed with the rationale supporting the relationship between care processes for CABG and readmissions.
- Committee members noted a range in performance gap due to several determinants of health, showing that there is opportunity for improvement. The Committee agreed that this measure was important to measure and report noting that it is a procedure that incurs significant cost to Medicare program, and is a high volume procedure.

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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: **H-8**; **M-14**; **L-0**; **I-0** 2b. Validity: **H-4**; **M-17**; **L-1**; **I-0**

Rationale:

- Committee members assessed that reliability was moderate noting that the signal to noise ratio for the measure is 0.47, which is within a generally acceptable range. The developers noted that as case volume increases the reliability of the measure increases.
- One Committee member questioned the measure developer on the specifications of the measure, which includes patients who have a VAD (Ventricular Assist Device) implant during a CABG procedure. The developer's rationale for inclusion of VAD implantations was that these implantations are often unplanned during CABG and as such can impact the quality of the CABG procedure and subsequent perioperative care. The Committee agreed with this rationale, but noted that with high risk Heart Failure patients there is a very high likelihood that the patient will need a VAD placement, following CABG surgery.
- The Committee noted that patients who undergo a VAD procedure tend to have higher readmissions than those undergoing isolated CABG. Consequently, by including CABG plus VAD in this particular patient population, there is a high risk of penalizing tertiary and quaternary care centers that treat patients with advance heart failure.
- The developer noted that the STS database has been modified so that VAD are now tracked as to whether it was a planned or unplanned insertion. The developer plans to update the measure once this data becomes available.
- Since the measure uses two different data sources, Committee members questioned how many beneficiaries overlap across the two datasets, Medicare fee-for-service (FFS) and the STS clinical data registry. According to the developer, from the Medicare fee-for-service data to the STS data, there is high fidelity (in the high nineties) across the two data sources, however from the STS data to the Medicare fee-for-service data this number drops to 85 percent.

- The developer noted one reason there is not a direct 1:1 match is because not all patients in the STS dataset are Medicare fee-for-service beneficiaries (i.e., that claims information for Medicare Advantage patients does not exist)

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3. Feasibility: H-11; M-11; L-0; I-0

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

Rationale:

- The Committee assessed the feasibility to be quite reasonable and noted the minor issue with linking patients across the Medicare data and STS data. Committee members expressed a desire for direct linkages using Social Security Numbers to improve accuracy.
- One Committee member questioned the proprietary nature of using the STS database, noting that potential fees associated with using the database could cause barriers for use by others, specifically the public and consumer organizations. The developers stated that the Society of Thoracic Surgeons is an advocate of public reporting and described two ways to get the information: from the STS website (www.sts.org) or Consumer Reports.

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4. Use and Usability: H-13; M-9; L-0; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee noted potential gaming where an elective procedure would not be performed, in order to not affect the readmission rate. However, it did acknowledge that since STS has been reporting data for some time, it should not have any significant incremental impact on selecting cases based on a risk of readmissions.
- The Committee noted, this measure was developed under contract with CMS, and may be used for public reporting in conjunction with measure 2512: Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery.

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5. Related and Competing Measures

- This measure directly competes with measure 2375: Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery.
- The Committee discussed measure 2514 and measure 2515 and noted that the two measures were harmonized along several measure dimensions, including measure cohort, assessment of isolated CABG, and inclusion of VAD procedures. Committee members noted that the principal difference between these two measures is their data sources.
- Measure 2514 uses registry data to calculate the measure cohort and the risk model and then uses administrative data to calculate the outcome of readmissions. In contrast, measure 2515 uses administrative claims data for both the risk model and the readmissions outcome. While the data sources for risk adjustment differ between the measures, the Committee noted that identical statistical approaches are used (i.e., hierarchical logistic regression); moreover, both measures produce similar measure results.

- The developers of these measures argued that the measure differences justify having two measures. They noted that having two fully harmonized measures will capture widest possible group of patients. Further, the use of both measures represents a natural progression toward development of electronic measures using clinical-based data. Both developers agreed that incorporating clinical data in quality measures, whenever appropriate and feasible, strengthens the face validity of a measure.
- CMS provided funding to support the development of complementary measures that utilize a range of available data for quality measurements. It was noted by CMS that the agency intends to migrate toward use of clinical registry-based measures over time, and the harmonization of these measures will provide for a smoother transition when this migration occurs.
- During the post-meeting comment period, commenters disagreed with the Committee's conclusion that the two CABG measures were harmonized to the extent possible. Comments discussed the differences between the two CABG measures, noting that measure 2515 uses administrative claims and could feasibly incorporate the CMS "planned readmissions" algorithm, while measure 2514 uses clinical data that that may more appropriately capture risk factors.
- Commenters encouraged the Committee to defer endorsement decisions and recommended the developers collaborate on a single combined measure, noting that the CABG readmission measure should be analogous to the PCI readmission measure (measure 0695), which links clinical registry data from the American College of Cardiology registry with Medicare claims data and removes planned readmissions from the outcome. Other comments asked the developer to provide additional data on the variance in measurement between these two measures, noting that data submitted for measure 2515 suggests that nearly eight percent of hospitals will have a difference of one percent or more in their performance between the two measure specifications. Commenters cautioned that while the differences may appear small, they matter in the context of pay-for-performance programs.
- During the post-comment call, Committee members agreed that the STS registry used for measure 2514 would provide feedback in a timely manner, and may therefore be more useful for internal quality improvement. Committee members also agreed that measure 2515, which is based on claims, might be more suitable for public reporting and use in federal programs at this time since performance could be calculated for all hospitals using claims whereas the STS registry data covers only those who participate in the registry. Overall, the Committee agreed with the developer's assessment that the measures are complementary; however, some members expressed concern that endorsing multiple measures may add confusion for consumers and patients.
- The Committee voted to recommend both measures for endorsement (Yes-13, No-5), noting that the measures were harmonized to the extent possible and acknowledging that both sets of measures use different data sources.

Standing Committee Recommendation for Endorsement: **Y-22**; **N-0**

6. Member and Public Comment

- Commenters disagreed that the two CABG readmission measures are harmonized to the extent possible. Commenters discussed the differences between the two CABG measures, noting that measure 2515 uses administrative claims and can feasibly incorporate the CMS "planned

readmissions" algorithm, while measure 2514 uses clinical data that is potentially important for high-volume facilities and facilities with higher-risk patients. Commenters encouraged the Committee to defer endorsement decisions and recommended that the developers collaborate on a single hybrid measure, noting that the CABG readmission measure should be analogous to the PCI readmission measure (measure 0695), which links clinical registry data from the American College of Cardiology registry with Medicare claims data and removes planned readmissions from the outcome.

- Other comments asked the developer to provide additional data on the variance in measurement between these two measures, noting that data submitted for measure 2515 suggests that nearly 8 percent of hospitals have a difference of one percent or more in their results. Comments cautioned that while the differences may appear small, they matter significantly in the context of pay-for-performance programs.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-14; N-0; A-3

Decision: Approved for endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Submission | Specifications

Description: The measure estimates a hospital-level risk-standardized readmission rate (RSRR), defined as unplanned readmission for any cause within 30 days from the date of discharge of the index CABG procedure, for patients 18 years and older discharged from the hospital after undergoing a qualifying isolated CABG procedure. The measure was developed using Medicare Fee-for-Service (FFS) patients 65 years and older and was tested in all-payer patients 18 years and older.

An index admission is the hospitalization for a qualifying isolated CABG procedure considered for the readmission outcome.

Numerator Statement: The outcome for this measure is 30-day all-cause readmission. We define all-cause readmission as an unplanned inpatient admission for any cause within 30 days after the date of discharge from the index admission for patients 18 years and older discharged from the hospital after undergoing isolated CABG surgery. If a patient has one or more unplanned admissions (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission.

Denominator Statement: This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 18 years or older. We have tested the measure in both age groups.

The cohort includes admissions for patients who receive a qualifying isolated CABG procedure (see codes below) and with a complete claims history for the 12 months prior to admission. For simplicity of implementation and as testing demonstrated closely correlated patient-level and hospital-level results using models with or without age interaction terms, the only recommended modification to the

measure for application to all-payer data sets is replacement of the "Age-65" variable with a fully continuous age variable.

Exclusions: In order to create a clinically coherent population for risk adjustment and in accordance with existing NQF-approved CABG measures and clinical expert opinion, the measure is intended to capture isolated CABG patients (i.e., patients undergoing CABG procedures without concomitant valve or other major cardiac or vascular procedures).

For all cohorts, hospitalizations are excluded if they meet any of the following criteria. Hospitalizations for:

1) Patients who leave the hospital against medical advice (AMA)

Rationale: We exclude hospitalizations for patients who are discharged AMA because providers did not have the opportunity to deliver full care and prepare the patient for discharge.

2) Patients with qualifying CABG procedures subsequent to another qualifying CABG procedure during the measurement period.

Rationale: CABG procedures are expected to last for several years without the need for revision or repeat revascularization. A repeat CABG procedure during the measurement period very likely represents a complication of the original CABG procedure and is a clinically more complex and higher risk surgery. We, therefore, select the first CABG admission for inclusion in the measure and exclude subsequent CABG admissions from the cohort.

For Medicare FFS patients, the measure additionally excludes:

3) Patients without at least 30 days post-discharge enrollment in FFS Medicare.

Rationale: We exclude these hospitalizations because the 30-day readmission outcome cannot be assessed in this group.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims

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

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-22**; **N-0;** 1b. Performance Gap: **H-9**; **M-13**; **L-0**; **I-0;** 1c. Impact: **H-18**; **M-4**; **L-0**; **I-0**

Rationale:

- The Committee observed the similarities between this measure and measure 2514, both of which focus on readmissions following CABG. The Committee agreed with the rationale provided by the developer, which stated that care processes within hospitals impact the rate of readmissions within 30 days following discharge. The Committee members noted a range of readmissions rates between 12 and 21.1 percent, with a mean performance of 16.8 percent. This range represents a performance gap and opportunity for improvement.

- The Committee considered this measure to be high priority due to the large costs associated with CABG surgery, which could potentially be prevented. Data submitted by the developer cites the annual preventable CABG readmission costs to Medicare as $151 million.

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

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

2a. Reliability: **H-1**; **M-21**; **L-0**; **I-0** 2b. Validity: **H-2**; **M-20**; **L-0**; **I-0**

<u>Rationale</u>:

- The evidence base for the measure included a test/retest split sample to assess the reliability of the measure. The developers noted an interclass correlation coefficient of 0.331, which is considered to be "fair". During evaluation of the measure's validity, the Committee noted that the measures c-statistic was 0.63, which is similar to other outcome measures and measure 2514.
- One Committee member raised the question that since this is administrative data, the VAD patients could only be included or excluded, but not put into subsets of elective and non-elective, unlike measure 2514.
- Several Committee members questioned whether outpatient death prior to readmission is excluded and asked if additional analysis could be provided to determine how common death within 30 days is. The developer replied that those who die within 30 days in the hospital are excluded from this measure. However, there are a small proportion of patients who die after discharge from the hospital, which allows it to capture a spectrum of quality outcomes and prevents any unintended consequences.

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3. Feasibility: H-20; M-2; 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)

<u>Rationale</u>:

- Committee members noted the measure is based on claims data and is highly feasible. They noted that the measure uses Medicare Part A inpatient and outpatient and part B outpatient claims and the data elements are readily available.

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4. Use and Usability: H-3; M-18; L-1; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

<u>Rationale</u>:

- One Committee member raised concern on whether this measure would be able to sufficiently distinguish between high and low performance. Methods used to report this measure should ensure that differences are statistically different from one another.
- Committee members evaluated this measure to be comprehensive enough to use for public reporting, and noted that CMS is considering use of this measure in public reporting.

5. Related and Competing Measures

- This measure directly competes with measure 2514: Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate.
- The Committee discussed measure 2514 and measure 2515 and noted that the two measures were harmonized along several measure dimensions, including measure cohort, assessment of isolated CABG, and inclusion of VAD procedures. Committee members noted that the principal difference between these two measures is their data sources.
- Measure 2514 uses registry data to calculate the measure cohort and the risk model and then uses administrative data to calculate the outcome of readmissions. In contrast, measure 2515 uses administrative claims data for both the risk model and the readmissions outcome. While the data sources for risk adjustment differ between the measures, the Committee noted that identical statistical approaches are used (i.e., hierarchical logistic regression); moreover, both measures produce similar measure results.
- The developers of these measures argued that the measure differences justify having two measures. They noted that having two fully harmonized measures will capture widest possible group of patients. Further, the use of both measures represents a natural progression toward development of electronic measures using clinical-based data. Both developers agreed that incorporating clinical data in quality measures, whenever appropriate and feasible, strengthens the face validity of a measure.
- CMS provided funding to support the development of complementary measures that utilize a range of available data for quality measurements. It was noted by CMS that the agency intends to migrate toward use of clinical registry-based measures over time, and the harmonization of these measures will provide for a smoother transition when this migration occurs.
- During the post-meeting comment period, commenters disagreed with the Committee's conclusion that the two CABG measures were harmonized to the extent possible. Comments discussed the differences between the two CABG measures, noting that measure 2515 uses administrative claims and could feasibly incorporate the CMS "planned readmissions" algorithm, while measure 2514 uses clinical data that that may more appropriately capture risk factors.
- Commenters encouraged the Committee to defer endorsement decisions and recommended the developers collaborate on a single combined measure, noting that the CABG readmission measure should be analogous to the PCI readmission measure (measure 0695), which links clinical registry data from the American College of Cardiology registry with Medicare claims data and removes planned readmissions from the outcome. Other comments asked the developer to provide additional data on the variance in measurement between these two measures, noting that data submitted for measure 2515 suggests that nearly eight percent of hospitals will have a difference of one percent or more in their performance between the two measure specifications. Commenters cautioned that while the differences may appear small, they matter in the context of pay-for-performance programs.
- During the post-comment call, Committee members agreed that the STS registry used for measure 2514 would provide feedback in a timely manner, and may therefore be more useful for internal quality improvement. Committee members also agreed that measure 2515, which is based on claims, might be more suitable for public reporting and use in federal programs at this time since performance could be calculated for all hospitals using claims whereas the STS registry data covers only those who participate in the registry. Overall, the Committee agreed with the developer's assessment that the measures are complementary; however, some

members expressed concern that endorsing multiple measures may add confusion for consumers and patients.

- The Committee voted to recommend both measures for endorsement (Yes-13, No-5), noting that the measures were harmonized to the extent possible and acknowledging that both sets of measures use different data sources.

Standing Committee Recommendation for Endorsement: **Y-21**; **N-1**

6. Member and Public Comment

- Commenters disagreed that the two CABG readmission measures are harmonized to the extent possible. Commenters discussed the differences between the two CABG measures, noting that measure 2515 uses administrative claims and can feasibly incorporate the CMS "planned readmissions" algorithm, while measure 2514 uses clinical data that is potentially important for high-volume facilities and facilities with higher-risk patients.
- Commenters encouraged the Committee to defer endorsement decisions and recommended that the developers collaborate on a single hybrid measure, noting that the CABG readmission measure should be analogous to the PCI readmission measure (measure 0695), which links clinical registry data from the American College of Cardiology registry with Medicare claims data and removes planned readmissions from the outcome.
- Other comments asked the developer to provide additional data on the variance in measurement between these two measures, noting that data submitted for measure 2515 suggests that nearly 8 percent of hospitals have a difference of one percent or more in their results. Comments cautioned that while the differences may appear small, they matter significantly in the context of pay-for-performance programs.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-14; N-0; A-3

Decision: Approved for endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Submission | Specifications

Description: Rate of risk-standardized, all-cause, unplanned hospital visits within 7 days of an outpatient colonoscopy among Medicare fee-for-service (FFS) patients aged 65 years and older.

Numerator Statement: The outcome for this measure is all-cause, unplanned hospital visits within 7 days of an outpatient colonoscopy. We define a hospital visit as any emergency department (ED) visit, observation stay, or unplanned inpatient admission.

Denominator Statement: Colonoscopies performed at hospital outpatient departments (HOPDs) and ambulatory surgical centers (ASCs) for Medicare FFS patients aged 65 years and older.

Exclusions: We established the following exclusion criteria after reviewing the literature, examining existing measures, and discussing alternatives with the working group and technical expert panel (TEP) members. The goal was to be as inclusive as possible; we excluded only those high-risk procedures and patient groups for which risk adjustment would not be adequate or for which hospital visits were not typically a quality signal. The exclusions, based on clinical rationales, prevent unfair distortion of performance results.

1) Colonoscopies for patients who lack continuous enrollment in Medicare FFS Parts A and B in the 1 month after the procedure.

Rationale: We exclude these patients to ensure full data availability for outcome assessment.

2) Colonoscopies that occur concurrently with high-risk upper gastrointestinal (GI) endoscopy procedures.

Rationale: Patients undergoing concurrent high-risk upper GI endoscopy procedures, such as upper GI endoscopy procedures for the control of bleeding or treatment of esophageal varices, are often unwell and have a higher risk profile than typical colonoscopy patients. Therefore these patients have a disproportionally higher risk for the outcome.

3) Colonoscopies for patients with a history of inflammatory bowel disease (IBD).

Rationale: We exclude these patients because:

-IBD is a chronic condition; patients with IBD undergo colonoscopy for both surveillance due to increased cancer risk and for evaluation of acute symptoms. IBD is likely to be coded as the primary diagnosis prompting the procedure irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure in the setting of an acute exacerbation of IBD. Therefore, we may not be able to adequately risk adjust for these patients as we cannot identify relatively well versus acutely unwell patients among visits coded as IBD.

-Our aim is to capture hospital visits which reflect the quality of care. Admissions for acutely ill IBD patients who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of an IBD flare do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see Measure Testing Form Section 1.2 and 1.7 for full description of the dataset), more than one third of IBD patients admitted to the hospital with colonoscopy had a discharge diagnosis of IBD, indicating their admission was for medical treatment of their IBD. We therefore excluded this group so that providers who treat a disproportionate number of IBD patients will not be disadvantaged in the measure.

4) Colonoscopies for patients with a history of diverticulitis.

Rationale: We exclude these patients because:

-It is unclear what the health status is of patients coded with a history of diverticulitis, making it difficult to fully risk adjust for patients' health. Colonoscopies performed on patients with a history of diverticulitis are likely to be coded as diverticulitis as the primary diagnosis irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure (i.e., are acutely unwell with active disease). Furthermore, the codes for diverticulitis and diverticulosis may not be consistently used; patients with diverticulosis may be erroneously coded as diverticulitis. Therefore, we may not be able to adequately risk adjust as we cannot identify relatively well versus acutely unwell patients among visits coded as diverticulitis.

-Admissions for acutely ill patients with a history of diverticulitis who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see Measure Testing Form Section 1.2 and 1.7 for full description of the dataset) more than one quarter of patients

with a history of diverticulitis admitted to the hospital post colonoscopy had a discharge diagnosis of diverticulitis, indicating they were admitted for medical treatment of the condition. These admissions are likely unrelated to the quality of the colonoscopy. We therefore excluded this group so that providers who treat a disproportionate number of diverticulitis patients will not be disadvantaged in the measure.

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Ambulatory Care : Ambulatory Surgery Center (ASC), Ambulatory Care : Clinician Office/Clinic, Other

Type of Measure: Outcome

Data Source: Administrative claims

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

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-14; N-4**; 1b. Performance Gap: **H-7**; **M-11**; **L-0**; **I-0;** 1c. Impact: **H-12**; **M-6**; **L-0**; **I-0**

Rationale:

- The Committee noted that colonoscopy is the most common procedure performed in the outpatient or ASC setting.
- The Committee noted that there is significant variation from 8.3 to 20.1 per 1,000 beneficiaries and agreed there is opportunity for improvement.
- The Committee agreed with the evidence in support of the rationale. They noted that most patients return to the hospital with potentially preventable complications (e.g., abdominal pain, bleeding, perforation, aspiration because of the anesthesia).
    - The developer further stressed there is rationale suggesting that providers in the outpatient setting are unaware of these events, citing a study which suggested that in about 80 percent of readmissions the provider is unaware of any complication. The developer suggested that there are legal limitations around follow-up care by ambulatory surgical centers.

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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: **H-1**; **M-17**; **L-0**; **I-0** 2b. Validity: **H-0**; **M-18**; **L-0**; **I-0**

Rationale:

- The Committee noted, that the interclass correlation coefficient (ICC) provided by the developer (0.335, interpreted as “fair agreement”) was comparable to other outcome measures of quality. The developer noted, that the split sample which was used to conduct reliability testing contained 2-years of data, rather than 3-years (as the measure is specified), as such when extrapolating the data to 3-years the ICC increased to 0.43, interpreted as “moderate agreement”.

- The Committee agreed the systematic face validity testing provided by the developer demonstrated the TEP agreed with overall validity of the measure as specified, concluding the measure could be used to distinguish quality.
- The Committee noted that the model has is able to discriminate between high and low performers, with a C-statistic of 0.67, when the development sample was compared to the validation sample.
- The Committee questioned why polypectomy was included in the risk adjustment model. The developers explained that polypectomy was included in the model because while polypectomy is a risk factor for GI bleeding, removal is discretionary the developers did not want to penalize providers who excised polyps during colonoscopy.
    - Committee members warned that was possible then that the polypectomy could cause the readmission and that the model might adjust that away. The Committee further recommended that this measure should be compared to another measure of polypectomy rates or adenoma detection rates.
- The Committee questioned the 7-day time window and asked the developer to provide insight as to why they chose that time period. The developer explained that while there is a range of side effects that could occur after a colonoscopy, the literature suggests that a majority of complications or adverse events occur within 7 days. The developers empirically tested this looking at the number of hospital visit per each day post procedure, and noticed the number of visits levels off to after about 7 days.
- The Committee questioned whether there was any other measure in use that would be able to externally validate this quality measure (i.e., looking at volume or detection of abnormalities). The developer noted that finding other measures to validate against was difficult as there are not many outcome measures for ASC.
- Some Committee members noted similar issues with measure 2496: Standardized Readmission Ratio (SRR) for dialysis facilities, where the skill of the provider is not easily distinguished from the facility, while other Committee members noted the measure was well specified and precise in determining a linkage between the physician doing the colonoscopy, the procedure, and the outcome.
    - The developer explained that the reason the measure is specified at the facility level is because the measure is dependent on the number of cases in order to get a reliable estimate, but also that there is a component of facility care that the developers think contributes to the outcome such as anesthesia care, post-op care, and discharge.

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3. Feasibility: H-14; M-4; 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:

- All data elements are in defined fields in electronic claims and that these data are routinely collected as part of the billing process.

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4. Use and Usability: H-1; M-16; L-1; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- The Committee noted that the measure developers acknowledge that there are many situations where a component of primary care or first contact care can happen someplace besides a primary care clinician's practice, such as an ED, and cautioned against potential unintended consequences of using this measure as a metric for ED visits.
- The Committee warned against potential misattribution of risk if the ASC is one where a single provider in a small group is driving poor outcomes; there is a potential for the ASC to become an outlier.
    - The developers noted that CMS is considering use of this measure in public reporting in the Hospital Outpatient Quality Reporting Program and/or Ambulatory Surgery Center Quality Reporting Program. During workgroup discussion of this measure the Committee cautioned that overlap of this measure within two programs could cause "double jeopardy."

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5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-17**; **N-1**

6. Member and Public Comment

- NQF received four comments on measure 2539. Commenters were supportive of the increased focus on the quality of colonoscopy and the development of this measure concept.
- Concern was raised that the planned readmission exclusions and risk adjustment variables included in this measure are not sufficient for the clinical condition and may result in reluctance of endoscopists to scope patients with significant comorbidities.
- One commenter argued that the intraclass correlation coefficient of 0.355 suggested a low level of reliability.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-13; N-1; A-3

Decision: Approved for endorsement

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8. Board of Directors Vote: December 22, 2014: Y-8;N-0

Decision: Ratified for endorsement

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9. Appeals

- On January 28, 2015, the 30-day appeals period for the all-cause admission and readmission measures closed. NQF received an appeal submitted by the Ambulatory Surgery Center Quality Collaboration (ASC-QC).
- NQF staff reviewed the appeal and determined that the issues raised were based on measure-specific issues. The appellant's main concerns were as follows: Questions around the scientific acceptability of the measure including the risk-adjustment model, systematic undercounting of Hospital Outpatient Departments (HOPD) events, the effect of the Medicare 3-day payment rule on the measure score, the limited ability of the measure score to make distinctions among facilities, and whether the measure score results are actionable.

- CSAC reviewed the appeal on February 10, 2015, and voted to uphold endorsement (92% approval).
    - For measure 2539, the CSAC emphasized that readmissions following colonoscopy procedures are important to measure and report, due to the high volume of procedures performed and the variability in outcomes. The CSAC noted this measure met all the must-pass criteria at the Standing Committee level and the Standing Committee strongly recommended endorsement of the measure with 94 percent approval. Additionally, the CSAC was satisfied that the developer addressed the concerns raised by the appellant and concluded that, as CMS continues to refine the measure; updates should be considered during the annual update process.
- The BOD Executive Committee reviewed the appeal on March 5, 2015, and voted to uphold endorsement of the measure.

Measure Not Endorsed

0327 Risk-Adjusted Average Length of Inpatient Hospital Stay

Submission | Specifications

Description: The average (geometric mean) hospital length of stay in days relative to the expected geometric mean length of stay of any well defined population of inpatients over a specified time interval

Numerator Statement: Risk-adjusted in-hospital days average for any defined and observable inpatient population in the form of days above the average that would be expected purely based on patient risk factors of the defined patient population

Denominator Statement: Patients admitted to a hospital. Patient population can be aggregated as any grouping of patients (e.g., by hospital, physician, diagnosis code, procedure, DRG, etc.)

Exclusions: The only exclusions are those limited by the parameters set for a specific population and are not limited by diagnosis

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility, Behavioral Health/Psychiatric : Inpatient, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility, Post Acute/Long Term Care Facility : Long Term Acute Care Hospital, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

Type of Measure: Outcome

Data Source: Administrative claims

Measure Steward: Premier, Inc

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-23; N-1**; 1b. Performance Gap: **H-10**; **M-11**; **L-3**; **I-0;** 1c. Impact: **H-12**; **M-10**; **L-1**; **I-0**

Rationale:

- The Committee agreed with the developer's assessment that length of stay serves as a proxy for resource usage, reflecting how efficiently a hospital allocates staff time, space, equipment, and additional considerations per patient.
- The Committee noted a performance gap and large variations across hospitals.
- The Committee agreed that length of stay represents a high priority area and correlates with high cost.

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2. Scientific Acceptability of Measure Properties: The measure failed to reach consensus on the Scientific Acceptability criteria

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

2a. Reliability: **H-1**; **M-11**; **L-6**; **I-6** 2b. Validity: **H-3**; **M-16**; **L-4**; **I-1**

Rationale:

- Some members expressed concern that there was limited testing information provided by the developer, such as R squared values and c-statistics.
- The Committee also noted a gap in data and references to correlate the reliability statistic provided by the developer. This limited information made the assessment of validity and reliability testing challenging for the Committee.
- The Committee noted that the risk adjustment model includes factors related to socioeconomic status. Members expressed concern that this is not consistent with current NQF guidance. It was noted that the guidance in question was updated after this measure's initial endorsement in May 2008. Some agreed that adjustment for sociodemographic factors was conceptually appropriate for this measure and that there could be an adequate rationale for departing from NQF's guidance in this instance.
- Committee members noted that longer hospital stays might be indicated, and that no data was provided to support the cut off of 100 days. The developer explained that hospital stays of more than 100 days represents less than 0.5 percent of the population.

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3. Feasibility: H-22; M-2; 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:

- Committee members agreed that the measure is feasible, given its use of administrative claims data that is routinely collected as a part of care delivery.

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4. Use and Usability: H-1; M-14; L-6; I-2

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

Rationale:

- To date, this measure has been used primarily for quality improvement purposes, and it is not currently used in public reporting. The developer noted that CMS and Premier have had discussions about how the measure may be publicly reported; however, there are currently no definite plans to do so.

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5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-10**; **N-10**

6. Member and Public Comment

- NQF received several comments on measure 0327, a measure where the Committee has not yet reached consensus. Commenters noted that the measure as specified could be applied to inpatient rehabilitation facilities (IRFs), which the commenters argued should be excluded from this measure due to the large variation in length of stay at these facilities. In addition, commenters suggested that there should be a method to adjust for outliers.

- Several commenters argued that 0327 should be considered an efficiency measure rather than a true quality measure, and that it should be paired with quality measures to avoid unintended consequences such as reduction of length of stay at the expense of sufficient and appropriate care.
- Some commenters also suggested that the measure has limited usability given its lack of specificity, and that the measure should enable providers to "drill down" to assess length of stay by diagnosis-related group.

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7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-5; N-9; A-3
Decision: Not approved for endorsement

2496 Standardized Readmission Ratio (SRR) for dialysis facilities

Submission | Specifications

Description: The Standardized Readmission Ratio (SRR) is defined to be the ratio of the number of index discharges from acute care hospitals that resulted in an unplanned readmission to an acute care hospital within 30 days of discharge for Medicare-covered dialysis patients treated at a particular dialysis facility to the number of readmissions that would be expected given the discharging hospitals and the characteristics of the patients as well as the national norm for dialysis facilities. Note that in this document, "hospital" always refers to acute care hospital.

Numerator Statement: Each facility's observed number of hospital discharges that are followed by an unplanned hospital readmission within 30 days of discharge

Denominator Statement: The expected number of unplanned readmissions in each facility, which is derived from a model that accounts for patient characteristics and discharging acute care hospitals.

Exclusions: Hospital discharges that:

- Are not live discharges
- Result in a patient dying within 30 days with no readmission
- Are against medical advice
- Include a primary diagnosis for cancer, mental health or rehabilitation
- Occur after a patient's 12th admission in the calendar year
- Are from a PPS-exempt cancer hospital
- Result in a transfer to another hospital on the same day

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Dialysis Facility

Type of Measure: Outcome

Data Source: Administrative claims

Measure Steward: Centers for Medicare and Medicaid Services

STANDING COMMITTEE MEETING [05/05/2014-05/06/2014]

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

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-17; N-6**; 1b. Performance Gap: **H-15**; **M-8**; **L-0**; **I-0;** 1c. Impact: **H-20**; **M-3**; **L-0**; **I-0**

Rationale:

- There was general agreement that this is a high impact area of measurement and there is opportunity for improvement, with the overall readmissions rate at approximately 30 percent and the readmissions rate for hemodialysis patients at approximately 36 percent.
- The Committee agreed that certain post-discharge assessments and changes in treatment at the dialysis facility may be associated with a reduced risk of readmissions.
- One committee member was concerned that the cause of the reduced risk of admissions had more to do with interventions by nephrologists, rather than the dialysis unit. Further, the

member noted that NQF guidance regarding evidence for outcome measures are not strong enough, suggesting that the quality, quantity, and consistency of the evidence should be evaluated even for outcome measures.

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

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

2a. Reliability: **H-5**; **M-17**; **L-1**; **I-0** 2b. Validity: **H-1**; **M-16**; **L-7**; **I-0**

<u>Rationale</u>:

- The Standing Committee discussed a number of threats to validity of the measure, mainly focusing on whether the dialysis unit was the accountable entity for 30-day readmissions back to acute care facilities.
    - One member argued that there are limited interventions a dialysis unit can implement that would influence this particular measure. This member noted that there are limited structures that allow the medical director or the governing body of the dialysis unit to compel nephrologists to see patients immediately after discharge from an acute care facility.
    - Other Committee members noted that while the locus of control may not be solely the dialysis facility, this measure and improvement efforts tied to it may be the type of impetus needed to improve care for this population. These members also noted that with patients spending nine to 12 hours in these units during the week, more could be done to improve care for these patients.

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3. Feasibility: H-11; M-9; L-4; 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)

<u>Rationale</u>:

- The required data elements are routinely generated and used during care delivery and all data elements are in defined fields in electronic claims

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4. Use and Usability: H-3; M-11; L-10; I-0

(Meaningful, understandable, and useful to the intended audiences for 4a. Public Reporting/Accountability and 4b. Quality Improvement)

<u>Rationale</u>:

- Some members were concerned that the threats to validity would cause unintended consequences with the use of this measure in public reporting or accountability applications; however, there was limited evidence of unintended consequences identified.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-8**; **N-12**

6. Member and Public Comment

- NQF received 10 post-evaluation comments regarding this measure. There was one supportive comment, arguing that this measure addresses an important high priority for measurement with sufficient room for improvement in the care processes of dialysis units. The remaining comments raised concern about the measure specifications, including the numerator specifications, denominator specifications, attribution, temporal logic, risk adjustment, testing, and intended use.

Numerator Specifications

- Commenters were concerned that the numerator definition relies on an accurate determination of planned admissions using codes from a non-ESRD population. Commenters encouraged validation of these codes in the ESRD population through examination of patient-level data from the CMS dry run.
- Commenters raised strong concern that the numerator of acute admissions does not consider ESRD-specific patient management – noting that this list of admissions should be tailored to include nephrology–related treatment. Commenters requested clarification on whether PD catheter placement or omentectomy, vascular access creation, or transfusion for a transfusion dependent patient fall is included in the measure.

Denominator Specifications

- Specifically, a commenter disagreed that the number of discharges should not be the determinant of the denominator, but rather the number of readmissions should be based on the total number of patients treated in a facility. Further, the commenter argued that the current measure is vulnerable to being skewed by the effect of one or two complex patients requiring frequent hospitalization.

Attribution

- Many commenters challenged the notion that dialysis facilities have the ability to affect readmissions. Commenters explained that dialysis facilities often do not receive any direct communication from the discharging hospital or facility for their patients, and are not supported to have coordinated presence in multiple hospitals. One commenter noted that a patient might be readmitted before ever being seen in the dialysis unit. This commenter noted that these readmissions are not actionable by the dialysis facility and should not be included in the measure. Further, commenters noted a lack of evidence showing that changes in a dialysis unit are the factors driving performance improvement.
- Additionally, a commenter noted that the majority of dialysis facilities do not have the resources for additional personnel, such as case managers, to improve care coordination between dialysis facilities and other health care providers. This commenter argued that dialysis facilities have a role in reducing all-cause readmissions; however, these facilities may not be the locus of control to manage the coordination required.

- Further, the commenter discussed that a dialysis unit has no control over a hospital's decision to re-admit a patient. The hospital physician decides whether or not to admit a patient, and many of these admissions have nothing to do with the nephrological issues being addressed by the dialysis facility and should also be excluded from the measure.
- Commenters also requested clarification on the frequency of admissions that occur prior to the first post-acute visit to a dialysis facility.

Exclusions

- Commenters requested clarification on how specific patient cohorts are handled in the measure. Additionally, a commenter requested clarification on how readmissions as a result of unsuccessful kidney transplants are handled in the 6 months following the transplant. Another commenter requested clarification on the rationale for excluding index hospitalizations after the patient's 12th admission in the calendar year. Further, this commenter requested clarification on why patients without complete claims histories and those who are readmitted within the 1-3 days after discharge are not excluded from the measure.

Risk Adjustment

- Commenters noted concern with the validity of the two-stage random effects risk-adjustment model. In particular, they requested clarification on how the measure is impacted by communities where there is only one major hospital and/or one major dialysis facility versus communities where there is many of one or both. The Commenters also noted that the risk adjustment model should reduce the number of variables to those that are clinically relevant.
- Further, another commenter noted that other comorbidities should be included in the risk adjustment model, including sickle cell trait, angiodysplasia, myelodysplasia, diverticular bleeding, and asthma. Additionally, the commenter suggested adjusting for nursing home status in the risk adjustment model. Commenters also requested clarification on whether "poisoning by nonmedical substances" includes ongoing/chronic alcohol or drug abuse and not just acute events.

Reliability and validity testing

- Commenters noted that the testing results demonstrating correlations between hospitalization and re-hospitalization do not enhance confidence in the measure. The correlations with access and *urea reduction ratio (*URR) are statistically significant but of very low magnitude, and the correlation with the *standardized mortality ratio* (SMR) also has a low magnitude. Another commenter noted that the area under the curve for the for the receiver operating characteristic (ROC) curve (C-statistic) for the multivariable model of <0.65 is quite poor and suggests that the model is inadequate.
- Commenters requested clarification on the minimum sample size required to provide a statistically stable value for the measure. They expressed concern that many individual dialysis facilities may be too small with wide confidence intervals, limiting the statistical validity of the results.

Intended use in the specific program (QIP) and its appropriateness

- Commenters expressed concern regarding the appropriateness of the intended use of this measure for the CMS ESRD *Quality Incentive Program (*QIP). Commenters argued that the measure should focus only on admissions that are actionable for dialysis facilities, making stratification by primary diagnosis for readmission important.

7. Consensus Standards Approval Committee (CSAC) Vote: November 21, 2014: Y-9; N-5; A-3
Decision: Approved for endorsement

8. Board of Directors Vote: Pending

9. Appeals

- On January 28, 2015, the 30-day appeals period for the all-cause admission and readmission measures closed. NQF received an appeal submitted by the Renal Physicians Association (RPA) and co-signed by the American Nephrology Nurses Association, American Society of Nephrology, American Society of Pediatric Nephrology, Dialysis Patient Citizens, and Kidney Care Partners.
- NQF staff reviewed the appeal and determined that the issues raised were based on NQF process issues, rather than measure-specific issues. The appellant's main concern was that the CSAC did not consider the Committee evaluation and Member voting results, which is the basis for their challenge of the endorsement decision. The appellants note that the CSAC voted to approve the measure despite its having reached only 14 percent approval among NQF member councils and 40 percent approval by the Standing Committee.
- CSAC reviewed the appeal on February 10, 2015, and voted to uphold endorsement (92% approval).
    - CSAC members acknowledged the appellant's concerns about measure 2496 but remained supportive of its endorsement of the measure. The CSAC noted that the process followed in the review and endorsement of this measure is consistent with the approved process for measures on which consensus is not reached. Endorsement decisions require the CSAC to balance input received from the project Standing Committee, feedback by the membership from commenting, voting, and the NQF all-member call. The CSAC considered these transparent inputs and they were adequately considered in the final endorsement recommendation on this measure.
- The BOD Executive Committee reviewed the appeal on March 5, 2015, and requested that NQF bring together the appellant and the measure developer to explore opportunities for a shared path forward. NQF will engage in further consensus building regarding this measure and the measure will come back to the Executive Committee when those efforts are complete.

Measures Withdrawn from Consideration

Over time, and for various reasons, some previously-endorsed admission and readmission measures have been dropped from the full NQF portfolio. In some cases, the measure steward may not want to continue to maintain the measure for endorsement (e.g., update specifications to reflect new planned readmissions categories or as diagnosis/procedure codes evolve or go through NQF's measure maintenance process). In other cases, measures may lose endorsement upon maintenance review. Loss of endorsement can occur for many different reasons including—but not limited to—a change in evidence without an associated change in specifications, high performance on a measure signifying no further opportunity for improvement, and endorsement of a superior measure.

Five measures previously endorsed by NQF have not been re-submitted or withdrawn from maintenance of endorsement. The following measures are being retired from endorsement:

Measure	Reason for retirement
0698 30-Day Post-Hospital AMI Discharge Care Transition Composite Measure (CMS)	CMS has not implemented measure 0698 related to care transition since its endorsement by NQF. CMS contracted with Yale in October 2013 to conduct a comprehensive reevaluation of these measures; incorporating the findings from implementing the CMS readmissions for public reporting and payment programs. CMS will re-submit these measures for a comprehensive reevaluation once completed by Yale (YNHHSC/CORE/CMS).
0699 30-Day Post-Hospital HF Discharge Care Transition Composite Measure (CMS)	CMS has not implemented measure 0699 related to care transition since its endorsement by NQF. CMS contracted with Yale in October 2013 to conduct a comprehensive reevaluation of these measures; incorporating the findings from implementing the CMS readmissions for public reporting and payment programs. CMS will re-submit these measures for a comprehensive reevaluation once completed by Yale (YNHHSC/CORE/CMS).
0707 30-day Post-Hospital PNA (Pneumonia) Discharge Care Transition Composite Measure (CMS)	CMS has not implemented measure 0707 related to care transition since its endorsement by NQF. CMS contracted with Yale in October 2013 to conduct a comprehensive reevaluation of these measures; incorporating the findings from implementing the CMS readmissions for public reporting and payment programs. CMS will re-submit these measures for a comprehensive reevaluation once completed by Yale (YNHHSC/CORE/CMS).
0328 Casemix-Adjusted Inpatient Hospital Average Length of Stay (United Health Group)	United Health Group indicated that they no longer have the capacity to maintain these measures in accordance with NQF's Maintenance. Their methods for risk-adjusting length of stay have evolved and now more closely mirror those put forth by Premier in measure 0327. Given the relative alignment of the endorsed Premier and internal UHG methodologies, the effort required to document our current process for risk-adjusted LOS is likely counterproductive. For this reason, they did not resubmit measure 0328 during this measure maintenance cycle.
0331 Severity-Standardized Average Length of Stay - Routine Care (risk adjusted) (LeapFrog)	The Leapfrog Group indicated that they no longer have the capacity to maintain these measures in accordance with NQF's Maintenance Policy. Due to the staff-intensive resources that shepherding a measure through the NQF process requires, The Leapfrog Group has made the decision to no longer serve as measure steward on measure 0331.

Appendix B: NQF All-Cause Admissions and Readmissions Portfolio and Related Measures

All Cause/All Condition Specific Admissions

Measure Number	Measure Title
2503+	Hospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries [Colorado Foundation for Medical Care]
0171*	Acute Care Hospitalization (Risk-Adjusted) [CMS]
0173*	Emergent Care (Risk Adjusted)
0265*	All-Cause Hospital Transfer/Admission [ASC Quality Collaboration]
1463	Standardized Hospitalization Ratio for Admissions [CMS]

*Indicates measures in the Admissions and Readmissions Standing Committee Portfolio
+Indicates newly-submitted measures

Admissions Measures for Prevention Quality Indicators

Measure Number	Measure Title
0272	Diabetes Short-Term Complications Admission Rate (PQI 1) [AHRQ]
0273	Perforated Appendix Admission Rate (PQI 2) [AHRQ]
0274	Diabetes Long-Term Complications Admission Rate (PQI 3) [AHRQ]
0277	Heart Failure Admission Rate (PQI 8) [AHRQ]
0279	Bacterial Pneumonia Admission Rate (PQI 11) [AHRQ]
0280	Dehydration Admission Rate (PQI 10) [AHRQ]
0281	Urinary Tract Infection Admission Rate (PQI 12) [AHRQ]
0283	Asthma in Younger Adults Admission Rate (PQI 15) [AHRQ]
0638	Uncontrolled Diabetes Admission Rate (PQI 14) [AHRQ]

Admissions Measures for Pediatric Quality Indicators

Measure Number	Measure Title
0727	Gastroenteritis Admission Rate (pediatric) [AHRQ]
0728	Asthma Admission Rate (Pediatric) [AHRQ]

Length of Stay Measures

Measure Number	Measure Title
0334*	PICU Severity-adjusted Length of Stay [Virtual PICU Systems, LLC]
0327*	Risk-Adjusted Average Length of Inpatient Hospital Stay [Premier]
0702*	Intensive Care Unit (ICU) Length-of-Stay (LOS) [Philip R. Lee Institute for Health Policy Studies]

*Indicates measures in the Admissions and Readmissions Standing Committee Portfolio

Hospital All-Cause/All-Condition Readmission Measures

Measure Number	Measure Title
0335	PICU Unplanned Readmission Rate [Virtual PICU Systems, LLC]
1768*	Plan All-Cause Readmissions [NCQA]
1789*	Hospital-Wide All-Cause Unplanned Readmission Measure (HWR) [CMS]
2393+	Pediatric All-Condition Readmission Measure [Center of Excellence for Pediatric Quality Measurement]
2504+	30-day Rehospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries [CMS]

*Indicates measures in the Admissions and Readmissions Standing Committee Portfolio

+Indicates newly-submitted measures

Cardiovascular Condition-Specific Hospital Readmission Measures

Measure Number	Measure Title
0330*	Hospital 30-day, all-cause, risk-standardized readmission rate following heart failure hospitalization for patients 18 and older [CMS]
0505*	Thirty-day all-cause risk standardized readmission rate following acute myocardial infarction (AMI) hospitalization [CMS]
0695*	Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI) [American College of Cardiology]
2514+	Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate [STS]
2515+	Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery [CMS]

*Indicates measures in the Admissions and Readmissions Standing Committee Portfolio

+Indicates newly-submitted measures

Pulmonary Condition-Specific Hospital Readmission Measures

Measure Number	Measure Title
0506*	Thirty-day all-cause risk standardized readmission rate following pneumonia hospitalization. [CMS]
1891	Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization [CMS]
2414+	Pediatric Lower Respiratory Infection Readmission Measure [Center of Excellence for Pediatric Quality Measurement]

*Indicates measures in the Admissions and Readmissions Standing Committee Portfolio

+Indicates newly-submitted measures

Surgical Condition-Specific Hospital Readmission Measures

Measure Number	Measure Title
2513+	Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) following Vascular Procedures [CMS]
1551	Hospital-level 30-day, all-cause risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA) [CMS]

+Indicates newly-submitted measures

Setting-Specific Readmission Measures

Measure Number	Measure Title
2375+	PointRight OnPoint-30 SNF Rehospitalizations [AHCA]
2510+	Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) [RTI]
2380+	Rehospitalization During the First 30 Days of Home Health [CMS]
2505+	Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health [CMS]
2512+	All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals (LTCHs) [CMS]
2502+	All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities [CMS]
2496+	Standardized Readmission Ratio (SRR) for dialysis facilities [CMS]
2539+	Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy [CMS]

+Indicates newly-submitted measures

Appendix C: All-Cause Admissions and Readmissions Portfolio—Use in Federal Programs

NQF #	Title	Federal Programs: Current Finalized 2013-2014
0505	Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.	Hospital Inpatient Quality Reporting, Hospital Readmission Reduction Program
2502	All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facility (IRF)	Inpatient Rehabilitation Facilities Quality Reporting
2512	30-Day All Cause Post Long-Term Care Hospital (LTCH) Discharge Hospital Readmission Measure	Long-term Care Hospital Quality Reporting
2505	Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health	Home Health Quality Reporting

Appendix D: Project Standing Committee and NQF Staff

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Appendix E: Pre-Meeting Comments

Comments received as of May 29, 2014

Topic	Commenter	Comment
0505: Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.	Ms. Vipra Ghimire, MPH	The following comment is from the Johns Hopkins Medicine Armstrong Institute for Patient Safety and Quality. Measure seems very reasonable. We would be interested in seeing what the "planned readmissions" are. We completely agree with excluding AMA and hospital transfers, as these patients are typically sicker or more problematic in some other respect (social, family support). We support the case-mix adjustment for the standard. One concern is academic medical centers may see sicker patients (i.e. patients are selectively taken to larger centers with more severe illness), so an adjustment for that may be necessary. An absolute rate would not be appropriate.
0505: Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.	Dr. Allison L. Jones, MD	The point that I would make with the measure is that it does not take into consideration the cognitive status of the patient, nor does it take into consideration the socioeconomic factors which hospitals do not have control of. These factors are not routinely identified in the hospital setting, nor the outpatient arena, but certainly play a role in the possibility of the patient being readmitted. N. Knight, MD Member, Champaign County Medical Society

Topic	Commenter	Comment
0695: Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI)	Dr. Allison L. Jones, MD	As with other readmission measure I would make the comment that they do not take into consideration the socioeconomic circumstances of the patient, nor do they take into consideration the cognitive status of the patient which determines the ability of the patient to take control and steer the complex care needs that occur for themselves after this procedure. N. Knight, MD Member, Champaign County Medical Society
2393: Pediatric All-Condition Readmission Measure	Dr. Ellen Schwalenstocker, PhD, MBA	This comment can be found on the NQF website. http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=76657
2393: Pediatric All-Condition Readmission Measure	John Muldoon, 3M HIS; Submitted by Ms. Lisa J. Turner	This comment can be found on the NQF website. http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=76152
2414: Pediatric Lower Respiratory Infection Readmission Measure	John Muldoon, 3M HIS; Submitted by Ms. Lisa J. Turner	This comment can be found on the NQF website. http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=76153

Topic	Commenter	Comment
2414: Pediatric Lower Respiratory Infection Readmission Measure	Dr. Ellen Schwalenstocker, PhD, MBA	This comment can be found on the NQF website. http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=76657
2496: Standardized Readmission Ratio (SRR) for dialysis facilities	Linda Keegan, Kidney Care Partners (KCP); Submitted by Dr. Lisa McGonigal, MD, MPH	This comment can be found on the NQF website. http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=76154

Topic	Commenter	Comment
2496: Standardized Readmission Ratio (SRR) for dialysis facilities		DaVita Healthcare Partners treats nearly 170,000 ESRD patients in 2200 clinics. We are opposed to the suggested measure 2496, SRR for dialysis clinics. While we believe that readmissions are important in ESRD, the dialysis unit has limited ability to impact those outcomes for all causes. Based on 2011 Medicare Claims data, ESRD patients had an admission rate of 1.88 admits/pt/yr. The percentage of those admissions due to factors the dialysis unit can control were low, with 5% for vascular access infection, and 27% for ALL CV disease including fluid overload as well as CAD, AMI, and many others. The majority then of admissions and readmissions are due to other end organ manifestations of chronic disease, most of which are beyond the ability of the dialysis unit to manage. Further, 17% of patients had a readmission within 3 days post discharge, before even the first post discharge outpatient dialysis session. In our Special Needs Plan, a program with significantly more resources than a dialysis unit, we are able to affect all cause readmissions but only after expending considerable expense on IT and care coordination. The proposed measure, intended to join a host of other measures in the Quality Incentive Program, would compete for resources amongst the 2% of payment withheld as part of that program. This is simply not feasible. All cause readmission markers are appropriate for hospitals where care coordination and data are available. Dialysis units do not receive timely data, nor or hospitals required to provide data to dialysis units to coordinate care. Despite a large program to acquire every discharge summary for all of our patients, we were unable to obtain a significant amount of that data after a year following discharge, let alone within the few days required to coordinate care. This issue will be likely reflected in the comments to the dry run conducted by CMS and its contractor. There, our units were unable to ascertain the validity of the data given the lack of data mentioned above. The statistical model used to risk adjust this measure has never been subjected to peer review. Recently the NQF noted that socioeconomic status may affect quality outcomes. This is not taken into account in the model. We have trended public data for Readmission rates currently distributed by KECC on behalf of CMS against census data for income a measure of socioeconomic status (SES). There dialysis units in high poverty locations were more likely to have higher readmit rates for each decile, while units in lower poverty locations were more likely to have lower rates. We believe that this measure may better as a SES risk adjusted hospital measure not a dialysis measure. For dialysis, an SES risk adjusted and cause specific measure, such as one that includes fluid and vascular access infection would be more appropriate.

Topic	Commenter	Comment
2514: Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate	Submitted by Paul Kurlansky, MD	In view of the fact that current risk-adjustment models for this parameter have a disappointing c-statistic in the 0.60 to 0.65 range, and given that CMS has elected not to include vital socioeconomic factors in the models, and given that there is wide variability in the risk factors for readmission amongst hospitals, it does not appear as the risk adjustment technology at this point is sufficiently well-developed to apply effectively or meaningfully for this parameter.
2539: Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy	Submitted by Dr. Allison L. Jones, MD	Help me understand this. A patient has a screening colonoscopy planned. The physician tells the patient that there is a risk of death, perforation, bleeding, etc. The procedure is performed skillfully, and because of biologic variability the patient winds up with post-polypectomy syndrome, which is a common recognized complication for this procedure, which the patient has accepted. Look at the possible downside of this measure. Lesions which are difficult to remove, or are in tough anatomical positions, will the proceduralist given this measure, remove the lesion or not?? I think a wiser position on this would be to make sure that the patient is appropriately advised of the possible risks.

Appendix F: Measure Specifications

0327 Risk-Adjusted Average Length of Inpatient Hospital Stay

STATUS

Standing Committee Review

STEWARD

Premier, Inc

DESCRIPTION

The average (geometric mean) hospital length of stay in days relative to the expected geometric mean length of stay of any well defined population of inpatients over a specified time interval

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Hospital/Acute Care Facility, Behavioral Health/Psychiatric : Inpatient, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility, Post Acute/Long Term Care Facility : Long Term Acute Care Hospital, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility Hospital/Acute Care Facility, Behavioral Health/Psychiatric : Inpatient, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility, Post Acute/Long Term Care Facility : Long Term Acute Care Hospital, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

TIME WINDOW

NUMERATOR STATEMENT

Risk-adjusted in-hospital days average for any defined and observable inpatient population in the form of days above the average that would be expected purely based on patient risk factors of the defined patient population

NUMERATOR DETAILS

The observed outcome is each patient's number of days of hospitalization. Same day discharges are counted as 1-day stays.

DENOMINATOR STATEMENT

Patients admitted to a hospital. Patient population can be aggregated as any grouping of patients (e.g., by hospital, physician, diagnosis code, procedure, DRG, etc.)

DENOMINATOR DETAILS

The target population is any observable subset of patients admitted to a hospital. Patient population can be identified as any grouping of patients (e.g., by hospital, physician, diagnosis code, procedure, DRG, etc.)

EXCLUSIONS

The only exclusions are those limited by the parameters set for a specific population and are not limited by diagnosis

EXCLUSION DETAILS

The only exclusions are those limited by the parameters set for a specific population and are not limited by diagnosis

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5.1 Identified measures: 0327

5a.1 Are specs completely harmonized?

5a.2 If not completely harmonized, identify difference, rationale, impact: 0327

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

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

STATUS

Standing Committee Review

STEWARD

Centers for Medicare & Medicaid

DESCRIPTION

The measure estimates a hospital-level 30-day risk-standardized readmission rate (RSRR) for patients discharged from the hospital with a principal diagnosis of acute myocardial infarction (AMI). The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission. A specified set of planned readmissions do not count as readmissions. The target population is patients aged 18 years and older. CMS annually reports the measure for individuals who are 65 years and older and are either Medicare fee-for-service (FFS) beneficiaries hospitalized in non-federal hospitals or patients hospitalized in Department of Veterans Affairs (VA) facilities.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Hospital/Acute Care Facility Hospital/Acute Care Facility

NUMERATOR STATEMENT

The outcome for this measure is 30-day readmission. We define readmission as an inpatient admission for any cause, with the exception of certain planned readmissions, within 30 days from the date of discharge from the index AMI admission. If a patient has more than one unplanned admission within 30 days of 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, then no readmission is counted, regardless of whether a subsequent unplanned readmission takes place. This is because it is not clear whether such readmissions are appropriately attributed to the original index admission or the intervening planned readmission.

NUMERATOR DETAILS

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

The Planned Readmission Algorithm is a set of criteria for classifying readmissions as planned among the general Medicare population using Medicare 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 (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. The Planned Readmission Algorithm replaced the definition of planned readmissions in the original AMI measure because the algorithm uses a more comprehensive definition. 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 AMI readmission measure, CMS used the Planned Readmission Algorithm without making any changes.

Analyzing Medicare FFS data from July 2009-June 2012, 2.4% of index hospitalizations after AMI were followed by a planned readmission within 30 days of discharge.

The Planned Readmission Algorithm and associated code tables are attached in data field S.2b (Data Dictionary or Code Table). For more details on the Planned Readmission Algorithm, please see the report titled "2013 Measures Updates and Specifications Report: Hospital-Level 30-Day

Risk-Standardized Readmission Measures for Acute Myocardial Infarction, Heart Failure, and Pneumonia (Version 6.0)" posted on the web page provided in data field S.1.

DENOMINATOR STATEMENT

The target population for this measure is patients aged 18 years and older hospitalized for AMI. The measure is currently publicly reported by CMS for those 65 years and older who are either Medicare FFS beneficiaries admitted to non-federal hospitals or patients admitted to VA hospitals.

The measure includes admissions for patients discharged from the hospital with a principal diagnosis of AMI and with a complete claims history for the 12 months prior to admission.

As noted above, this measure can also be used for an all-payer population aged 18 years and older. We have explicitly tested the measure in both patients aged 18+ years and those aged 65+ years.

DENOMINATOR DETAILS

This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we use this field to define the measure cohort.

The denominator includes patients aged 18 years and older with a principal discharge diagnosis of AMI (defined by the ICD-9 or ICD-10 codes below). The measure is currently publicly reported by CMS for those 65 years and older who are either Medicare FFS beneficiaries admitted to non-federal hospitals or patients admitted to VA hospitals. To be included in the measure cohort used in public reporting, patients must meet the following additional inclusion criteria: 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 (this criterion does not apply to patients discharged from VA hospitals); not transferred to another acute care facility; and alive at discharge.

ICD-9-CM codes that define the patient cohort:

410.00 AMI (anterolateral wall) – episode of care unspecified

410.01 AMI (anterolateral wall) – initial episode of care

410.10 AMI (other anterior wall) – episode of care unspecified

410.11 AMI (other anterior wall) – initial episode of care

410.20 AMI (inferolateral wall) – episode of care unspecified

410.21 AMI (inferolateral wall) – initial episode of care

410.30 AMI (inferoposterior wall) – episode of care unspecified

410.31 AMI (inferoposterior wall) – initial episode of care

410.40 AMI (other inferior wall) – episode of care unspecified

410.41 AMI (other inferior wall) – initial episode of care

410.50 AMI (other lateral wall) – episode of care unspecified

410.51 AMI (other lateral wall) – initial episode of care

410.60 AMI (true posterior wall) – episode of care unspecified

410.61 AMI (true posterior wall) – initial episode of care

410.70 AMI (subendocardial) – episode of care unspecified

410.71 AMI (subendocardial) – initial episode of care

410.80 AMI (other specified site) – episode of care unspecified

410.81 AMI (other specified site) – initial episode of care

410.90 AMI (unspecified site) – episode of care unspecified

410.91 AMI (unspecified site) – initial episode of care

ICD-10 Codes that define the patient cohort:

I2109 ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior wall

I2119 ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall

I2111 ST elevation (STEMI) myocardial infarction involving right coronary artery

I2119 ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall

I2129 ST elevation (STEMI) myocardial infarction involving other sites

I214 Non-ST elevation (NSTEMI) myocardial infarction

I213 ST elevation (STEMI) myocardial infarction of unspecified site

An ICD-9 to ICD-10 crosswalk is attached in field S.2b. (Data Dictionary or Code Table).

EXCLUSIONS

For all cohorts, the measure excludes admissions for patients:

-discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);

-admitted and then discharged on the same day (because it is unlikely these are clinically significant AMIs);

-admitted with AMI within 30 days of discharge from a qualifying index admission (Admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as a readmission and an index admission. The next eligible admission after the 30-day time period following an index admission will be considered another index admission.)

For Medicare FFS patients, the measure additionally excludes admissions for patients:

-without at least 30 days post-discharge enrollment in FFS Medicare (because the 30-day readmission outcome cannot be assessed in this group).

EXCLUSION DETAILS

For all cohorts, the measure excludes admissions for patients:

-discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);

-admitted and then discharged on the same day (because it is unlikely these are clinically significant AMIs);

-admitted with AMI within 30 days of discharge from a qualifying index admission (Admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as a readmission and an index admission. The next eligible admission after the 30-day time period following an index admission will be considered another index admission.)

For Medicare FFS patients, the measure additionally excludes admissions for patients:

-without at least 30 days post-discharge enrollment in FFS Medicare (because the 30-day readmission outcome cannot be assessed in this group).

0695 Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI)

STATUS

Standing Committee Review

STEWARD

American College of Cardiology

DESCRIPTION

This measure estimates a hospital-level risk-standardized readmission rate (RSRR) following PCI for Medicare Fee-for-Service (FFS) patients who are 65 years of age or older. The outcome is defined as unplanned readmission for any cause within 30 days following hospital stays. The measure includes both patients who are admitted to the hospital (inpatients) for their PCI and patients who undergo PCI without being admitted (outpatient or observation stay). A specified set of planned readmissions do not count as readmissions. The measure uses clinical data available in the National Cardiovascular Disease Registry (NCDR) CathPCI Registry for risk adjustment and Medicare claims to identify readmissions. Additionally, the measure uses direct patient identifiers including Social Security Number (SSN) and date of birth to link the datasets.

A hospital stay is when a patient is admitted to the hospital (inpatient) for PCI or receives a procedure at a hospital, but is not admitted as an inpatient (outpatient).

The primary update to this measure since it was last reviewed by the National Quality Forum (NQF) is a more comprehensive specification of planned readmission. Additionally, the updated measure includes a re-specification of variables to reflect changes in the data collection form that occurred when the CathPCI Registry was updated from Version 3.04 (Version 3) to Version 4.3.1 (Version 4). Finally, the measure has been updated to use direct identifiers including SSN and date of birth to link the CathPCI Registry data with corresponding administrative claims data. These updates are described within this application and in the accompanying report re-specifying Hospital 30-Day Readmission Following Percutaneous Coronary Intervention Measure (see Appendix attachment).

TYPE

Outcome

DATA SOURCE

Administrative claims, Electronic Clinical Data : Registry

LEVEL

Facility

SETTING

Hospital/Acute Care Facility Hospital/Acute Care Facility

NUMERATOR STATEMENT

The outcome for this measure is 30-day all-cause readmission. We define readmission as an acute care inpatient hospital admission for any cause, with the exception of certain planned readmissions, within 30 days from the discharge date of the index PCI hospitalization or PCI outpatient claim end date (hereafter referred to as discharge). If a patient has more than one unplanned admission within 30 days of 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, then no readmission is counted, regardless of whether a subsequent unplanned readmission takes place. We use this approach because it would potentially be unfair to attribute an unplanned readmission that follows a planned readmission back to the care received during the initial index admission. For more details on how planned readmissions were identified and removed from the outcome, please refer to the Specifications Report in the attached Appendix.

NUMERATOR DETAILS

The measure counts readmissions to any acute care hospital for any cause within 30 days of PCI discharge, excluding planned readmissions as defined below.

Planned Readmission Algorithm:

The Planned Readmission Algorithm is a set of criteria for classifying readmissions as planned among the general Medicare population using Medicare 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 (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, Centers for Medicare & Medicaid Services (CMS) applied the algorithm to its other readmission measures. NQF reviewed and endorsed the planned readmission algorithm as applied to the AMI readmission measure during an Ad Hoc review completed in January 2013. The Planned Readmission Algorithm replaced the definition of planned readmissions in the original PCI measure because the algorithm uses a more comprehensive definition. 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 AMI readmission measure, CMS used the Planned Readmission Algorithm without making any changes.

Customization for PCI Readmission Measure:

Yale New Haven Health Servicec Corporation Center for Outcomes Research and Evaluation (YNHHSC/CORE) updated the approach to identifying planned readmissions in the PCI readmission measure by replacing the original NQF-endorsed approach, which only identified revascularization procedures as planned, with a more comprehensive planned readmission algorithm. The revised approach uses a modified version of the Planned Readmission Algorithm

Version 2.1 – General Population that has been customized for the PCI patient population. The approach takes into account differences in the likelihood that a procedure is planned depending on whether a coronary stent was implanted during the index PCI procedure.

A working group of YNHHSC/CORE cardiologists and clinicians that developed the Planned Readmission Algorithm reviewed the list of potentially planned procedures in the context of the PCI population. Patients who receive a stent during their PCI require at least four weeks of therapy with aspirin and a platelet inhibitor. During that time period, it is unusual to perform procedures that would require interruption of dual antiplatelet therapy. In contrast, if no stent is deployed, dual antiplatelet therapy is not required, and patients are more likely to undergo planned surgical procedures. Given these considerations, the working group developed different sets of potentially planned procedures for patients with and without stent implantation.

For all readmissions, the measure first identifies readmissions for procedures that are always considered planned (e.g., chemotherapy or organ transplantation [Table PR1, Table PR2]). In the next step, the approach changes depending on whether or not a patient had a stent during the index PCI procedure. If a stent was deployed, the algorithm uses a smaller set of potentially planned procedures (Table PR3) than if a stent was not deployed (Table PR4). All potentially planned procedures identified in both patient populations are then checked for an accompanying primary discharge diagnosis that would more likely than not reflect an acute condition or complication of care (Table PR5).

Analyzing Medicare Fee-For-Service data from July 2008 to June 2011, the crude 30-day measured readmission rate decreased by 0.5% to 11.8%, from 12.3% using the original planned readmission methodology.

Details of the Planned Readmission Algorithm and associated code tables (including Tables PR1-PR5) are attached in data field S.2b (Data Dictionary or Code Table). For more details on the Planned Readmission Algorithm, please see the report titled “2013 Measures Updates and Specifications Report: Hospital 30-Day Readmission Following Percutaneous coronary Intervention Measure” in the Appendix attachment.

DENOMINATOR STATEMENT

The target population for this includes hospital stays for patients who are 65 years of age or older who receive a PCI and who have matching records in the CathPCI Registry and Medicare claims.

DENOMINATOR DETAILS

This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we use this field to define the measure cohort.

The time window can be specified for two years. The index cohort includes hospital stays for patients aged 65 or older who receive a PCI and who have matching records in the CathPCI Registry and Medicare claims.

In the CathPCI Registry, eligible admissions are identified with field 5305 (PCI=Yes).

In the Medicare claims, the patient cohort is defined by having one or more of the ICD-9-CM procedure codes and Current Procedural Terminology (CPT) procedure codes listed below.

ICD-9 codes that define the patient cohort:

00.66 Percutaneous transluminal coronary angioplasty or coronary atherectomy

17.55 Transluminal coronary atherectomy

36.06 Insertion of non-drug-eluting coronary artery stent(s)

36.07 Insertion of drug-eluting coronary artery stent (s)

Note: An ICD-9 to ICD-10 crosswalk is attached in field S.2b. (Data Dictionary or Code Table).

CPT codes:

92973 Percutaneous transluminal coronary thrombectomy

92980 Coronary Stents (single vessel)

92981 Coronary Stents (each additional vessel)

92982 Coronary Balloon Angioplasty (single vessel)

92984 Coronary Balloon Angioplasty (each additional vessel)

92995 Percutaneous Atherectomy

92996 Percutaneous Atherectomy

EXCLUSIONS

The following exclusions were applied to data during the merging of NCDR CathPCI and Medicare datasets:

1. Patients younger than 65 years of age.

Rationale: Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of PCI patients. Additionally, patients younger than 65 in the NCDR CathPCI dataset will not have corresponding data in the Medicare claims dataset to obtain the readmission outcome.

2. Patient stays with duplicate fields (NCDR CathPCI and Medicare datasets).

Rationale: Two or more patient stays that have identical information for SSN, admission date, discharge date, and hospital MPN are excluded to avoid making matching errors upon merging of the two datasets.

3. Unmatched patient stays.

Rationale: The measure requires information from both the CathPCI Registry and corresponding Medicare claims data. Accordingly, the measure cannot be applied to patient stays that are not matched in both datasets.

Exclusions applied to the linked dataset:

1. Patients not enrolled in Medicare FFS at the start of the episode of care.

Rationale: Readmission data are currently available only for Medicare FFS patients.

2. Not the first claim in the same claim bundle.

Rationale: Multiple claims from an individual hospital can be bundled together. To ensure that the selected PCI is the index PCI, we exclude those PCI procedures that were not the first claim in a specific bundle. Inclusion of additional claims could lead to double counting of an index PCI procedure.

3. Instances when PCI is performed more than 10 days following admission.

Rationale: Patients who undergo PCI late into their hospitalization represent an unusual clinical situation in which it is less likely that the care delivered at the time of or following the PCI would be reasonably assumed to be associated with subsequent risk of readmission.

4. Transfers out.

Rationale: Patient stays in which the patient received a PCI and was then transferred to another hospital are excluded because the hospital that performed the PCI procedure does not provide discharge care and cannot fairly be held responsible for their outcomes following discharge.

5. In-hospital deaths (the patient dies in the hospital).

Rationale: Subsequent admissions (readmissions) are not possible.

6. Discharges Against Medical Advice (AMA).

Rationale: Physicians and hospitals do not have the opportunity to deliver the highest quality care.

7. PCI in which 30-day follow-up is not available.

Rationale: Patients who are not enrolled for 30 days in fee-for-service Medicare following their hospital stay are excluded because there is not adequate follow-up data to assess readmissions.

8. Admissions with a PCI occurring within 30-days of a prior PCI already included in the cohort.

Rationale: We do not want to count the same admission as both an index admission and an outcome.

EXCLUSION DETAILS

The following exclusions were applied to data during the merging of NCDR CathPCI and Medicare datasets:

1. Patients younger than 65 years of age.

Rationale: Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of PCI patients. Additionally, patients younger than 65 in the NCDR CathPCI dataset will not have corresponding data in the Medicare claims dataset to obtain the readmission outcome.

2. Patient stays with duplicate fields (NCDR CathPCI and Medicare datasets).

Rationale: Two or more patient stays that have identical information for SSN, admission date, discharge date, and hospital MPN are excluded to avoid making matching errors upon merging of the two datasets.

3. Unmatched patient stays.

Rationale: The measure requires information from both the CathPCI Registry and corresponding Medicare claims data. Accordingly, the measure cannot be applied to patient stays that are not matched in both datasets.

Exclusions applied to the linked dataset:

1. Patients not enrolled in Medicare FFS at the start of the episode of care.

Rationale: Readmission data are currently available only for Medicare FFS patients.

2. Not the first claim in the same claim bundle.

Rationale: Multiple claims from an individual hospital can be bundled together. To ensure that the selected PCI is the index PCI, we exclude those PCI procedures that were not the first claim in a specific bundle. Inclusion of additional claims could lead to double counting of an index PCI procedure.

3. Instances when PCI is performed more than 10 days following admission.

Rationale: Patients who undergo PCI late into their hospitalization represent an unusual clinical situation in which it is less likely that the care delivered at the time of or following the PCI would be reasonably assumed to be associated with subsequent risk of readmission.

4. Transfers out.

Rationale: Patient stays in which the patient received a PCI and was then transferred to another hospital are excluded because the hospital that performed the PCI procedure does not provide discharge care and cannot fairly be held responsible for their outcomes following discharge.

5. In-hospital deaths (the patient dies in the hospital).

Rationale: Subsequent admissions (readmissions) are not possible.

6. Discharges Against Medical Advice (AMA).

Rationale: Physicians and hospitals do not have the opportunity to deliver the highest quality care.

7. PCI in which 30-day follow-up is not available.

Rationale: Patients who are not enrolled for 30 days in fee-for-service Medicare following their hospital stay are excluded because there is not adequate follow-up data to assess readmissions.

8. Admissions with a PCI occurring within 30-days of a prior PCI already included in the cohort.

Rationale: We do not want to count the same admission as both an index admission and an outcome.

2375 PointRight OnPoint-30 SNF Rehospitalizations

STATUS

Standing Committee Review

STEWARD

American Health Care Association

DESCRIPTION

PointRight OnPoint-30 is an all-cause, risk adjusted rehospitalization measure. It provides the rate at which all patients (regardless of payer status or diagnosis) who enter skilled nursing facilities (SNFs) from acute hospitals and are subsequently rehospitalized during their SNF stay, within 30 days from their admission to the SNF.

TYPE

Outcome

DATA SOURCE

Electronic Clinical Data

LEVEL

Facility

SETTING

Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

NUMERATOR STATEMENT

The numerator is the number of patients sent back to any acute care hospital (excluding emergency room only visits) during their SNF stay within 30 days from a SNF admission, as indicated on the MDS 3.0 discharge assessment during the 12 month measurement period.

NUMERATOR DETAILS

The numerator is the number of patients that are discharged from a SNF to an acute hospital within 30 days of entry from an acute hospital as indicated by MDS item A2100=03 (indicating 'discharge to acute hospitals') and MDS item A0310F=10/11 (indicating discharge status). The length of stay before rehospitalization is calculated by subtracting MDS item A1600 (entry date) from MDS item A2000 (discharge date).

DENOMINATOR STATEMENT

The denominator is the number of all admissions,regardless of payer status and diagnosis, with an MDS 3.0 admission assessment to a SNF from an acute hospital during the target rolling 12 month period.

DENOMINATOR DETAILS

The total number of admissions to the facility, from an acute hospital, during the 12 month measure period are determined using the MDS item A1800=03, indicating 'entered from hospital'.The entry date is determined using 2 MDS variables: A1600 (entry date) and A0310F=01 (indicating 'entry tracking records').

EXCLUSIONS

The denominator has 2 different exclusions: individual level and provider level. At the individual level the exclusion is related to incomplete assessments. At the provider level the exclusion is related to the amount of data necessary to calculate the measure that is missing. Payer status and clinical conditions are not used for any exclusions.

EXCLUSION DETAILS

The denominator has 2 different exclusions: individual level and provider level. At the individual level the exclusion is related to incomplete assessments. At the provider level the exclusion is related to the amount of data necessary to calculate the measure that is missing. Payer status and clinical conditions are not used for any exclusions.

2380 Rehospitalization During the First 30 Days of Home Health

STATUS

Standing Committee Review

STEWARD

Centers for Medicare and Medicaid Services

DESCRIPTION

Percentage of Home Health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their Home Health stay were admitted to an acute care hospital during the 30 days following the start of the Home Health stay.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Home Health Home Health

NUMERATOR STATEMENT

Number of Home Health stays for patients who have a Medicare claim for an admission to an acute care hospital in the 30 days following the start of the Home Health stay.

NUMERATOR DETAILS

The 30 day time window is calculated by adding 30 days to the "from" date in the first Home Health claim in the series of Home Health claims that comprise the Home Health stay. If the patient has at least one Medicare inpatient claim from short term or critical access hospitals (identified by the CMS Certification Number ending in 0001-0879, 0800-0899, or 1300-1399) during the 30 day window, then the stay is included in the measure numerator.

Numerator Exclusions: Inpatient claims for planned hospitalizations are excluded from the rehospitalization measure numerator. Planned hospitalizations are defined using the same criteria as the Hospital-Wide All-Cause Unplanned Readmission Measure as of January 2013. Specifically, a small set of readmissions, defined using Agency for Healthcare Research and Quality (AHRQ) Procedure and Diagnosis Clinical Classification Software (CCS), are always considered "planned." An additional set of admissions are categorized as "potentially planned" and are also excluded from being counted as unplanned admissions in the measure numerator unless they have a discharge condition category considered "acute or complication of care," which is defined using AHRQ Diagnosis CCS.

DENOMINATOR STATEMENT

Number of Home Health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the Home Health stay. A Home Health stay is a sequence of Home Health payment episodes separated from other Home Health payment episodes by at least 60 days.

DENOMINATOR DETAILS

The algorithm for computing patient-level outcomes is based on a 12-month observation period and produces both monthly and yearly numerator and denominator counts; to include all valid Home Health stays over a three-year period for public reporting purposes, CMS will merge the data for the most recent 12-month observation period with the data from the preceding two 12-month observation periods.

A Home Health stay is a sequence of Home Health payment episodes separated from other Home Health payment episodes by at least 60 days. Each Home Health payment episode is associated with a Medicare Home Health claim, so Home Health stays are constructed from claims data using the following procedure:

1. First, retrieve Home Health claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary.

2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date.

3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new Home Health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim.

4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n) minus Stay_End_Date(n-1) is greater than 60 days for all adjacent stays.

5. Fifth, drop stays that begin before the 12-month observation window.

6. Finally, only stays that begin within 5 days of discharge from a short-term inpatient hospital are included in the denominator as follows:

i. Link to Part A claims for 6 months prior to Stay_Start_Date for each beneficiary.

ii. Define Hosp_Discharge_DT = Thru_Dt of the inpatient claim with the latest through date (thru_Dt) prior to Stay_Start_Date,.

iii. Limit to Home Health stays where the Stay_Start_Date minus the Hosp_Discharge_DT is equal to or less than 5. Exclude stays where the IP claim is from a provider type that is not a short stay hospital . Short term hospitals are defined using the following CCN ranges in the third through sixth positions: 0001-0879, 0880-0899, and 1300-1399.

Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous Home Health claims by at least 60 days.

EXCLUSIONS

The measure denominator excludes several types of Home Health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following Home Health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator

window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another Home Health agency within a Home Health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of Home Health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of Home Health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

EXCLUSION DETAILS

The measure denominator excludes several types of Home Health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following Home Health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another Home Health agency within a Home Health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of Home Health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of Home Health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

2393 Pediatric All-Condition Readmission Measure

STATUS

Standing Committee Review

STEWARD

Center of Excellence for Pediatric Quality Measurement

DESCRIPTION

This measure calculates case-mix-adjusted readmission rates, defined as the percentage of admissions followed by 1 or more readmissions within 30 days, for patients less than 18 years old. The measure covers patients discharged from general acute care hospitals, including children's hospitals.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Hospital/Acute Care Facility Hospital/Acute Care Facility

NUMERATOR STATEMENT

The numerator consists of hospitalizations at general acute care hospitals for patients less than 18 years old that are followed by 1 or more readmissions to general acute care hospitals within 30 days. Readmissions are excluded from the numerator if the readmission was for a planned procedure or for chemotherapy.

The measure outcome is a readmission rate, defined as the percentage of index admissions with 1 or more readmissions within 30 days. The readmission rate, unadjusted for case-mix, is calculated as follows:

number of index admissions with 1 or more readmissions within 30 days/

total number of index admissions

NUMERATOR DETAILS

A readmission is operationalized as the first unplanned admission to any acute care hospital within 30 days of discharge from a prior hospitalization at an acute care hospital. This prior admission, which serves as the reference point for enumerating 30-day readmissions, is the index admission. Additional admissions within 30 days from discharge from an index admission are not counted as index admissions. An admission more than 30 days from discharge from an index admission is counted as a new index admission.

We chose 30 days as the follow-up period during which to evaluate readmissions for multiple reasons. Readmissions within 30 days seem likely to reflect the quality of care provided both in the hospital and following discharge, which is consistent with the measure's intended purpose of assessing quality not just for a hospital but also for its wider health system. A follow-up period of 30 days is consistent with many readmission measures already in use, including the CMS readmission measures for adults. In addition, when we used a time-to-event curve to evaluate the proportion of readmissions within 1 year that occur within timeframes from 1 day

up to 365 days, we observed a smooth curve with no obvious break to suggest an alternative follow-up period.

Readmissions are excluded if they are for a planned procedure or for chemotherapy. Readmissions for planned procedures and for chemotherapy are part of a patient's intended course of care and thus unlikely to be related to health system quality. This measure therefore focuses on unplanned readmissions because they are more likely to be related to a defect in quality of care during the index admission or during the interval between the index admission and readmission. In adult and pediatric medicine, most planned readmissions are for planned procedures or chemotherapy; therefore, these exclusions are intended to capture the majority of planned readmissions.

We identify planned procedures using an algorithm based on primary procedure codes. Expert pediatric clinicians in 15 different procedure-oriented specialties reviewed procedures typically performed by their specialty. The reviewers indicated which procedures (1) are usually planned (defined as planned in more than 80% of cases) and (2) could require hospitalization. Admissions for which the primary International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) procedure code or the principal International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) procedure code for a planned procedure coded was 1 of these procedures are excluded from readmissions. ICD-9-CM codes will henceforth be referred to as ICD-9 codes. ICD-10-CM diagnosis codes and ICD-10 Procedure Coding System (PCS) codes will be referred to as ICD-10 diagnosis and ICD-10 procedure codes, respectively.

EXCLUSIONS FROM THE NUMERATOR (READMISSIONS):

• Hospitalizations with a primary ICD-9 code or a principal ICD-10 code for a planned procedure (i.e., planned = 1).

• Hospitalizations with a primary ICD-9 or a principal ICD-10 diagnosis or procedure code for chemotherapy (i.e., chemo = 1).

These exclusions are applied without deleting the records from the dataset as these hospitalizations may still meet criteria for index admissions, detailed in Section S.10.

Variable definitions and ICD-9 or ICD-10 codes for identifying readmissions for planned procedures and for chemotherapy are provided in the Data Dictionary.

If a planned readmission occurs within 30 days of an index admission, it does not count as a readmission against the index admission, and no subsequent admissions occurring within 30 days of discharge from the index admission count as readmissions against the index admission. After 30 days from discharge from the index admission, a new index admission can be counted.

DENOMINATOR STATEMENT

Hospitalizations at general acute care hospitals for patients less than 18 years old.

DENOMINATOR DETAILS

All index hospitalizations are included in the denominator unless excluded based on 1 of the criteria in Sections S.10 and S.11 below.

EXCLUSIONS

EXCLUSIONS FROM THE NUMERATOR (READMISSIONS) AND DENOMINATOR (INDEX HOSPITALIZATIONS)

We exclude certain hospitalizations from the measure entirely (i.e., from the numerator and denominator) based on clinical criteria or for issues of data completeness or quality that could prevent assessment of eligibility for the measure cohort or compromise the accuracy of readmission rates. Hospitalizations are excluded from the measure if they meet any of the following criteria:

1. The hospitalization was at a specialty or non-acute care hospital.

Rationale: The focus of the measure is admissions to hospitals that provide general pediatric acute care. Records for admissions to specialty and non-acute care hospitals are therefore omitted from the dataset. Because hospital type cannot be determined for records with missing data in the hospital type variable, these records are also removed from the dataset.

2. Records for the hospitalization contain incomplete data for variables needed to assess eligibility for the measure or calculate readmission rates, including hospital type, patient identifier, admission date, discharge date, disposition status, date of birth, primary ICD-9 or principal ICD-10 diagnosis codes, or gender.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records. Hospital identifiers are needed to determine the hospital at which index admissions occurred. The disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date. Because gender is 1 of the variables used for case-mix adjustment, episodes of care with missing or inconsistent gender cannot be evaluated in the measure.

3. Records for the hospitalization contain data of questionable quality for calculating readmission rates, including

a. Inconsistent date of birth across records for a patient.

b. Discharge date prior to admission date.

c. Admission or discharge date prior to date of birth.

d. Admission date after a disposition status of death during a prior hospitalization.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service. A valid disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date.

4. Codes other than ICD-9 or ICD-10 codes are used for the primary procedure.

Rationale: ICD-9 or ICD-10 procedure codes are necessary for applying clinical exclusions.

5. The patient was older than 18 years, 29 days at the time of admission.

Rationale: This age exclusion limits the population to pediatric patients and prevents inclusion of records that overlap with adult readmission measures. Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the focus of the measure is pediatric patients, a patient's hospitalization is ineligible for inclusion in the

measure as an index admission if the patient was 18 years old or greater at the time of discharge. Because the subsequent observation period for readmissions is 30 days, a patient's hospitalization is ineligible for inclusion in the measure as a readmission if the patient was older than 18 years, 29 days at the start of the readmission.

6. The hospitalization was for obstetric care, including labor and delivery.

Rationale: Hospitalizations for obstetric conditions are excluded because care related to pregnancy does not generally fall within the purview of pediatric providers.

7. The primary ICD-9 or principal ICD-10 diagnosis code was for a mental health condition.

Rationale: Hospitalizations for mental health conditions are excluded because we found that hospitals with high readmission rates for mental health hospitalizations tend to have low readmission rates for hospitalizations for other conditions, and vice versa. We describe this analysis in detail in Section 2b.3 of the Measure Testing Submission Form.

8. The hospitalization was for birth of a healthy newborn.

Rationale: Hospitalizations for birth of healthy newborns are excluded because these hospitalizations, unlike all others, are not for evaluation and management of disease.

EXCLUSIONS FROM THE DENOMINATOR ONLY (INDEX HOSPITALIZATIONS ONLY)

We also apply further exclusions to the denominator only (i.e., these hospitalizations are excluded from index hospitalizations but could still meet criteria for readmissions). Hospitalizations are excluded from the denominator only if they meet any of the following criteria:

9. The patient was 18 years old or older at the time of discharge.

Rationale: Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the measure covers pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge.

10. The discharge disposition was death.

Rationale: A patient must be discharged alive from an index admission in order to be readmitted. Therefore, any record with a discharge disposition of death cannot serve as an index admission.

11. The discharge disposition was leaving the hospital against medical advice.

Rationale: A discharge disposition of leaving against medical advice indicates that a patient left care before the hospital determined that the patient was ready to leave.

12. The hospital has less than 80% of records with complete patient identifier, admission date, and discharge date or less than 80% of records with complete primary ICD-9 or principal ICD-10 diagnosis codes. (Records for these hospitals are still assessed as possible readmissions, but readmission rates are not calculated for these hospitals due to their lack of complete data.)

Rationale: Readmission rates are not calculated for hospitals missing large amounts of data for the above variables because these hospitals have limited data to accurately apply measure cohort exclusions and calculate case-mix-adjusted readmission rates. Assessing eligibility for the measure cohort and performing case-mix adjustment requires information on admission dates, end-of-service dates, and diagnosis codes. Identifying readmissions requires information on admission dates and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records.

13. The hospital is in a state not being analyzed.

Rationale: A claims database used for readmission analysis may contain records for hospitals located in states that are not included in the database (because covered patients may sometimes be admitted to out-of-state hospitals). Records for these out-of-state hospital admissions are not excluded from the measure dataset because these records may meet criteria for being counted as readmissions as part of an in-state hospital's readmission rate. However, readmission rates are not calculated for out-of-state hospitals due to the lack of complete data for these hospitals.

14. Thirty days of follow-up data are not available for assessing readmissions.

Rationale: Identifying readmissions within 30 days requires a full 30 days of follow-up data.

EXCLUSION DETAILS

EXCLUSIONS FROM THE NUMERATOR (READMISSIONS) AND DENOMINATOR (INDEX HOSPITALIZATIONS)

We exclude certain hospitalizations from the measure entirely (i.e., from the numerator and denominator) based on clinical criteria or for issues of data completeness or quality that could prevent assessment of eligibility for the measure cohort or compromise the accuracy of readmission rates. Hospitalizations are excluded from the measure if they meet any of the following criteria:

1. The hospitalization was at a specialty or non-acute care hospital.

Rationale: The focus of the measure is admissions to hospitals that provide general pediatric acute care. Records for admissions to specialty and non-acute care hospitals are therefore omitted from the dataset. Because hospital type cannot be determined for records with missing data in the hospital type variable, these records are also removed from the dataset.

2. Records for the hospitalization contain incomplete data for variables needed to assess eligibility for the measure or calculate readmission rates, including hospital type, patient identifier, admission date, discharge date, disposition status, date of birth, primary ICD-9 or principal ICD-10 diagnosis codes, or gender.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records. Hospital identifiers are needed to determine the hospital at which index admissions occurred. The disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date. Because gender is 1 of the variables used for case-mix adjustment, episodes of care with missing or inconsistent gender cannot be evaluated in the measure.

3. Records for the hospitalization contain data of questionable quality for calculating readmission rates, including

a. Inconsistent date of birth across records for a patient.

b. Discharge date prior to admission date.

c. Admission or discharge date prior to date of birth.

d. Admission date after a disposition status of death during a prior hospitalization.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service. A valid disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date.

4. Codes other than ICD-9 or ICD-10 codes are used for the primary procedure.

Rationale: ICD-9 or ICD-10 procedure codes are necessary for applying clinical exclusions.

5. The patient was older than 18 years, 29 days at the time of admission.

Rationale: This age exclusion limits the population to pediatric patients and prevents inclusion of records that overlap with adult readmission measures. Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the focus of the measure is pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge. Because the subsequent observation period for readmissions is 30 days, a patient's hospitalization is ineligible for inclusion in the measure as a readmission if the patient was older than 18 years, 29 days at the start of the readmission.

6. The hospitalization was for obstetric care, including labor and delivery.

Rationale: Hospitalizations for obstetric conditions are excluded because care related to pregnancy does not generally fall within the purview of pediatric providers.

7. The primary ICD-9 or principal ICD-10 diagnosis code was for a mental health condition.

Rationale: Hospitalizations for mental health conditions are excluded because we found that hospitals with high readmission rates for mental health hospitalizations tend to have low readmission rates for hospitalizations for other conditions, and vice versa. We describe this analysis in detail in Section 2b.3 of the Measure Testing Submission Form.

8. The hospitalization was for birth of a healthy newborn.

Rationale: Hospitalizations for birth of healthy newborns are excluded because these hospitalizations, unlike all others, are not for evaluation and management of disease.

EXCLUSIONS FROM THE DENOMINATOR ONLY (INDEX HOSPITALIZATIONS ONLY)

We also apply further exclusions to the denominator only (i.e., these hospitalizations are excluded from index hospitalizations but could still meet criteria for readmissions). Hospitalizations are excluded from the denominator only if they meet any of the following criteria:

9. The patient was 18 years old or older at the time of discharge.

Rationale: Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the measure covers pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge.

10. The discharge disposition was death.

Rationale: A patient must be discharged alive from an index admission in order to be readmitted. Therefore, any record with a discharge disposition of death cannot serve as an index admission.

11. The discharge disposition was leaving the hospital against medical advice.

Rationale: A discharge disposition of leaving against medical advice indicates that a patient left care before the hospital determined that the patient was ready to leave.

12. The hospital has less than 80% of records with complete patient identifier, admission date, and discharge date or less than 80% of records with complete primary ICD-9 or principal ICD-10 diagnosis codes. (Records for these hospitals are still assessed as possible readmissions, but readmission rates are not calculated for these hospitals due to their lack of complete data.)

Rationale: Readmission rates are not calculated for hospitals missing large amounts of data for the above variables because these hospitals have limited data to accurately apply measure cohort exclusions and calculate case-mix-adjusted readmission rates. Assessing eligibility for the measure cohort and performing case-mix adjustment requires information on admission dates, end-of-service dates, and diagnosis codes. Identifying readmissions requires information on admission dates and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records.

13. The hospital is in a state not being analyzed.

Rationale: A claims database used for readmission analysis may contain records for hospitals located in states that are not included in the database (because covered patients may sometimes be admitted to out-of-state hospitals). Records for these out-of-state hospital admissions are not excluded from the measure dataset because these records may meet criteria for being counted as readmissions as part of an in-state hospital's readmission rate. However, readmission rates are not calculated for out-of-state hospitals due to the lack of complete data for these hospitals.

14. Thirty days of follow-up data are not available for assessing readmissions.

Rationale: Identifying readmissions within 30 days requires a full 30 days of follow-up data.

2414 Pediatric Lower Respiratory Infection Readmission Measure

STATUS

Standing Committee Review

STEWARD

Center of Excellence for Pediatric Quality Measurement

DESCRIPTION

This measure calculates case-mix-adjusted readmission rates, defined as the percentage of admissions followed by 1 or more readmissions within 30 days, following hospitalization for lower respiratory infection (LRI) in patients less than 18 years old. The measure covers patients discharged from general acute care hospitals, including children's hospitals.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Hospital/Acute Care Facility Hospital/Acute Care Facility

NUMERATOR STATEMENT

The numerator consists of hospitalizations at general acute care hospitals for LRI in patients less than 18 years old that are followed by 1 or more readmissions to general acute care hospitals within 30 days. Readmissions are excluded from the numerator if the readmission was for a planned procedure or for chemotherapy.

The measure outcome is a readmission rate, defined as the percentage of index admissions with 1 or more readmissions within 30 days. The readmission rate, unadjusted for case-mix, is calculated as follows:

number of index admissions with 1 or more readmissions within 30 days/

total number of index admissions

NUMERATOR DETAILS

A readmission is operationalized as the first unplanned admission to any acute care hospital within 30 days of discharge from a prior hospitalization at an acute care hospital. This prior admission, which serves as the reference point for enumerating 30-day readmissions, is the index admission. Additional admissions within 30 days from discharge from an index admission are not counted as index admissions. An admission more than 30 days from discharge from an index admission is counted as a new index admission.

We chose 30 days as the follow-up period during which to evaluate readmissions for multiple reasons. Readmissions within 30 days seem likely to reflect the quality of care provided both in the hospital and following discharge, which is consistent with the measure's intended purpose of assessing quality not just for a hospital but also for its wider health system. A follow-up period of 30 days is consistent with many readmission measures already in use, including the CMS readmission measures for adults. In addition, when we used a time-to-event curve to evaluate the proportion of readmissions within 1 year that occur within timeframes from 1 day up to 365 days, we observed a smooth curve with no obvious break to suggest an alternative follow-up period.

Readmissions are excluded if they are for a planned procedure or for chemotherapy. Readmissions for planned procedures and for chemotherapy are part of a patient’s intended course of care and thus unlikely to be related to health system quality. This measure therefore focuses on unplanned readmissions because they are more likely to be related to a defect in quality of care during the index admission or during the interval between the index admission and readmission. In adult and pediatric medicine, most planned readmissions are for planned procedures or chemotherapy; therefore, these exclusions are intended to capture the majority of planned admissions.

We identify planned procedures using an algorithm based on primary procedure codes. Expert pediatric clinicians in 15 different procedure-oriented specialties reviewed procedures typically performed by their specialty. The reviewers indicated which procedures (1) are usually planned (defined as planned in more than 80% of cases) and (2) could require hospitalization. Admissions for which the primary International Classification of Diseases, Ninth Revision, Clinical

Modification (ICD-9-CM) procedure code or the principal International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) procedure code for a planned procedure coded was 1 of these procedures are excluded from readmissions. ICD-9-CM codes will henceforth be referred to as ICD-9 codes. ICD-10-CM diagnosis codes and ICD-10 Procedure Coding System (PCS) codes will be referred to as ICD-10 diagnosis and ICD-10 procedure codes, respectively.

EXCLUSIONS FROM THE NUMERATOR (READMISSIONS):

• Hospitalizations with a primary ICD-9 code or a principal ICD-10 code for a planned procedure (i.e., planned = 1).

• Hospitalizations with a primary ICD-9 or a principal ICD-10 diagnosis or procedure code for chemotherapy (i.e., chemo = 1).

These exclusions are applied without deleting the records from the dataset as these hospitalizations may still meet criteria for index admissions, detailed in Section S.10.

Variable definitions and ICD-9 or ICD-10 codes for identifying readmissions for planned procedures and for chemotherapy are provided in the Data Dictionary.

If a planned readmission occurs within 30 days of an index admission, it does not count as a readmission against the index admission, and no subsequent admissions occurring within 30 days of discharge from the index admission count as readmissions against the index admission. After 30 days from discharge from the index admission, a new index admission can be counted.

DENOMINATOR STATEMENT

Hospitalizations at general acute care hospitals for LRI in patients less than 18 years old.

DENOMINATOR DETAILS

Index hospitalizations are identified by applying a case definition for LRI and the exclusion criteria detailed in Sections S.10 and S.11. The LRI case definition requires either a primary ICD-9 or principal ICD-10 diagnosis code for bronchiolitis, influenza, or community-acquired pneumonia (CAP) or a secondary ICD-9 or additional ICD-10 diagnosis code for one of these LRIs plus a primary ICD-9 or additional ICD-10 diagnosis code for asthma, respiratory failure, or sepsis/bacteremia. The variable definition and ICD-9 or ICD-10 codes for the case definition are provided in the ICD-9 or ICD-10 Data Dictionary.

EXCLUSIONS

EXCLUSIONS FROM THE NUMERATOR (READMISSIONS) AND DENOMINATOR (INDEX HOSPITALIZATIONS)

We exclude certain hospitalizations from the measure entirely (i.e., from the numerator and denominator) based on clinical criteria or for issues of data completeness or quality that could prevent assessment of eligibility for the measure cohort or compromise the accuracy of readmission rates. Hospitalizations are excluded from the measure if they meet any of the following criteria:

1. The hospitalization was at a specialty or non-acute care hospital.

Rationale: The focus of the measure is admissions to hospitals that provide general pediatric acute care. Records for admissions to specialty and non-acute-care hospitals are therefore omitted from the dataset. Because hospital type cannot be determined for records with missing data in the hospital type variable, these records are also removed from the dataset.

2. Records for the hospitalization contain incomplete data for variables needed to assess eligibility for the measure or calculate readmission rates, including hospital type, patient identifier, admission date, discharge date, disposition status, date of birth, primary ICD-9 or principal ICD-10 diagnosis codes, and gender.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records. Hospital identifiers are needed to determine the hospital at which index admissions occurred. The disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date. Because gender is 1 of the variables used for case-mix adjustment, episodes of care with missing or inconsistent gender cannot be evaluated in the measure.

3. Records for the hospitalization contain data of questionable quality for calculating readmission rates, including

a. Inconsistent date of birth across records for a patient.

b. Discharge date prior to admission date.

c. Admission or discharge date prior to date of birth.

d. Admission date after a disposition status of death during a prior hospitalization.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service. A valid disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date.

4. Codes other than ICD-9 or ICD-10 codes are used for the primary procedure.

Rationale: ICD-9 or ICD-10 procedure codes are necessary for applying clinical exclusions.

5. The patient was older than 18 years, 29 days at the time of admission.

Rationale: This age exclusion limits the population to pediatric patients and prevents inclusion of records that overlap with adult readmission measures. Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the focus of the measure is pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge. Because the subsequent observation period for readmissions is 30 days, a patient's hospitalization is ineligible for inclusion in the measure as a readmission if the patient was older than 18 years, 29 days at the start of the readmission.

6. The hospitalization was for obstetric care, including labor and delivery.

Rationale: Hospitalizations for obstetric conditions are excluded because care related to pregnancy does not generally fall within the purview of pediatric providers.

7. The primary ICD-9 or principal ICD-10 diagnosis code was for a mental health condition.

Rationale: Hospitalizations for mental health conditions are excluded because we found that hospitals with high readmission rates for mental health hospitalizations tend to have low readmission rates for hospitalizations for other conditions, and vice versa. We describe this analysis in detail in Section 2b.3 of the Measure Testing Submission Form.

8. The hospitalization was for birth of a healthy newborn.

Rationale: Hospitalizations for birth of healthy newborns are excluded because these hospitalizations, unlike all others, are not for evaluation and management of disease.

EXCLUSIONS FROM THE DENOMINATOR ONLY (INDEX HOSPITALIZATIONS ONLY)

We also apply further exclusions to the denominator only (i.e., these hospitalizations are excluded from index hospitalizations but could still meet criteria for readmissions). Hospitalizations are excluded from the denominator only if they meet any of the following criteria:

9. The patient was 18 years old or greater at the time of discharge.

Rationale: Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the measure covers pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge.

10. The discharge disposition was death.

Rationale: A patient must be discharged alive from an index admission in order to be readmitted. Therefore, any record with a discharge disposition of death cannot serve as an index admission.

11. The discharge disposition was leaving the hospital against medical advice.

Rationale: A discharge disposition of leaving against medical advice indicates that a patient left care before the hospital determined that the patient was ready to leave.

12. The hospital has less than 80% of records with complete patient identifier, admission date, and discharge date or less than 80% of records with complete primary ICD-9 or principal ICD-10 diagnosis codes. (Records for these hospitals are still assessed as possible readmissions, but readmission rates are not calculated for these hospitals due to their lack of complete data.)

Rationale: Readmission rates are not calculated for hospitals missing large amounts of data for the above variables because these hospitals have limited data to accurately apply measure cohort exclusions and calculate case-mix-adjusted readmission rates. Assessing eligibility for the measure cohort and performing case-mix adjustment requires information on admission dates, end-of-service dates, and diagnosis codes. Identifying readmissions requires information on admission dates and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records.

13. The hospital is in a state not being analyzed.

Rationale: A claims database used for readmission analysis may contain records for hospitals located in states that are not included in the database (because covered patients may sometimes be admitted to out-of-state hospitals). Records for these out-of-state hospital admissions are not excluded from the measure dataset because these records may meet criteria for being counted as readmissions as part of an in-state hospital’s readmission rate. However, readmission rates are not calculated for out-of-state hospitals due to the lack of complete data for these hospitals.

14. Thirty days of follow-up data are not available for assessing readmissions.

Rationale: Identifying readmissions within 30 days requires a full 30 days of follow-up data.

15. The hospitalization does not have a primary ICD-9 or principal ICD-10 LRI diagnosis or does not have a secondary ICD-9 or additional ICD-10 LRI diagnosis plus a primary ICD-9 or principal ICD-10 diagnosis of asthma, respiratory failure, or sepsis/bacteremia.

Rationale: This measure focuses on readmissions following hospitalization for LRI. Episodes of care that do not meet the case definition for an LRI hospitalization are therefore excluded from index admissions.

EXCLUSION DETAILS

EXCLUSIONS FROM THE NUMERATOR (READMISSIONS) AND DENOMINATOR (INDEX HOSPITALIZATIONS)

We exclude certain hospitalizations from the measure entirely (i.e., from the numerator and denominator) based on clinical criteria or for issues of data completeness or quality that could prevent assessment of eligibility for the measure cohort or compromise the accuracy of readmission rates. Hospitalizations are excluded from the measure if they meet any of the following criteria:

1. The hospitalization was at a specialty or non-acute care hospital.

Rationale: The focus of the measure is admissions to hospitals that provide general pediatric acute care. Records for admissions to specialty and non-acute-care hospitals are therefore omitted from the dataset. Because hospital type cannot be determined for records with missing data in the hospital type variable, these records are also removed from the dataset.

2. Records for the hospitalization contain incomplete data for variables needed to assess eligibility for the measure or calculate readmission rates, including hospital type, patient identifier, admission date, discharge date, disposition status, date of birth, primary ICD-9 or principal ICD-10 diagnosis codes, and gender.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records. Hospital identifiers are needed to determine the hospital at which index admissions occurred. The disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date. Because gender is 1 of the variables used for case-mix adjustment, episodes of care with missing or inconsistent gender cannot be evaluated in the measure.

3. Records for the hospitalization contain data of questionable quality for calculating readmission rates, including

a. Inconsistent date of birth across records for a patient.

b. Discharge date prior to admission date.

c. Admission or discharge date prior to date of birth.

d. Admission date after a disposition status of death during a prior hospitalization.

Rationale: Complete and valid information for the variables listed above is needed to define the measure cohort and calculate case-mix-adjusted readmission rates. Identifying readmissions within 30 days requires information on dates of admission and end-of-service. A valid

disposition status is needed to determine whether a patient was discharged or experienced some other outcome (e.g., was transferred to another acute care hospital, left against medical advice, died). Establishing a patient's eligibility for membership in the pediatric cohort and performing case-mix adjustment requires an accurate date of birth and end-of-service date.

4. Codes other than ICD-9 or ICD-10 codes are used for the primary procedure.

Rationale: ICD-9 or ICD-10 procedure codes are necessary for applying clinical exclusions.

5. The patient was older than 18 years, 29 days at the time of admission.

Rationale: This age exclusion limits the population to pediatric patients and prevents inclusion of records that overlap with adult readmission measures. Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the focus of the measure is pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge. Because the subsequent observation period for readmissions is 30 days, a patient's hospitalization is ineligible for inclusion in the measure as a readmission if the patient was older than 18 years, 29 days at the start of the readmission.

6. The hospitalization was for obstetric care, including labor and delivery.

Rationale: Hospitalizations for obstetric conditions are excluded because care related to pregnancy does not generally fall within the purview of pediatric providers.

7. The primary ICD-9 or principal ICD-10 diagnosis code was for a mental health condition.

Rationale: Hospitalizations for mental health conditions are excluded because we found that hospitals with high readmission rates for mental health hospitalizations tend to have low readmission rates for hospitalizations for other conditions, and vice versa. We describe this analysis in detail in Section 2b.3 of the Measure Testing Submission Form.

8. The hospitalization was for birth of a healthy newborn.

Rationale: Hospitalizations for birth of healthy newborns are excluded because these hospitalizations, unlike all others, are not for evaluation and management of disease.

EXCLUSIONS FROM THE DENOMINATOR ONLY (INDEX HOSPITALIZATIONS ONLY)

We also apply further exclusions to the denominator only (i.e., these hospitalizations are excluded from index hospitalizations but could still meet criteria for readmissions). Hospitalizations are excluded from the denominator only if they meet any of the following criteria:

9. The patient was 18 years old or greater at the time of discharge.

Rationale: Age eligibility for inclusion in the measure is based on age at the time of discharge from the index admission. Because the measure covers pediatric patients, a patient's hospitalization is ineligible for inclusion in the measure as an index admission if the patient was 18 years old or greater at the time of discharge.

10. The discharge disposition was death.

Rationale: A patient must be discharged alive from an index admission in order to be readmitted. Therefore, any record with a discharge disposition of death cannot serve as an index admission.

11. The discharge disposition was leaving the hospital against medical advice.

Rationale: A discharge disposition of leaving against medical advice indicates that a patient left care before the hospital determined that the patient was ready to leave.

12. The hospital has less than 80% of records with complete patient identifier, admission date, and discharge date or less than 80% of records with complete primary ICD-9 or principal ICD-10 diagnosis codes. (Records for these hospitals are still assessed as possible readmissions, but readmission rates are not calculated for these hospitals due to their lack of complete data.)

Rationale: Readmission rates are not calculated for hospitals missing large amounts of data for the above variables because these hospitals have limited data to accurately apply measure cohort exclusions and calculate case-mix-adjusted readmission rates. Assessing eligibility for the measure cohort and performing case-mix adjustment requires information on admission dates, end-of-service dates, and diagnosis codes. Identifying readmissions requires information on admission dates and end-of-service dates and the ability to link unique patient identifiers across inpatient claims records.

13. The hospital is in a state not being analyzed.

Rationale: A claims database used for readmission analysis may contain records for hospitals located in states that are not included in the database (because covered patients may sometimes be admitted to out-of-state hospitals). Records for these out-of-state hospital admissions are not excluded from the measure dataset because these records may meet criteria for being counted as readmissions as part of an in-state hospital's readmission rate. However, readmission rates are not calculated for out-of-state hospitals due to the lack of complete data for these hospitals.

14. Thirty days of follow-up data are not available for assessing readmissions.

Rationale: Identifying readmissions within 30 days requires a full 30 days of follow-up data.

15. The hospitalization does not have a primary ICD-9 or principal ICD-10 LRI diagnosis or does not have a secondary ICD-9 or additional ICD-10 LRI diagnosis plus a primary ICD-9 or principal ICD-10 diagnosis of asthma, respiratory failure, or sepsis/bacteremia.

Rationale: This measure focuses on readmissions following hospitalization for LRI. Episodes of care that do not meet the case definition for an LRI hospitalization are therefore excluded from index admissions.

2496 Standardized Readmission Ratio (SRR) for dialysis facilities

STATUS

Standing Committee Review

STEWARD

Centers for Medicare and Medicaid Services

DESCRIPTION

The Standardized Readmission Ratio (SRR) is defined to be the ratio of the number of index discharges from acute care hospitals that resulted in an unplanned readmission to an acute care hospital within 30 days of discharge for Medicare-covered dialysis patients treated at a particular dialysis facility to the number of readmissions that would be expected given the discharging hospitals and the characteristics of the patients as well as the national norm for dialysis facilities. Note that in this document, "hospital" always refers to acute care hospital.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Dialysis Facility Dialysis Facility

NUMERATOR STATEMENT

Each facility's observed number of hospital discharges that are followed by an unplanned hospital readmission within 30 days of discharge

NUMERATOR DETAILS

Hospitalizations are counted as events in the numerator if they met the definition of unplanned readmission that (a) occurred within 30 days of a hospital discharge and (b) was not preceded by a "planned" readmission that also occurred within 30 days of discharge. In summary, a readmission is considered "planned" under two scenarios [1]:

1. The patient undergoes a procedure that is always considered planned (e.g., bone marrow transplant) or has a primary diagnosis that always indicates the hospitalization is planned (e.g., maintenance chemotherapy).

2. The patient undergoes a procedure that MAY be considered planned if it is not accompanied by an acute diagnosis. For example, a hospitalization involving a heart valve procedure accompanied by a primary diagnosis of diabetes would be considered planned, whereas a hospitalization involving a heart valve procedure accompanied by a primary diagnosis of acute myocardial infarction (AMI) would be considered unplanned.

1. Centers for Medicaid and Medicare Services. Hospital Quality Initiative: Measure Methodology website. "Planned Readmission Algorithm" [ZIP file]. Available at: http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Measure-Methodology.html. Accessed February 3, 2014.

DENOMINATOR STATEMENT

The expected number of unplanned readmissions in each facility, which is derived from a model that accounts for patient characteristics and discharging acute care hospitals.

DENOMINATOR DETAILS

All Medicare live discharges of dialysis patients from a hospital in a calendar year are considered eligible for this measure.

We calculate the expected number of unplanned readmissions by fitting a model with random effects for discharging hospitals, fixed effects for facilities and regression adjustments for a set of patient-level characteristics, including measures of patient comorbidities. The expectation for the given facility is computed assuming readmission rates corresponding to an "average" facility with the same patient characteristics and same discharging hospitals as this facility. Model details are provided in the Risk Standardization section below.

EXCLUSIONS

Hospital discharges that:

- Are not live discharges
- Result in a patient dying within 30 days with no readmission
- Are against medical advice
- Include a primary diagnosis for cancer, mental health or rehabilitation
- Occur after a patient's 12th admission in the calendar year
- Are from a PPS-exempt cancer hospital
- Result in a transfer to another hospital on the same day

EXCLUSION DETAILS

Hospital discharges that:

- Are not live discharges
- Result in a patient dying within 30 days with no readmission
- Are against medical advice
- Include a primary diagnosis for cancer, mental health or rehabilitation
- Occur after a patient's 12th admission in the calendar year
- Are from a PPS-exempt cancer hospital
- Result in a transfer to another hospital on the same day

2502 All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities (IRFs)

STATUS

Standing Committee Review

STEWARD

Centers for Medicare & Medicaid Services (CMS)

DESCRIPTION

This measure estimates the risk-standardized rate of unplanned, all-cause readmissions for patients (Medicare fee-for-service [FFS] beneficiaries) discharged from an Inpatient Rehabilitation Facility (IRF) who were readmitted to a short-stay acute-care hospital or a Long-Term Care Hospital (LTCH), within 30 days of an IRF discharge. The measure is based on data for 24 months of IRF discharges to non-hospital post-acute levels of care or to the community.

A risk-adjusted readmission rate for each facility is calculated as follows:

Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates.

Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate.

For this measure, readmissions that are usually for planned procedures are excluded. Please refer to Appendix Tables A1-A5 for a list of planned procedures.

The measure specifications are designed to harmonize with CMS' hospital-wide readmission (HWR) measure to a great extent. The HWR (NQF #1789) estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmissions within 30 days of a hospital discharge, similar to this IRF readmission measure.

TYPE

Outcome

DATA SOURCE

Administrative claims, Other

LEVEL

Facility

SETTING

Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility

NUMERATOR STATEMENT

The numerator is mathematically related to the number of patients in the target population who have the event of an unplanned readmission in the 30- day post-discharge window. The measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. Instead, the numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix.

NUMERATOR DETAILS

The numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days after discharge from an IRF. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix. The numerator uses a model estimated on full national data; it is applied to the facility's patients and includes the facility effect term for that facility.

Planned readmissions are not counted in the numerator. The planned readmissions (Appendix Tables A1-A4) are defined largely by the definition used for the CMS Hospital-Wide Readmission (HWR) measure (NQF #1789), and were revised to include additional procedures determined as suitable for IRFs with input from a Technical Expert Panel convened by CMS contractor RTI International.

International Classification of Diseases (ICD-9) codes for these additional procedures were identified by a certified coder. The definition is based on the claim from the readmission having a code for a procedure that is frequently planned, but if a principal diagnosis in a specified list of

acute diagnoses is present, the readmission is reclassified as unplanned. Appendix Table A5 presents the list of codes for procedures identified as "planned" for IRFs, which are not in the HWR list. These procedures and diagnoses are currently defined by ICD-9 procedure and diagnosis codes grouped by the Clinical Classification Software (CCS), developed by the AHRQ, where large clusters were appropriate and by individual codes, if necessary. Readmissions to psychiatric hospitals or units are also classified as planned readmissions.

The prediction equation is based on a logistic statistical model with a 2-level hierarchical structure. The patient stays in the model have an indicator as to which IRF they are discharged from and the effect of the facility is measured as a positive or negative shift in the intercept term of the equation. The facility effects are modeled as belonging to a normal (Gaussian) distribution centered at 0, and are estimated along with the effects of patient characteristics in the model.

The data are from Medicare FFS inpatient claims and eligibility and enrollment data. See section 2a1.26 for more details on the data sources.

Note: This measure was developed with ICD-9 procedure and diagnosis codes. RTI is currently revising Appendix Table A5 with ICD-10 procedure codes. The provisional mapping is provided in Appendix Table A6. We are awaiting the ICD-10 versions of the HWR planned readmissions codes. Please refer to Section 2b2.3 for more details.

DENOMINATOR STATEMENT

The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded IRF stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of readmissions that would be expected for that patient population at the average IRF. The measure includes all the IRF stays in the measurement period that are observed in national Medicare FFS data and do not fall into an excluded category.

DENOMINATOR DETAILS

The observation window is 30 days after being discharged from an IRF; this window of observation excludes the day of discharge and the day thereafter (the 30 days starts on discharge day plus 2). Stays ending in transfers to IRFs or acute hospitals are excluded. For this purpose, the term "acute hospitals" includes short-stay acute-care hospitals, critical access hospitals, long-term care hospitals (LTCHs), or psychiatric hospitals and units. (The psychiatric facilities were included because transfers to or readmissions to such facilities are likely for reasons other than IRF care.) These transfer patients are not included in the post-IRF discharge measure. The measure is based on data for 24 months of IRF discharges to less intense levels of care or to the community.

For the includable IRF stays at each facility, the measure denominator is the risk-adjusted expected number of readmissions. This estimate includes risk adjustment for patient characteristics with the facility effect removed. The "expected" number of readmissions is the predicted number of risk-adjusted readmissions if the patients were treated at the average IRF.

This population, like that for the numerator, is the group of Medicare FFS IRF patients who are not excluded for the reasons below. Because some information for risk adjustment comes from a prior short-stay inpatient record, having such a discharge within the prior 30 days is an important requirement. Fewer than 10% of IRF stays do not meet this requirement.

EXCLUSIONS

The measure excludes some IRF patient stays; some of these exclusions result from data limitations.

The following are the measure's denominator exclusions, including the rationale for exclusion:

1. IRF patients who died during the IRF stay.

Rationale: A post-discharge readmission measure is not relevant for patients who died during their IRF stay.

2. IRF patients less than 18 years old.

Rationale: IRF patients under 18 years old are not included in the target population for this measure. Pediatric patients are relatively few and may have different patterns of care from adults.

3. IRF patients who were transferred at the end of a stay to another IRF or short-term acute care hospital.

Rationale: Patients who were transferred to another IRF or short-term acute-care hospital are excluded from this measure because the transfer suggests that either their IRF treatment has not been completed or that their condition worsened, requiring a transfer back to the acute care setting. The intent of the measure is to follow patients deemed well enough to be discharged to a less intensive care setting (i.e., discharged to less intense levels of care or to the community).

4. Patients who were not continuously enrolled in Part A FFS Medicare for the 12 months prior to the IRF stay admission date, and at least 30 days after IRF stay discharge date.

Rationale: The adjustment for certain comorbid conditions in the measure requires information on acute inpatient bills for 1 year prior to the IRF admission, and readmissions must be observable in the observation window following discharge. Patients without Part A coverage or who are enrolled in Medicare Advantage plans will not have complete inpatient claims in the system.

5. Patients who did not have a short-term acute-care stay within 30 days prior to an IRF stay admission date.

Rationale: This measure requires information from the prior short-term acute-care stay in the elements used for risk adjustment.

6. IRF patients discharged against medical advice (AMA).

Rationale: Patients discharged AMA are excluded because these patients have not completed their full course of treatment in the opinion of the facility.

7. IRF patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer.

Rationale: Consistent with the HWR Measure, patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer are excluded because these patients were identified as following a very different trajectory after discharge, with a particularly high mortality rate.

8. IRF stays with data that are problematic (e.g., anomalous records for hospital stays that overlap wholly or in part or are otherwise erroneous or contradictory).

Rationale: This measure requires accurate information from the IRF stay and prior short-term acute-care stays in the elements used for risk adjustment. No-pay IRF stays involving exhaustion of Part A benefits are also excluded.

EXCLUSION DETAILS

The measure excludes some IRF patient stays; some of these exclusions result from data limitations.

The following are the measure's denominator exclusions, including the rationale for exclusion:

1. IRF patients who died during the IRF stay.

Rationale: A post-discharge readmission measure is not relevant for patients who died during their IRF stay.

2. IRF patients less than 18 years old.

Rationale: IRF patients under 18 years old are not included in the target population for this measure. Pediatric patients are relatively few and may have different patterns of care from adults.

3. IRF patients who were transferred at the end of a stay to another IRF or short-term acute care hospital.

Rationale: Patients who were transferred to another IRF or short-term acute-care hospital are excluded from this measure because the transfer suggests that either their IRF treatment has not been completed or that their condition worsened, requiring a transfer back to the acute care setting. The intent of the measure is to follow patients deemed well enough to be discharged to a less intensive care setting (i.e., discharged to less intense levels of care or to the community).

4. Patients who were not continuously enrolled in Part A FFS Medicare for the 12 months prior to the IRF stay admission date, and at least 30 days after IRF stay discharge date.

Rationale: The adjustment for certain comorbid conditions in the measure requires information on acute inpatient bills for 1 year prior to the IRF admission, and readmissions must be observable in the observation window following discharge. Patients without Part A coverage or who are enrolled in Medicare Advantage plans will not have complete inpatient claims in the system.

5. Patients who did not have a short-term acute-care stay within 30 days prior to an IRF stay admission date.

Rationale: This measure requires information from the prior short-term acute-care stay in the elements used for risk adjustment.

6. IRF patients discharged against medical advice (AMA).

Rationale: Patients discharged AMA are excluded because these patients have not completed their full course of treatment in the opinion of the facility.

7. IRF patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer.

Rationale: Consistent with the HWR Measure, patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer are excluded because these patients were identified as following a very different trajectory after discharge, with a particularly high mortality rate.

8. IRF stays with data that are problematic (e.g., anomalous records for hospital stays that overlap wholly or in part or are otherwise erroneous or contradictory).

Rationale: This measure requires accurate information from the IRF stay and prior short-term acute-care stays in the elements used for risk adjustment. No-pay IRF stays involving exhaustion of Part A benefits are also excluded.

2503 Hospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries

STATUS

Standing Committee Review

STEWARD

Centers for Medicare & Medicaid Services

DESCRIPTION

Number of hospital discharges from an acute care hospital (PPS or CAH) per 1000 FFS Medicare beneficiaries at the state and community level by quarter and year.

TYPE

Outcome

DATA SOURCE

Administrative claims, Other

LEVEL

Population : Community, Population : State

SETTING

Other

NUMERATOR STATEMENT

Number of hospital discharges from an acute care hospital (PPS or CAH)

NUMERATOR DETAILS

Inclusions:

Any discharge from a PPS or CAH

Exclusions:

Hospitalizations having a discharge date that is the same as the admission date on a subsequent claim

DENOMINATOR STATEMENT

Medicare FFS beneficiaries, prorated based on the number of days of FFS eligibility in the time period (quarter or year).

DENOMINATOR DETAILS

To calculate the denominator, count the days each beneficiary was enrolled in FFS Medicare in the time period (quarter or year). For each beneficiary, the number of days of FFS Medicare eligibility is determined by evaluating HMO enrollment (BENE_HMO_IND_XX) and time to death (BENE_DEATH_DT). Days enrolled in HMO and days after death are not counted. Eligible days for each beneficiary are summed over all beneficiaries. The total number of eligible days is then

divided by the number of days in the time period to obtain the prorated number of beneficiaries. The denominator is the prorated number of beneficiaries divided by 1,000.

EXCLUSIONS

None

EXCLUSION DETAILS

None

2504 30-day Rehospitalizations per 1000 Medicare fee-for-service (FFS) Beneficiaries

STATUS

Standing Committee Review

STEWARD

Centers for Medicare & Medicaid Services

DESCRIPTION

Number of rehospitalizations occurring within 30 days of discharge from an acute care hospital (prospective payment system (PPS) or critical access hospital (CAH)) per 1000 FFS Medicare beneficiaries at the state and community level by quarter and year.

TYPE

Outcome

DATA SOURCE

Administrative claims, Other

LEVEL

Population : Community, Population : State

SETTING

Other

NUMERATOR STATEMENT

Number of rehospitalizations within 30 days of discharge from an acute care hospital (PPS or CAH).

NUMERATOR DETAILS

Inclusions:

Any hospitalization to a PPS or CAH occurring within 30 days of the most recent prior hospitalization discharge from a PPS or CAH.

Exclusions:

Same-day hospital transfers; transfers are defined as any hospitalization, whether to the same hospital or not, where discharge date is the same as hospitalization date and are treated as one continuous long stay; the 30-day period starts at the end of the combined stay.

DENOMINATOR STATEMENT

Medicare FFS beneficiaries, prorated based on the number of days of FFS eligibility in the time period (quarter or year).

DENOMINATOR DETAILS

To calculate the denominator, count the days each beneficiary was enrolled in FFS Medicare in the time period (quarter or year). For each beneficiary, number of days of FFS Medicare eligibility is determined by evaluating HMO enrollment (BENE_HMO_IND_XX) and time to death (BENE_DEATH_DT). Days enrolled in HMO and days after death are not counted. Eligible days for each beneficiary are summed over all beneficiaries. The total number of eligible days is then divided by the number of days in the time period to obtain the prorated number of beneficiaries. The denominator is the prorated number of beneficiaries divided by 1,000.

EXCLUSIONS

None

EXCLUSION DETAILS

None

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

STATUS

Standing Committee Review

STEWARD

Centers for Medicare and Medicaid Services

DESCRIPTION

Percentage of Home Health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their Home Health stay used an emergency department but were not admitted to an acute care hospital during the 30 days following the start of the Home Health stay.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Home Health Home Health

NUMERATOR STATEMENT

Number of Home Health stays for patients who have a Medicare claim for outpatient emergency department use and no claims for acute care hospitalization in the 30 days following the start of the Home Health stay.

NUMERATOR DETAILS

The 30 day time window is calculated by adding 30 days to the "from" date in the first Home Health claim in the series of Home Health claims that comprise the Home Health stay. If the patient has any Medicare outpatient claims with any emergency department revenue center codes (0450-0459, 0981) during the 30 day window AND if the patient has no Medicare inpatient claims for admission to an acute care hospital (identified by the CMS Certification Number on the IP claim ending in 0001-0879, 0800-0899, or 1300-1399) during the 30 day window, then the stay is included in the measure numerator.

Numerator Exclusions: None.

DENOMINATOR STATEMENT

Number of Home Health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the Home Health stay. A Home Health stay is a sequence of Home Health payment episodes separated from other Home Health payment episodes by at least 60 days.

DENOMINATOR DETAILS

The algorithm for computing patient-level outcomes is based on a 12-month observation period and produces both monthly and yearly numerator and denominator counts; to include all valid Home Health stays over a three-year period for public reporting purposes, CMS will merge the data for the most recent 12-month observation period with the data from the preceding two 12-month observation periods.

A Home Health stay is a sequence of Home Health payment episodes separated from other Home Health payment episodes by at least 60 days. Each Home Health payment episode is associated with a Medicare Home Health (HH) claim, so Home Health stays are constructed from claims data using the following procedure:

1. First, retrieve Home Health claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary.

2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date.

3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new Home Health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the

claim begins a new stay. If the claim “from” date is within 60 days of the “through” date on the previous claim, then the claim continues the stay associated with the previous claim.

4. Fourth, for each stay, set Stay_Start_Date(n) equal to the “from” date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the “through” date on the last claim in that stay. Confirm that Stay_Start_Date(n) minus Stay_End_Date(n-1) is greater than 60 days for all adjacent stays.

5. Fifth, drop stays that begin before the 12-month observation window.

6. Finally, only stays that begin within 5 days of discharge from a short-term inpatient hospital are included in the denominator as follows:

i. Link to Part A claims for 6 months prior to Stay_Start_Date for each beneficiary.

ii. Define Hosp_Discharge_DT = Thru_Dt of the inpatient claim with the latest through date (thru_Dt) prior to Stay_Start_Date,.

iii. Limit to Home Health stays where the Stay_Start_Date minus the Hosp_Discharge_DT is equal to or less than 5. Exclude stays where the IP claim is from a provider type that is not a short stay hospital . Short term hospitals are defined using the following CCN ranges in the third through sixth positions: 001-0879, 0880-0899, and 1300-1399.

Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous Home Health claims by at least 60 days.

EXCLUSIONS

The measure denominator excludes several types of Home Health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following Home Health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another Home Health agency within a Home Health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of Home Health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of Home Health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

EXCLUSION DETAILS

The measure denominator excludes several types of Home Health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following Home Health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another Home Health agency within a Home Health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of Home Health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of Home Health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

STATUS

Standing Committee Review

STEWARD

Centers for Medicare and Medicaid Services

DESCRIPTION

This measure estimates the risk-standardized rate of all-cause, unplanned, hospital readmissions for patients who have been admitted to a Skilled Nursing Facility (SNF) (Medicare fee-for-service [FFS] beneficiaries) within 30 days of discharge from their prior proximal hospitalization. The prior proximal hospitalization is defined as an admission to an IPPS, CAH, or a psychiatric hospital. The measure is based on data for 12 months of SNF admissions.

A risk-adjusted readmission rate for each facility is calculated as follows:

Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates.

Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate.

For this measure, readmissions that are usually for planned procedures are excluded. Please refer to the Appendix, Tables 1 - 5 for a list of planned procedures.

The measure specifications are designed to harmonize with CMS' hospital-wide readmission (HWR) measure to the greatest extent possible. The HWR (NQF #1789) estimates the hospital-level, risk-standardize rate of unplanned, all-cause readmissions within 30 days of a hospital discharge and uses the same 30-day risk window as the SNFRM.

TYPE

Outcome

DATA SOURCE

Administrative claims, Other

LEVEL

Facility

SETTING

Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

NUMERATOR STATEMENT

This measure is designed to capture the outcome of unplanned all-cause hospital readmissions (IPPS or CAH) of SNF patients occurring within 30 days of discharge from the patient's prior proximal acute hospitalization.

The numerator is more specifically defined as the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge from the prior proximal acute hospitalization. The numerator is mathematically related to the number of SNF stays where there was hospitalization readmission, but the measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. The numerator, as defined, includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix.

Hospital readmissions that occur after discharge from the SNF stay but within 30 days of the proximal hospitalization are also included in the numerator. Readmissions identified using the Planned Readmission algorithm (see Section S.6) are excluded from the numerator. This measure does not include observation stays as a readmission (see Section S.6).

NUMERATOR DETAILS

The numerator is the risk-adjusted estimate of the number of all-cause, unplanned readmissions to an acute care or critical access hospital that occurred within 30 days of discharge from an eligible prior proximal hospitalization. In addition, the patient will be required to have been admitted to a SNF within one day after discharge from an eligible hospitalization. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix. The numerator uses a model estimated on full national data; it is applied to the facility's patients and includes the facility effect term for that facility.

The prediction equation is based on a logistic statistical model with a 2-level hierarchical structure. The SNF stays in the model have an indicator as to which SNF they were admitted and the effect of the facility is measured as a positive or negative shift in the intercept term of the

equation. The facility effects are modeled as belonging to a normal (Gaussian) distribution centered at 0, and are estimated along with the effects of patient characteristics in the model.

The data are from Medicare inpatient claims and eligibility and enrollment data. See section 2a1.26 for more details on the data sources.

Observation stays: This measure does not include observation stays as a readmission. Rationale: In a recently published analysis, researchers at Brown University evaluated how frequently SNF patients had observation stays with and without formal admission to the hospital (Feng et al., 2012). In 2009, of the approximately 2.5 million SNF stays among FFS Medicare beneficiaries aged 65+ nationwide, there were roughly 18,000 observation stays (0.7%) and few readmissions within 30 days after the observation stay (Feng 2012). The results indicated that the vast majority of hospital observation stays in 2009 (over one million in total) originated from the community (83% from community without Home Health and 8% from community with Home Health care). Only a small number and proportion of observation stays were originated from a SNF (i.e. preceded immediately by a SNF stay): N=17,731 or 1.7 percent of all observation stays, nationally. Consistent with the pattern of their origins, the vast majority of hospital observation stays were discharged to the community (80% without Home Health and 11 percent with Home Health care). Again, only a small number and proportion of observation stays were discharged to a SNF (regardless of their origin): N=25,884 or 2.6 percent of all observations stays (Feng 2012). These results suggest that excluding hospital observation stays from the SNF hospital readmission measure will not make a meaningful difference in the SNF facility-level rate of hospital readmissions or in the relative ranking of SNF providers according to this measure.

Second, although the overall prevalence of hospital observation stays has been on the rise, raising legitimate concerns about their causes and consequences, the number of observation stays that originated from and subsequently discharged to SNF settings is very small relative to other settings (mostly communities). A recent report by the Office of Inspector General (OIG) shows that this trend has indeed continued in more recent years. According to this report, Medicare beneficiaries had 1.5 million observations stays in 2012, and an additional 1.4 million long outpatient stays that lasted at least one night but were not coded as observation stays (Office of Inspector General 2013). However, this study did not break down the data by setting, that is, the setting from which observation patients came. Based on our preliminary analysis results above, we want to emphasize again that despite an increasing number of Medicare beneficiaries held for observation in hospitals at the national level, the vast majority of them are from community settings and relatively few come from or are discharged to SNFs. We agree that the rising trend of hospital observation stays is an important issue that warrants continuous monitoring and policy attention.

Third, and perhaps most importantly, mingling outpatient observation stays with inpatient admissions raises serious questions as to whether other types of hospital outpatient stays, such as emergency department (ED) visits or prolonged outpatient stays other than observation care in the hospital, should also be counted as admissions. RTI argues that this could introduce bias into the measure from a technical and conceptual perspective, and send a mixed signal to SNF providers and hospitals with the potential to compromise patient care. For SNFs, their 30-day readmission rate would increase, more or less, depending on how many of their patients were sent back to the hospital via the ED and held for observation there within the 30-day tracking window. Counting observation stays in the SNFRM measure could potentially increase perverse incentives already identified as a general concern with public reporting of any quality measure. Namely, SNFs may have an incentive to NOT send patients to the ED even though the patients truly require hospital care, or may deliberately postpone doing so, until after the 30-day

measurement period ends to lower their publically reported readmission rate. Including observation stays in the measure could potentially contribute to these incentives.

The increased use of hospital observation stays as outpatient care is an important issue which may have significant adverse impact on Medicare beneficiaries in terms of reducing eligibility for SNF services due to lack of a qualifying prior acute admission and therefore increase out-of-pocket spending. However, when looking at SNF readmissions, the absolute number and percentage share of observation stays involving Medicare beneficiaries in the SNF setting are small relative to other settings. Most importantly, there remain significant conceptual and practical challenges in the consideration of counting observation stays in the SNFRM measure. A decision to do so would require a better understanding of possible negative consequences, including postponing transfer of SNF patients to the ED.

Planned readmissions: The SNFRM used a modified version of CMS' Hospital-Wide Readmission (HWR) planned readmissions algorithm to identify readmissions that are classified as planned, and should therefore not be included in the numerator. Planned readmissions should not be counted against facilities, because, as stated in the documentation for the HWR measure, "…planned readmissions are not a signal of quality of care." The algorithm is based on two main principles:

1. Planned readmissions are those in which one of a pre-specified list of procedures took place or those for transplants (bone marrow, kidney, other); Cesarean section; forceps, vacuum, and breech delivery. Also planned diagnosis categories include maintenance chemotherapy, forceps delivery, normal pregnancy and/or delivery, and rehabilitation. Readmissions to psychiatric hospitals or units are also classified as planned readmissions.

2. Admissions for acute illness or for complications of care are not 'planned.' Even a typically planned procedure performed during an admission for an acute illness would not likely have been planned. We used the principal diagnosis and all of the procedure codes from the readmission to identify planned readmissions.

The algorithm developed to identify planned readmissions uses procedure codes and discharge diagnosis categories for each readmission coded using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classification System (CCS) software. According to CMS' HWR planned readmission algorithm, a planned readmission is defined as any non-acute readmission in which one of a set of typically planned sets of procedures or diagnoses occurred (see Appendix, Tables 1 through 3). A subset of these procedures and diagnoses shown in Appendix Tables 1 and 2 are always considered planned. However, if any of the procedures denoted as "planned" in Table 3 occur in conjunction with a diagnosis that disqualifies a readmission from being considered planned (see Appendix, Table 4), the readmission will be considered unplanned.

Additional procedures were added to the final HWR planned readmission algorithm special to post-acute care settings based on feedback from a convened by CMS contractor RTI International. These additional procedures were codified by a certified nosologist prior to use (see Appendix, Table 5). These procedures and diagnoses are currently defined by ICD-9 procedure and diagnosis codes grouped by the Clinical Classification Software (CCS), developed by the AHRQ, where large clusters were appropriate and by individual codes, if necessary. The provisional mapping of these ICD-9s to ICD-10s is provided in Section Sb.2, Table 9. We are awaiting the ICD-10 versions of the HWR planned readmissions codes. Readmissions to psychiatric hospitals or units are also classified as planned readmissions.

Unless a readmission was considered planned, it was considered unplanned and counted as a readmission in the measure.

In 2011, there were 2,215,398 SNF stays, of which 467,107included an unplanned hospital readmission (21.1%). An additional 1.3 percent of SNF stays (or 27,956 stays) ended with readmissions that were classified as planned and not included in the numerator of the measure. These planned readmissions represented only 5.6 percent of all readmissions.

References

Feng Z, Wright B, Mor V. Sharp Rise in Medicare Enrollees Being Held in Hospitals for Observation Raises Concerns about Causes and Consequences. Health Affairs (2012). 31:6, 1251-1259.

Feng Z. Hospital Observation Stays: Analysis Update. Memo prepared for the Centers for Medicare and Medicaid Services, 22 September 2012.

Wright S. (2013). Memorandum Report: Hospitals' Use of Observation Stays and Short Inpatient Stays for Medicare Beneficiaries, OEI-02-12-00040. Department of Health and Human Services Office of the Inspector General, Washington, DC.

DENOMINATOR STATEMENT

The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded SNF stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of SNF admissions within 1 day of a prior proximal hospital discharge during a target year, taking denominator exclusions into account. Prior proximal hospitalizations are defined as admissions to an IPPS acute-care hospital, CAH, or psychiatric hospital.

DENOMINATOR DETAILS

The denominator includes all patients who have been admitted to a SNF within 1 day of discharge from a prior proximal hospitalization, taking denominator exclusions into account. Patients with SNF stays in swing bed facilities are included in the measure. The prior proximal hospitalization must include admissions to an IPPS acute-care hospital, CAH, or a psychiatric hospital.

EXCLUSIONS

The following are excluded from the denominator:

1. SNF stays where the patient had one or more intervening post-acute care (PAC) admissions (inpatient rehabilitation facility [IRF] or long-term care hospital [LTCH]) which occurred either between the prior proximal hospital discharge and SNF admission or after the SNF discharge, within the 30-day risk window. Also excluded are SNF admissions where the patient had multiple SNF admissions after the prior proximal hospitalization, within the 30-day risk window.

Rationale: For patients who have IRF or LTCH admissions prior to their first SNF admission, these patients are starting their SNF admission later in the 30-day risk window and receiving other additional types of services as compared to patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions. Additionally, when patients have multiple PAC admissions, evaluating quality of care coordination is confounded and even controversial in terms of attributing responsibility for a readmission among multiple PAC providers. Similarly, assigning

responsibility for a readmission for patients who have multiple SNF admissions subsequent to their prior proximal hospitalization is also controversial.

2. SNF stays with a gap of greater than 1 day between discharge from the prior proximal hospitalization and the SNF admission.

Rationale: These patients are starting their SNF admissions later in the 30-day risk window than patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions.

3. SNF stays where the patient did not have at least 12 months of FFS Medicare enrollment prior to the proximal hospital discharge (measured as enrollment during the month of proximal hospital discharge and the for 11 months prior to that discharge).

Rationale: FFS Medicare claims are used to identify comorbidities during the 12-month period prior to the proximal hospital discharge for risk adjustment. Multiple studies have shown that using lookback scans of a year or more of claims data provide superior predictive power for outcomes including rehospitalization as compared to using data from a single hospitalization (e.g., Klabunde et al., 2000; Preen et al, 2006; Zhang et al., 1999).

4. SNF stays in which the patient did not have FFS Medicare enrollment for the entire risk period (measured as enrollment during the month of proximal hospital discharge and the month following the month of discharge).

Rationale: Readmissions occurring within the 30-day risk window when the patient does not have FFS Medicare coverage cannot be detected using claims.

5. SNF stays in which the principal diagnosis for the prior proximal hospitalization was for the medical treatment of cancer. Patients with cancer whose principal diagnosis from the prior proximal hospitalization was for other diagnoses or for surgical treatment of their cancer remain in the measure.

Rationale: These admissions have a very different mortality and readmission risk than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions.

6. SNF stays where the patient was discharged from the SNF against medical advice.

Rationale: The SNF was not able to complete care as needed.

7. SNF stays in which the principal primary diagnosis for the prior proximal hospitalization was for “rehabilitation care; fitting of prostheses and for the adjustment of devices”.

Rationale: Hospital admissions for these conditions are not for acute care.

EXCLUSION DETAILS

The following are excluded from the denominator:

1. SNF stays where the patient had one or more intervening post-acute care (PAC) admissions (inpatient rehabilitation facility [IRF] or long-term care hospital [LTCH]) which occurred either between the prior proximal hospital discharge and SNF admission or after the SNF discharge, within the 30-day risk window. Also excluded are SNF admissions where the patient had multiple SNF admissions after the prior proximal hospitalization, within the 30-day risk window.

Rationale: For patients who have IRF or LTCH admissions prior to their first SNF admission, these patients are starting their SNF admission later in the 30-day risk window and receiving other additional types of services as compared to patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different

than the rest of SNF admissions. Additionally, when patients have multiple PAC admissions, evaluating quality of care coordination is confounded and even controversial in terms of attributing responsibility for a readmission among multiple PAC providers. Similarly, assigning responsibility for a readmission for patients who have multiple SNF admissions subsequent to their prior proximal hospitalization is also controversial.

2. SNF stays with a gap of greater than 1 day between discharge from the prior proximal hospitalization and the SNF admission.

Rationale: These patients are starting their SNF admissions later in the 30-day risk window than patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions.

3. SNF stays where the patient did not have at least 12 months of FFS Medicare enrollment prior to the proximal hospital discharge (measured as enrollment during the month of proximal hospital discharge and the for 11 months prior to that discharge).

Rationale: FFS Medicare claims are used to identify comorbidities during the 12-month period prior to the proximal hospital discharge for risk adjustment. Multiple studies have shown that using lookback scans of a year or more of claims data provide superior predictive power for outcomes including rehospitalization as compared to using data from a single hospitalization (e.g., Klabunde et al., 2000; Preen et al, 2006; Zhang et al., 1999).

4. SNF stays in which the patient did not have FFS Medicare enrollment for the entire risk period (measured as enrollment during the month of proximal hospital discharge and the month following the month of discharge).

Rationale: Readmissions occurring within the 30-day risk window when the patient does not have FFS Medicare coverage cannot be detected using claims.

5. SNF stays in which the principal diagnosis for the prior proximal hospitalization was for the medical treatment of cancer. Patients with cancer whose principal diagnosis from the prior proximal hospitalization was for other diagnoses or for surgical treatment of their cancer remain in the measure.

Rationale: These admissions have a very different mortality and readmission risk than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions.

6. SNF stays where the patient was discharged from the SNF against medical advice.

Rationale: The SNF was not able to complete care as needed.

7. SNF stays in which the principal primary diagnosis for the prior proximal hospitalization was for “rehabilitation care; fitting of prostheses and for the adjustment of devices”.

Rationale: Hospital admissions for these conditions are not for acute care.

2512 All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals (LTCHs)

STATUS

Standing Committee Review

STEWARD

Centers for Medicare & Medicaid Services (CMS)

DESCRIPTION

This measure estimates the risk-standardized rate of unplanned, all-cause readmissions for patients (Medicare fee-for-service [FFS] beneficiaries) discharged from a Long-Term Care Hospital (LTCH) who were readmitted to a short-stay acute-care hospital or a Long-Term Care Hospital (LTCH), within 30 days of an LTCH discharge. The measure is based on data for 24 months of LTCH discharges to non-hospital post-acute levels of care or to the community.

A risk-adjusted readmission rate for each facility is calculated as follows:

Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates.

Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate.

For this measure, readmissions that are usually for planned procedures are excluded. Please refer to Appendix Tables A1-A5 for a list of planned procedures.

The measure specifications are designed to harmonize with CMS' hospital-wide readmission (HWR) measure to a great extent. The HWR (NQF #1789) estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmissions within 30 days of a hospital discharge, similar to this LTCH readmission measure.

TYPE

Outcome

DATA SOURCE

Administrative claims, Other

LEVEL

Facility

SETTING

Post Acute/Long Term Care Facility : Long Term Acute Care Hospital Post Acute/Long Term Care Facility : Long Term Acute Care Hospital

NUMERATOR STATEMENT

The numerator is mathematically related to the number of patients in the target population who have the event of an unplanned readmission in the 30- day post-discharge window. The measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. Instead, the numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix.

NUMERATOR DETAILS

The numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days after discharge from an LTCH. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix. The numerator uses a model estimated on full national data; it is applied to the facility's patients and includes the facility effect term for that facility.

Planned readmissions are not counted in the numerator. The planned readmissions (Appendix Tables A1-A4) are defined largely by the definition used for the CMS Hospital-Wide Readmission (HWR) measure (NQF #1789), and were revised to include additional procedures determined as suitable for LTCHs with input from a Technical Expert Panel convened by CMS contractor RTI International. International Classification of Diseases (ICD-9) codes for these additional procedures were identified by a certified coder. The definition is based on the claim from the readmission having a code for a procedure that is frequently planned, but if a principal diagnosis in a specified list of acute diagnoses is present, the readmission is reclassified as unplanned. Appendix Table A5 presents the list of codes for procedures identified as "planned" for LTCHs, which are not in the HWR list. These procedures and diagnoses are currently defined by ICD-9 procedure and diagnosis codes grouped by the Clinical Classification Software (CCS), developed by the AHRQ, where large clusters were appropriate and by individual codes, if necessary. Readmissions to psychiatric hospitals or units are also classified as planned readmissions.

The prediction equation is based on a logistic statistical model with a 2-level hierarchical structure. The patient stays in the model have an indicator as to which LTCH they are discharged from and the effect of the facility is measured as a positive or negative shift in the intercept term of the equation. The facility effects are modeled as belonging to a normal (Gaussian) distribution centered at 0, and are estimated along with the effects of patient characteristics in the model.

The data are from Medicare FFS inpatient claims and eligibility and enrollment data. See section 2a1.26 for more details on the data sources.

Note: This measure was developed with ICD-9 procedure and diagnosis codes. RTI is currently revising Appendix Table A5 with ICD-10 procedure codes. The provisional mapping is provided in Appendix Table A6. We are awaiting the ICD-10 versions of the HWR planned readmissions codes. Please refer to Section 2b2.3 for more details.

DENOMINATOR STATEMENT

The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded LTCH stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of readmissions that would be expected for that patient population at the average LTCH. The measure includes all the LTCH stays in the measurement period that are observed in national Medicare FFS data and do not fall into an excluded category.

DENOMINATOR DETAILS

The observation window is 30 days after being discharged from an LTCH; this window of observation excludes the day of discharge and the day thereafter (the 30 days starts on discharge day plus 2). Stays ending in transfers to LTCHs or acute hospitals are excluded. For this purpose, the term "acute hospitals" includes short-stay acute-care hospitals, critical access hospitals, LTCHs, or psychiatric hospitals and units. (The psychiatric facilities were included because transfers to or readmissions to such facilities are likely for reasons other than LTCH

care.) These transfer patients are not included in the post-LTCH discharge measure. The measure is based on data for 24 months of LTCH discharges to less intense levels of care or to the community.

For the includable LTCH stays at each facility, the measure denominator is the risk-adjusted expected number of readmissions. This estimate includes risk adjustment for patient characteristics with the facility effect removed. The "expected" number of readmissions is the predicted number of risk-adjusted readmissions if the patients were treated at the average LTCH.

This population, like that for the numerator, is the group of Medicare FFS LTCH patients who are not excluded for the reasons below. Because some information for risk adjustment comes from a prior short-stay inpatient record, having such a discharge within the prior 30 days is an important requirement. Fewer than 10% of LTCH stays do not meet this requirement.

EXCLUSIONS

The measure excludes some LTCH patient stays; some of these exclusions result from data limitations.

The following are the measure's denominator exclusions, including the rationale for exclusion:

1.LTCH patients who died during the LTCH stay.

Rationale: A post-discharge readmission measure is not relevant for patients who died during their LTCH stay.

2.LTCH patients less than 18 years old.

Rationale: LTCH patients under 18 years old are not included in the target population for this measure. Pediatric patients are relatively few and may have different patterns of care from adults.

3.LTCH patients who were transferred at the end of a stay to another LTCH or short-term acute-care hospital.

Rationale: Patients who were transferred to another LTCH or short-term acute-care hospital are excluded from this measure because the transfer suggests that either their LTCH treatment has not been completed or that their condition worsened, requiring a transfer back to the acute care setting. The intent of the measure is to follow patients deemed well enough to be discharged to a less intensive care setting (i.e., discharged to less intense levels of care or to the community).

4.Patients who were not continuously enrolled in Part A FFS Medicare for the 12 months prior to the LTCH stay admission date, and at least 30 days after LTCH stay discharge date.

Rationale: The adjustment for certain comorbid conditions in the measure requires information on acute inpatient bills for 1 year prior to the LTCH admission, and readmissions must be observable in the observation window following discharge. Patients without Part A coverage or who are enrolled in Medicare Advantage plans will not have complete inpatient claims in the system.

5.Patients who did not have a short-term acute-care stay within 30 days prior to an LTCH stay admission date.

Rationale: This measure requires information from the prior short-term acute-care stay in the elements used for risk adjustment.

6.LTCH patients discharged against medical advice (AMA).

Rationale: Patients discharged AMA are excluded because these patients have not completed their full course of treatment in the opinion of the facility.

7.LTCH patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer.

Rationale: Consistent with the HWR Measure, patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer are excluded because these patients were identified as following a very different trajectory after discharge, with a particularly high mortality rate.

8.LTCH stays with data that are problematic (e.g., anomalous records for hospital stays that overlap wholly or in part or are otherwise erroneous or contradictory).

Rationale: This measure requires accurate information from the LTCH stay and prior short-term acute-care stays in the elements used for risk adjustment. No-pay LTCH stays involving exhaustion of Part A benefits are also excluded.

EXCLUSION DETAILS

The measure excludes some LTCH patient stays; some of these exclusions result from data limitations.

The following are the measure's denominator exclusions, including the rationale for exclusion:

1.LTCH patients who died during the LTCH stay.

Rationale: A post-discharge readmission measure is not relevant for patients who died during their LTCH stay.

2.LTCH patients less than 18 years old.

Rationale: LTCH patients under 18 years old are not included in the target population for this measure. Pediatric patients are relatively few and may have different patterns of care from adults.

3.LTCH patients who were transferred at the end of a stay to another LTCH or short-term acute-care hospital.

Rationale: Patients who were transferred to another LTCH or short-term acute-care hospital are excluded from this measure because the transfer suggests that either their LTCH treatment has not been completed or that their condition worsened, requiring a transfer back to the acute care setting. The intent of the measure is to follow patients deemed well enough to be discharged to a less intensive care setting (i.e., discharged to less intense levels of care or to the community).

4.Patients who were not continuously enrolled in Part A FFS Medicare for the 12 months prior to the LTCH stay admission date, and at least 30 days after LTCH stay discharge date.

Rationale: The adjustment for certain comorbid conditions in the measure requires information on acute inpatient bills for 1 year prior to the LTCH admission, and readmissions must be observable in the observation window following discharge. Patients without Part A coverage or who are enrolled in Medicare Advantage plans will not have complete inpatient claims in the system.

5.Patients who did not have a short-term acute-care stay within 30 days prior to an LTCH stay admission date.

Rationale: This measure requires information from the prior short-term acute-care stay in the elements used for risk adjustment.

6.LTCH patients discharged against medical advice (AMA).

Rationale: Patients discharged AMA are excluded because these patients have not completed their full course of treatment in the opinion of the facility.

7.LTCH patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer.

Rationale: Consistent with the HWR Measure, patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer are excluded because these patients were identified as following a very different trajectory after discharge, with a particularly high mortality rate.

8.LTCH stays with data that are problematic (e.g., anomalous records for hospital stays that overlap wholly or in part or are otherwise erroneous or contradictory).

Rationale: This measure requires accurate information from the LTCH stay and prior short-term acute-care stays in the elements used for risk adjustment. No-pay LTCH stays involving exhaustion of Part A benefits are also excluded.

2513 Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) following Vascular Procedures

STATUS

Submitted

STEWARD

Centers for Medicare & Medicaid Services (CMS)

DESCRIPTION

This measure estimates hospital risk-standardized 30-day unplanned readmission rates following hospital stays with one or more qualifying vascular procedure in patients who are 65 years of age or older and either admitted to the hospital (inpatients) for their vascular procedure(s) or receive their procedure(s) at a hospital but are not admitted as an inpatient (outpatients). Both scenarios are hereafter referred to as "hospital stays."

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Hospital/Acute Care Facility Hospital/Acute Care Facility

NUMERATOR STATEMENT

The outcome for this measure is 30-day all-cause unplanned readmission following a qualifying index hospital stay (see S.7-S.11 for more details). We define a readmission as a subsequent hospital inpatient admission within 30 days of either the discharge date (for inpatients) or claim end date (for outpatients – hereafter referred to as "discharge date") following a qualifying hospital stay. We do not count as readmissions any subsequent outpatient procedures or any subsequent admissions which are identified as "staged" or planned. If a patient has more than one unplanned readmission within 30 days of discharge from the index hospital stay, only the first one is counted as a readmission. The measure looks for a dichotomous yes or no outcome of whether each index hospital stay has an unplanned readmission within 30 days. (See S.6, Numerator Details, for more information.)

NUMERATOR DETAILS

Readmissions captured in the measure include any inpatient hospitalization to an acute care hospital within 30 days of discharge from the index hospital stay, unless that readmission is identified as "planned."

To the extent possible, we do not count as readmissions hospital stays associated with "planned" procedures. We identify planned procedures using the CMS Planned Readmission Algorithm Version 3.0 (developed for the Hospital-Wide All-Cause Unplanned Readmission Measure, NQF #1789), with modifications for vascular patients. In brief, the algorithm identifies readmissions with a diagnosis or procedure that is considered "always planned" (for example, major organ transplant or maintenance chemotherapy), as well as those readmissions with a "potentially planned" procedure (for exmaple, total hip replacement or cholecystectomy).

Additionally, since physicians caring for patients with vascular disease may opt to "stage" procedures across multiple hospital stays, we further identify vascular procedures which might be considered part of a planned series of admissions. An admission for a vascular procedure may be part of a planned: (1) same-procedure pair, (2) different-procedure pair, or (3) amputation procedure. The list of codes in each of these types of scenarios is included in the attached appendix (2014 Measure Updates Memorandum). One example of a potentially planned different-procedure pair is a readmission for a peripheral vascular shunt or bypass (International Classification of Diseases, Ninth Revision [ICD-9] 39.29) which follows an index admission for an insertion of non-drug-eluting, non-coronary artery stent (ICD-9 39.90). For these scenarios only, the index hospital stay and readmission must be at the same hospital. It should also be noted that for scenarios (1) and (2) only, only readmissions which follow an index inpatient hospital stay, as opposed to an outpatient hospital stay, may be considered "potentially planned."

Any readmission that is considered "potentially planned" will be considered unplanned if the principal discharge diagnosis for the readmission is acute. We consider acute diagnoses to be complications of care, and not indicative of a planned procedure.

Any unplanned readmission within 30 days of discharge from an index hospital stay may be counted in the numerator of this measure, regardless of whether the patient had a planned readmission within 30 days of discharge from the index hospital stay.

Full detail, including lists of procedures and diagnoses, are included in the 2014 Measure Updates Memorandum in the attached appendix.

DENOMINATOR STATEMENT

The target population for this measure includes inpatient and outpatient hospital stays for patients at least 65 years of age who receive one or more qualifying vascular procedure.

DENOMINATOR DETAILS

The index cohort includes inpatient or outpatient hospital stays for patients at least 65 years of age who received one or more qualifying vascular procedure at the hospital. Hospital stays are eligible for inclusion in the denominator if they contained a qualifying vascular procedure, the patient had continuous enrollment in Medicare fee-for-service (FFS) one year prior to the index hospital stay, the patient was not transferred to another acute hospital stay, and the patient was alive at discharge. Procedures on veins, procedures on cardiac and intracranial arteries, and procedures addressing vascular access for hemodialysis, do not qualify for inclusion in the cohort as they represent hospital stays for patient populations distinct from those intended for inclusion in the measure, with differing risks for readmission. Additionally, hospital stays associated with a primary discharge diagnosis of ICD-9 code 996.73 (other complications due to renal dialysis device implant and graft) are not included in the cohort.

This cohort is defined using the ICD-9 procedure codes identified in Medicare Part A inpatient and outpatient claims data and Medicare Part A outpatient Current Procedural Terminology (CPT) codes.

For purposes of risk adjustment, hospital stays are assigned to procedure groups based on anatomic location and whether an open surgical or endovascular procedure was performed, as described in item S.14 below. Qualifying ICD-9 and CPT procedure codes listed by anatomic group and procedure type are listed in the attached Excel file (see tab S.9).

EXCLUSIONS

Hospital stays are excluded from the cohort if they met any of the following criteria:

1) Lack of follow-up in Medicare FFS for at least 30 days post-discharge. Hospital stays for patients without at least 30 days of enrollment in Medicare FFS after discharge from the index stay are excluded.

Rationale: We exclude these hospital stays because the 30-day readmission outcome cannot be assessed in this group.

2) Hospital stays for patients who leave hospital against medical advice (AMA). Hospital stays for patients who are discharged AMA are excluded.

Rationale: We exclude hospital stays for patients who are discharged AMA because providers in these circumstances do not have the opportunity to deliver full care and prepare the patient for discharge.

3) Hospital stays with a qualifying vascular procedure that occur within 30 days of a previous hospital stay with a qualifying vascular procedure. Subsequent hospital stays with a qualifying vascular procedure within 30 days of discharge from an index hospital stay will not be counted as another index hospital stay.

Rationale: Qualifying vascular procedures occurring within 30 days of discharge from an index hospital stay fall within the 30-day readmission assessment period during which no new hospital stay can be counted as an index hospital stay. They are considered readmissions. Any vascular hospital stay is either an index stay or a potential readmission, but not both.

EXCLUSION DETAILS

Hospital stays are excluded from the cohort if they met any of the following criteria:

1) Lack of follow-up in Medicare FFS for at least 30 days post-discharge. Hospital stays for patients without at least 30 days of enrollment in Medicare FFS after discharge from the index stay are excluded.

Rationale: We exclude these hospital stays because the 30-day readmission outcome cannot be assessed in this group.

2) Hospital stays for patients who leave hospital against medical advice (AMA). Hospital stays for patients who are discharged AMA are excluded.

Rationale: We exclude hospital stays for patients who are discharged AMA because providers in these circumstances do not have the opportunity to deliver full care and prepare the patient for discharge.

3) Hospital stays with a qualifying vascular procedure that occur within 30 days of a previous hospital stay with a qualifying vascular procedure. Subsequent hospital stays with a qualifying vascular procedure within 30 days of discharge from an index hospital stay will not be counted as another index hospital stay.

Rationale: Qualifying vascular procedures occurring within 30 days of discharge from an index hospital stay fall within the 30-day readmission assessment period during which no new hospital stay can be counted as an index hospital stay. They are considered readmissions. Any vascular hospital stay is either an index stay or a potential readmission, but not both.

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

STATUS

Standing Committee Review

STEWARD

The Society of Thoracic Surgeons

DESCRIPTION

Risk-adjusted percentage of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.

TYPE

Outcome

DATA SOURCE

Administrative claims, Electronic Clinical Data : Registry

LEVEL

Facility

SETTING

Hospital/Acute Care Facility Hospital/Acute Care Facility

NUMERATOR STATEMENT

Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.

NUMERATOR DETAILS

Readmission is defined as a subsequent acute care hospital inpatient admission on or before the 30th day since the date of discharge from the index CABG episode (discharge day regarded as day 0). Transfers from the index CABG hospitalization to another acute care facility are not considered readmissions. In the case of transfer, the 30-day timeframe begins on the discharge date from the last acute care facility of the transfer chain. Regardless of transfers, events are attributed to the hospital that performed the CABG operation. If a patient has more than one admission within 30 days after discharge from the index CABG episode, only one is counted as a readmission.

DENOMINATOR STATEMENT

Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) during the designated 3-year measurement period and are discharged alive.

DENOMINATOR DETAILS

Candidate CABG admissions are identified by selecting Medicare Part A claims with an ICD-9-CM procedural code for CABG (36.1x) in any position. Records are retained for analysis if they meet the following additional criteria:

(1) Linked to an STS record for isolated CABG (see below for record linkage criteria and definition of isolated CABG);

(2) Eligible for Medicare fee-for-service (FFS) A and B for at least two months after discharge or until month of death, whichever is first;

(3) Discharged from acute care setting within 1 year of index CABG admission;

(4) Did not leave against medical advice;

(5) No logically inconsistent claims data (e.g. claims with overlapping admission and discharge dates);

(6) Is the first eligible operation per patient during the measurement period.

Criteria for linking CMS and STS records

STS and CMS records were linked using combinations of indirect identifiers (hospital, age, sex, date of admission, date of discharge). Before linking the CMS and STS databases, we applied the following inclusion criteria. From the CMS database, we selected all inpatient claims for patients 65 years or older at discharge with an ICD-9-CM procedural code for CABG (36.1x) in any position. From the STS database, we selected all records for patients 65 years or older on the date of discharge who underwent CABG (STS v2.61 “Coronary Artery Bypass” in section I “operative”). Eligible STS and CMS records were considered to link if they satisfied one or more of the following 3 criteria:

1. Agree on hospital, age, sex, date of admission, and date of discharge

2. Agree on hospital, sex, date of admission, date of discharge, with ages differ by 1 year

3. Agree on hospital, sex and age, and one of the two dates, with the other date differ by 1 day.

NOTE: The record linkage strategy described above was used for exploratory analyses for developing the measure and may not be required when the measure is implemented by CMS. For implementation by CMS, it is anticipated that CMS will mandate collection of direct identifiers (e.g. name and social security number) which may obviate the need to link records based on combinations of indirect identifiers.

Definition of Isolated CABG

Isolated CABG is defined as a stand-alone CABG operation without a concomitant valve or other major cardiac or non-cardiac procedure with the following exceptions:

- CABG + ventricular assist device (VAD) implantation is counted as isolated CABG.

Rationale: VAD implantation is often unplanned and may be impacted by the quality of the CABG operation and peri-operative care. Performance measures should adjust for patient factors present at the beginning of the episode of care and should not adjust for discretionary care practices that may reflect lower or higher quality of care.

- CABG + transmyocardial laser revascularization (TMR) is counted as isolated CABG.

Rationale: The decision to perform TMR is discretionary and susceptible to gaming.

- CABG + insertion of pacemaker or automatic implantable cardioverter defibrillator is counted as isolated CABG

Rationale: In the version of the Database used to develop this model, it is impossible to distinguish which such combined CABG plus pacemaker or ICD patients required these additional procedures because of a pre-existing condition versus as a result of a complication of surgery (e.g., heart block or a large perioperative MI with decrease EF and VT)

Algorithm for identifying eligible isolated CABG admissions in the linked STS + CMS database

Eligible isolated CABG admissions are identified by selecting linked STS-CMS records that meet the following criteria:

- ICD-9-CM procedural code 36.1x in any position
- STS field #1280 “coronary artery bypass grafting” = “yes”
- Each of the following STS fields is “no” or “missing”:
  - Valve surgery (1290)
  - Aortic valve operation (1630)
  - Mitral valve operation (1640)
  - Tricuspid valve operation (1650)
  - Pulmonic valve operation (1660)
  - Other non-cardiac procedure (1320)
  - Left ventricular aneurysm repair (2360)
  - Ventricular septal defect repair (2370)
  - Atrial septal defect repair (2380)
  - Batista (2390)
  - Surgical ventricular restoration (2400)

- Congenital Defect Repair (2410)
- Cardiac trauma (2430)
- Cardiac transplant (2440)
- Atrial fibrillation correction surgery (2470)
- Aortic aneurysm (2510)
- Other cardiac operation (1310)

EXCLUSIONS

Exclusion – Rationale

- The patient is age <65 years on date of discharge according to CMS or STS data – Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of CABG patients.
- There is a CMS record but no matching STS record – STS data elements are required for identifying the cohort and for risk adjustment.
- There is an STS record but not matching CMS record – Medicare data are required for ascertaining 30-day readmission status, especially readmissions to a hospital other than the CABG hospital
- CABG is not a stand-alone procedure – Inclusion of combination procedures complicates risk adjustment by adding multiple relatively rare cohorts with potentially distinct characteristics and outcomes.
- The patient died prior to discharge from acute care setting – Patient is not at risk of subsequent readmission.
- The patient leaves against medical advice (AMA). – Physicians and hospitals do not have the opportunity to deliver the highest quality care.
- The patient does not retain Medicare fee-for-service (FFS) A and B for at least two months after discharge – Beneficiaries who switch to a Medicare advantage plan are unlikely to file inpatient claims which are required for ascertaining 30-day readmission status.
- The index CABG episode is >365 days. – These patients were excluded for consistency with previous CMS readmission measures. These records may inaccurate admission and discharge dates. If not, including them would complicate risk adjustment by adding a relatively rare cohort with potentially distinct characteristics and outcomes.
- Not the first eligible CABG admission per patient per measurement period. – Simplifies statistical analysis. Also, repeat CABG procedures are very rare and so loss of information is minimal.

EXCLUSION DETAILS

Exclusion – Rationale

- The patient is age <65 years on date of discharge according to CMS or STS data – Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of CABG patients.
- There is a CMS record but no matching STS record – STS data elements are required for identifying the cohort and for risk adjustment.

- There is an STS record but not matching CMS record – Medicare data are required for ascertaining 30-day readmission status, especially readmissions to a hospital other than the CABG hospital
- CABG is not a stand-alone procedure – Inclusion of combination procedures complicates risk adjustment by adding multiple relatively rare cohorts with potentially distinct characteristics and outcomes.
- The patient died prior to discharge from acute care setting – Patient is not at risk of subsequent readmission.
- The patient leaves against medical advice (AMA). – Physicians and hospitals do not have the opportunity to deliver the highest quality care.
- The patient does not retain Medicare fee-for-service (FFS) A and B for at least two months after discharge – Beneficiaries who switch to a Medicare advantage plan are unlikely to file inpatient claims which are required for ascertaining 30-day readmission status.
- The index CABG episode is >365 days. – These patients were excluded for consistency with previous CMS readmission measures. These records may inaccurate admission and discharge dates. If not, including them would complicate risk adjustment by adding a relatively rare cohort with potentially distinct characteristics and outcomes.
- Not the first eligible CABG admission per patient per measurement period. – Simplifies statistical analysis. Also, repeat CABG procedures are very rare and so loss of information is minimal.

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

STATUS

Standing Committee Review

STEWARD

Centers for Medicare & Medicaid Services (CMS)

DESCRIPTION

The measure estimates a hospital-level risk-standardized readmission rate (RSRR), defined as unplanned readmission for any cause within 30 days from the date of discharge of the index CABG procedure, for patients 18 years and older discharged from the hospital after undergoing a qualifying isolated CABG procedure. The measure was developed using Medicare Fee-for-Service (FFS) patients 65 years and older and was tested in all-payer patients 18 years and older.

An index admission is the hospitalization for a qualifying isolated CABG procedure considered for the readmission outcome.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Hospital/Acute Care Facility Hospital/Acute Care Facility

NUMERATOR STATEMENT

The outcome for this measure is 30-day all-cause readmission. We define all-cause readmission as an unplanned inpatient admission for any cause within 30 days after the date of discharge from the index admission for patients 18 years and older discharged from the hospital after undergoing isolated CABG surgery. If a patient has one or more unplanned admissions (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission.

NUMERATOR DETAILS

(Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we are using this field to define the outcome and to which hospital the outcome is attributed when there are multiple hospitalizations within a single episode of care.)

This is an all-cause readmission measure and therefore any readmission within 30 days of discharge from the index hospitalization (hereafter referred to as discharge date) is included in the measure unless that readmission is deemed a "planned" readmission. The outcome is attributed to the hospital that provided the index CABG procedure.

Planned Readmission Definition:

Planned readmissions are scheduled admissions for elective procedures or for planned care such as chemotherapy or rehabilitation. Because planned readmissions are not necessarily a signal of quality of care, we chose to exclude planned readmissions from being considered as an outcome in this readmission measure. Although clinical experts agree that planned readmissions are rare after CABG, they likely do occur. Therefore, to identify these planned readmissions we have adapted and applied an algorithm originally created to identify planned readmissions for a hospital-wide (i.e., not condition-specific) readmission measure. This algorithm underwent two rounds of public comment, a validation study using data from a medical record review, and was finalized based upon technical input of 17 surgeons nominated by 9 surgical societies as well as 10 other expert surgeons.

In brief, the algorithm identifies a short list of always planned readmissions (those where the principal discharge diagnosis is major organ transplant, obstetrical delivery, or maintenance chemotherapy) as well as those readmissions with a potentially planned procedure (e.g., total hip replacement) AND a non-acute principle discharge diagnosis code. For example, a readmission for colon resection is considered planned if the principal diagnosis is colon cancer but unplanned if the principal diagnosis is abdominal pain, as this might represent a complication of the CABG procedure or hospitalization. Readmissions that included potentially planned procedures with acute diagnoses or procedures that might represent specific complications of CABG, such as PTCA or repeat CABG are not excluded from the measure outcome as they are not considered planned in this measure. Readmissions are considered planned if any of the following occurs during the readmission:

1. A procedure is performed that is in one of the procedure categories that are always planned regardless of diagnosis;

2. The principal diagnosis is in one of the diagnosis categories that are always planned; or,

3. A procedure is performed that is in one of the potentially planned procedure categories and the principal diagnosis is not in the list of acute discharge diagnoses.

Only the first readmission following an index hospital stay is counted in the numerator of this measure. If a patient has two or more readmissions within 30 days of discharge from the index hospital stay, only the first will be considered an outcome of interest; the second or later readmissions are not counted in the outcome.

Full detail, including lists of procedures and diagnoses, are included in the Measure Methodology Report in the attached appendix.

It should be noted that this approach differs from that adopted by STS for their registry-based measure, in which all 30-day readmissions were considered to be unplanned.

Outcome Attribution:

Attribution of the outcome in situations where a patient has multiple contiguous admissions, at least one of which involves an index CABG procedure (i.e., the patient is either transferred into the hospital that performs the index CABG or is transferred out to another hospital following the index CABG) is as follows:

- If a patient undergoes a CABG procedure in the first hospital and is then transferred to a second hospital where there is no CABG procedure, the readmission outcome is attributed to the first hospital performing the index CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain.

Rationale: A transfer following CABG is most likely due to a complication of the index procedure and that care provided by the hospital performing the CABG procedure likely dominates readmission risk even among transferred patients.

- If a patient is admitted to a first hospital but does not receive a CABG procedure there and is then transferred to a second hospital where a CABG is performed, the readmission outcome is attributed to the second hospital performing the index CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain.

Rationale: Care provided by the hospital performing the CABG procedure likely dominates readmission risk.

-If a patient undergoes a CABG procedure in the first hospital and is transferred to a second hospital where another CABG procedure is performed, the readmission outcome is attributed to the first hospital performing the index (first) CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain.

Rationale: A transfer following CABG is most likely due to a complication of the index procedure, and care provided by the hospital performing the index CABG procedure likely dominates readmission risk even among transferred patients.

DENOMINATOR STATEMENT

This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 18 years or older. We have tested the measure in both age groups.

The cohort includes admissions for patients who receive a qualifying isolated CABG procedure (see codes below) and with a complete claims history for the 12 months prior to admission. For

simplicity of implementation and as testing demonstrated closely correlated patient-level and hospital-level results using models with or without age interaction terms, the only recommended modification to the measure for application to all-payer data sets is replacement of the "Age-65" variable with a fully continuous age variable.

DENOMINATOR DETAILS

(Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year). We therefore use this field to define the measure cohort.)

The index cohort includes admissions for patients aged 18 years or older who received a qualifying "isolated" CABG procedure (CABG procedure without other concurrent major cardiac procedure such as a valve replacement). All patients in the cohort are alive at discharge (i.e., no in-hospital death). The measure was developed in a cohort of patients 65 years and older who were enrolled in Medicare FFS and admitted to non-federal hospitals. To be included in the Medicare FFS cohort, patients had to have a qualifying isolated CABG procedure AND had to be continuously enrolled in Medicare Fee-for-Service (FFS) one year prior to the first day of the index hospitalization and through 30 days post-discharge.

This cohort is defined using the ICD-9 Clinical Modification (ICD-9-CM) procedure codes identified in Medicare Part A Inpatient claims data. An ICD-9 to ICD-10 crosswalk is attached in field S.2b. (Data Dictionary or Code Table). ICD-9-CM procedure codes that indicate a patient has undergone a NON-isolated CABG procedure (CABG surgeries that occur concomitantly with procedures that elevate patients' readmission risk) and thus does not meet criteria for inclusion in the measure cohort are listed in the attached Excel file (see tab S.9).

ICD-9-CM codes that define the cohort:

36.1x - Aortocoronary bypass for heart revascularization, not otherwise specified

36.11 - (Aorto) coronary bypass of one coronary artery

36.12 - (Aorto coronary bypass of two coronary arteries

36.13 - (Aorto) coronary bypass of three coronary arteries

36.14 - (Aorto) coronary bypass of four or more coronary arteries

36.15 - Single internal mammary- coronary artery bypass

36.16 - Double internal mammary- coronary artery bypass

36.17 - Abdominal- coronary artery bypass

36.19 - Other bypass anastomosis for heart revascularization

EXCLUSIONS

In order to create a clinically coherent population for risk adjustment and in accordance with existing NQF-approved CABG measures and clinical expert opinion, the measure is intended to capture isolated CABG patients (i.e., patients undergoing CABG procedures without concomitant valve or other major cardiac or vascular procedures).

For all cohorts, hospitalizations are excluded if they meet any of the following criteria. Hospitalizations for:

1) Patients who leave the hospital against medical advice (AMA)

Rationale: We exclude hospitalizations for patients who are discharged AMA because providers did not have the opportunity to deliver full care and prepare the patient for discharge.

2) Patients with qualifying CABG procedures subsequent to another qualifying CABG procedure during the measurement period.

Rationale: CABG procedures are expected to last for several years without the need for revision or repeat revascularization. A repeat CABG procedure during the measurement period very likely represents a complication of the original CABG procedure and is a clinically more complex and higher risk surgery. We, therefore, select the first CABG admission for inclusion in the measure and exclude subsequent CABG admissions from the cohort.

For Medicare FFS patients, the measure additionally excludes:

3) Patients without at least 30 days post-discharge enrollment in FFS Medicare.

Rationale: We exclude these hospitalizations because the 30-day readmission outcome cannot be assessed in this group.

EXCLUSION DETAILS

In order to create a clinically coherent population for risk adjustment and in accordance with existing NQF-approved CABG measures and clinical expert opinion, the measure is intended to capture isolated CABG patients (i.e., patients undergoing CABG procedures without concomitant valve or other major cardiac or vascular procedures).

For all cohorts, hospitalizations are excluded if they meet any of the following criteria. Hospitalizations for:

1) Patients who leave the hospital against medical advice (AMA)

Rationale: We exclude hospitalizations for patients who are discharged AMA because providers did not have the opportunity to deliver full care and prepare the patient for discharge.

2) Patients with qualifying CABG procedures subsequent to another qualifying CABG procedure during the measurement period.

Rationale: CABG procedures are expected to last for several years without the need for revision or repeat revascularization. A repeat CABG procedure during the measurement period very likely represents a complication of the original CABG procedure and is a clinically more complex and higher risk surgery. We, therefore, select the first CABG admission for inclusion in the measure and exclude subsequent CABG admissions from the cohort.

For Medicare FFS patients, the measure additionally excludes:

3) Patients without at least 30 days post-discharge enrollment in FFS Medicare.

Rationale: We exclude these hospitalizations because the 30-day readmission outcome cannot be assessed in this group.

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

STATUS

Standing Committee Review

STEWARD

The Centers for Medicare & Medicaid Services (CMS)

DESCRIPTION

Rate of risk-standardized, all-cause, unplanned hospital visits within 7 days of an outpatient colonoscopy among Medicare fee-for-service (FFS) patients aged 65 years and older.

TYPE

Outcome

DATA SOURCE

Administrative claims

LEVEL

Facility

SETTING

Ambulatory Care : Ambulatory Surgery Center (ASC), Ambulatory Care : Clinician Office/Clinic, Other Ambulatory Care : Ambulatory Surgery Center (ASC), Ambulatory Care : Clinician Office/Clinic, Other

NUMERATOR STATEMENT

The outcome for this measure is all-cause, unplanned hospital visits within 7 days of an outpatient colonoscopy. We define a hospital visit as any emergency department (ED) visit, observation stay, or unplanned inpatient admission.

NUMERATOR DETAILS

Outcome Definition

The outcome for this measure is all-cause, unplanned hospital visits within 7 days of an outpatient colonoscopy. Hospital visits include ED visits, observation stays, and unplanned inpatient admissions. If more than one unplanned hospital visit occurs, only the first hospital visit within the outcome timeframe is counted in the outcome.

Identification of Planned Admissions

The measure outcome includes any inpatient admission within the first 7 days after the colonoscopy, unless that admission is deemed a “planned” admission as defined by the measure’s planned admission algorithm. The Centers for Medicare & Medicaid Services (CMS) seeks to count only unplanned admissions in the measure outcome, because variation in “planned” admissions does not reflect quality differences. We based the planned admission algorithm on the CMS Planned Readmission Algorithm Version 3.0, which CMS created for its hospital-wide readmission measure. In brief, the algorithm identifies admissions that are

typically planned and may occur after the patient's index event. The algorithm always considers a few specific, limited types of care planned (e.g., major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, the algorithm defines a planned admission as a non-acute admission for a scheduled procedure (e.g., total hip replacement or cholecystectomy), and the algorithm never considers admissions for acute illness or for complications of care planned. For example, the algorithm considers hip replacement unplanned if hip fracture (an acute condition) is the discharge diagnosis, but planned if osteoarthritis (a non-acute condition) is the discharge diagnosis. The algorithm considers admissions that include potentially planned procedures with acute diagnoses or that might represent complications of a colonoscopy unplanned and thus counts these admissions in the measure outcome.

Appendix C of the attached technical report contains the detailed algorithm used to identify planned admissions.

Applying the algorithm to 2010 Medicare data (Medicare 20% FFS Development Full Sample, see Measure Testing Form Section 1.2 and 1.7 for full description of the dataset), planned admissions constituted 19.2% of all hospital visits and 33.6% of all admissions within 7 days of colonoscopy. The most common planned admission was for colorectal resection.

Definition of ED and Observation Stay

We defined ED visits and observation stays using one of the specified billing codes or revenue center codes identified in Medicare Part B Outpatient hospital claims. The codes that define ED visits and observation stays are in the attached Data Dictionary, sheet "S.6 Numerator-ED Obs Def."

DENOMINATOR STATEMENT

Colonoscopies performed at hospital outpatient departments (HOPDs) and ambulatory surgical centers (ASCs) for Medicare FFS patients aged 65 years and older.

DENOMINATOR DETAILS

Target Population

The target population is colonoscopies performed at HOPDs and ASCs. However, the measure evaluates relative performance of facilities, and to ensure that the measure assesses colonoscopy quality at these facilities relative to the quality of all colonoscopy providers, we include colonoscopies performed at HOPDs, ASCs, and physician offices in the measure score calculation. The measure calculation package calculates a facility-level score for all unique facilities. Only the HOPDs and ASCs scores, however, are intended for use in public reporting, not the scores estimated for individual physician offices.

The denominator could be narrowed to the facilities of interest. For example, the measure scores could be calculated using only HOPDs or only ASC colonoscopies. However, this would change the comparison group. HOPDs would be compared relative to the performance of one another, and ASCs would be compared relative to the performance of one another. If this approach is used, the results cannot be used to compare quality across HOPDs and ASCs.

The targeted patient population is patients aged 65 years and older who are enrolled in Medicare FFS and have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of procedure. We limited the measure cohort to older Medicare patients since national data linking risk factors, procedures, and outcomes across care settings is only available for this group. The population includes patients undergoing screening for colorectal cancer (CRC),

patients undergoing diagnostic evaluation for symptoms and signs of disease, and patients undergoing biopsies or removal of pre-cancerous lesions or polyps who are generally well.

We defined this cohort as having one or more of the specified Current Procedural Terminology (CPT)/Healthcare Common Procedure Coding System (HCPCS) procedure codes identified in Medicare Carrier (Part B Physician) Standard Analytical File (SAF). The CPT and HCPCS procedure codes that define the cohort are in the attached Data Dictionary, sheet "S.9 Denominator Details-Cohort."

We considered all colonoscopy codes during development of the measure cohort. We did not include colonoscopy CPT procedure codes in the measure that reflected fundamentally higher-risk or different procedures. Those procedures billed with a qualifying colonoscopy procedure code and a high-risk colonoscopy procedure code (see attached Data Dictionary, sheet "S.9 Denominator Details-Hgh Rsk") were not included in the measure.

Colonoscopy is not possible among patients who have had a prior total colectomy. Any claim for a colonoscopy in a patient with a prior total colectomy is therefore likely to be a coding error. We perform an error check to ensure the measure does not include these patients with a total colectomy recorded in their prior medical history. The CPT and HCPCS procedure codes and International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes that define the total colectomy data reliability check are in the attached Data Dictionary, sheet "S.9 Denominator Details-Colect."

Capture of Colonoscopies Affected by the Medicare 3-Day Payment Window Policy:

Colonoscopies performed at HOPDs can be affected by the Medicare 3-day payment window policy. The policy states that outpatient services (including all diagnostic services such as colonoscopy) provided by a hospital or any Part B entity wholly owned or wholly operated by a hospital (such as a HOPD) in the 3 calendar days preceding the date of a beneficiary's inpatient admission are deemed to be related to the admission [1]. For outpatient colonoscopies affected, the facility claim (for the technical portion of the colonoscopy) is bundled with the inpatient claim, although the Medicare Part B physician claim for professional services rendered is still submitted. This policy has implications for the measure because it may lead to: (1) failure to completely capture outpatient colonoscopies performed at HOPDs; (2) underreporting of outcomes for colonoscopies performed in the HOPD setting; and (3) an inability to compare the measure score across both types of facilities (HOPDs and ASCs).

To ensure the capture of HOPD colonoscopies, we identify physician claims for colonoscopy in the HOPD setting from the Medicare Part B SAF who had an inpatient admission within =3 days and lacking a corresponding HOPD facility claim. We then attribute the colonoscopies identified as affected by this policy to the appropriate HOPD facility using the facility provider ID from the inpatient claim.

Citations

1. Centers for Medicare & Medicaid Services (CMS). Three Day Payment Window. 2013; http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Three_Day_Payment_Window.html.

EXCLUSIONS

We established the following exclusion criteria after reviewing the literature, examining existing measures, and discussing alternatives with the working group and technical expert panel (TEP) members. The goal was to be as inclusive as possible; we excluded only those high-risk procedures and patient groups for which risk adjustment would not be adequate or for which

hospital visits were not typically a quality signal. The exclusions, based on clinical rationales, prevent unfair distortion of performance results.

1) Colonoscopies for patients who lack continuous enrollment in Medicare FFS Parts A and B in the 1 month after the procedure.

Rationale: We exclude these patients to ensure full data availability for outcome assessment.

2) Colonoscopies that occur concurrently with high-risk upper gastrointestinal (GI) endoscopy procedures.

Rationale: Patients undergoing concurrent high-risk upper GI endoscopy procedures, such as upper GI endoscopy procedures for the control of bleeding or treatment of esophageal varices, are often unwell and have a higher risk profile than typical colonoscopy patients. Therefore these patients have a disproportionally higher risk for the outcome.

3) Colonoscopies for patients with a history of inflammatory bowel disease (IBD).

Rationale: We exclude these patients because:

-IBD is a chronic condition; patients with IBD undergo colonoscopy for both surveillance due to increased cancer risk and for evaluation of acute symptoms. IBD is likely to be coded as the primary diagnosis prompting the procedure irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure in the setting of an acute exacerbation of IBD. Therefore, we may not be able to adequately risk adjust for these patients as we cannot identify relatively well versus acutely unwell patients among visits coded as IBD.

-Our aim is to capture hospital visits which reflect the quality of care. Admissions for acutely ill IBD patients who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of an IBD flare do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see Measure Testing Form Section 1.2 and 1.7 for full description of the dataset), more than one third of IBD patients admitted to the hospital with colonoscopy had a discharge diagnosis of IBD, indicating their admission was for medical treatment of their IBD. We therefore excluded this group so that providers who treat a disproportionate number of IBD patients will not be disadvantaged in the measure.

4) Colonoscopies for patients with a history of diverticulitis.

Rationale: We exclude these patients because:

-It is unclear what the health status is of patients coded with a history of diverticulitis, making it difficult to fully risk adjust for patients' health. Colonoscopies performed on patients with a history of diverticulitis are likely to be coded as diverticulitis as the primary diagnosis irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure (i.e., are acutely unwell with active disease). Furthermore, the codes for diverticulitis and diverticulosis may not be consistently used; patients with diverticulosis may be erroneously coded as diverticulitis. Therefore, we may not be able to adequately risk adjust as we cannot identify relatively well versus acutely unwell patients among visits coded as diverticulitis.

-Admissions for acutely ill patients with a history of diverticulitis who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see Measure Testing Form Section 1.2 and 1.7 for full description of the dataset) more than one quarter of patients with a history of diverticulitis admitted to the hospital post colonoscopy had a discharge diagnosis of diverticulitis, indicating they were admitted for medical treatment of the condition. These admissions are likely unrelated to the quality of the colonoscopy. We

therefore excluded this group so that providers who treat a disproportionate number of diverticulitis patients will not be disadvantaged in the measure.

EXCLUSION DETAILS

We established the following exclusion criteria after reviewing the literature, examining existing measures, and discussing alternatives with the working group and technical expert panel (TEP) members. The goal was to be as inclusive as possible; we excluded only those high-risk procedures and patient groups for which risk adjustment would not be adequate or for which hospital visits were not typically a quality signal. The exclusions, based on clinical rationales, prevent unfair distortion of performance results.

1) Colonoscopies for patients who lack continuous enrollment in Medicare FFS Parts A and B in the 1 month after the procedure.

Rationale: We exclude these patients to ensure full data availability for outcome assessment.

2) Colonoscopies that occur concurrently with high-risk upper gastrointestinal (GI) endoscopy procedures.

Rationale: Patients undergoing concurrent high-risk upper GI endoscopy procedures, such as upper GI endoscopy procedures for the control of bleeding or treatment of esophageal varices, are often unwell and have a higher risk profile than typical colonoscopy patients. Therefore these patients have a disproportionally higher risk for the outcome.

3) Colonoscopies for patients with a history of inflammatory bowel disease (IBD).

Rationale: We exclude these patients because:

-IBD is a chronic condition; patients with IBD undergo colonoscopy for both surveillance due to increased cancer risk and for evaluation of acute symptoms. IBD is likely to be coded as the primary diagnosis prompting the procedure irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure in the setting of an acute exacerbation of IBD. Therefore, we may not be able to adequately risk adjust for these patients as we cannot identify relatively well versus acutely unwell patients among visits coded as IBD.

-Our aim is to capture hospital visits which reflect the quality of care. Admissions for acutely ill IBD patients who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of an IBD flare do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see Measure Testing Form Section 1.2 and 1.7 for full description of the dataset), more than one third of IBD patients admitted to the hospital with colonoscopy had a discharge diagnosis of IBD, indicating their admission was for medical treatment of their IBD. We therefore excluded this group so that providers who treat a disproportionate number of IBD patients will not be disadvantaged in the measure.

4) Colonoscopies for patients with a history of diverticulitis.

Rationale: We exclude these patients because:

-It is unclear what the health status is of patients coded with a history of diverticulitis, making it difficult to fully risk adjust for patients' health. Colonoscopies performed on patients with a history of diverticulitis are likely to be coded as diverticulitis as the primary diagnosis irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure (i.e., are acutely unwell with active disease). Furthermore, the codes for diverticulitis and diverticulosis may not be consistently used; patients with diverticulosis may be erroneously coded as diverticulitis. Therefore, we may not be able to adequately risk adjust as we cannot identify relatively well versus acutely unwell patients among visits coded as diverticulitis.

-Admissions for acutely ill patients with a history of diverticulitis who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see Measure Testing Form Section 1.2 and 1.7 for full description of the dataset) more than one quarter of patients with a history of diverticulitis admitted to the hospital post colonoscopy had a discharge diagnosis of diverticulitis, indicating they were admitted for medical treatment of the condition. These admissions are likely unrelated to the quality of the colonoscopy. We therefore excluded this group so that providers who treat a disproportionate number of diverticulitis patients will not be disadvantaged in the measure.

Appendix G1: Related and Competing Measures (Tabular Format)

CABG Readmission

	2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate	2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery
Steward	The Society of Thoracic Surgeons	Centers for Medicare & Medicaid Services (CMS)
Description	Risk-adjusted percentage of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.	The measure estimates a hospital-level risk-standardized readmission rate (RSRR), defined as unplanned readmission for any cause within 30 days from the date of discharge of the index CABG procedure, for patients 18 years and older discharged from the hospital after undergoing a qualifying isolated CABG procedure. The measure was developed using Medicare Fee-for-Service (FFS) patients 65 years and older and was tested in all-payer patients 18 years and older. An index admission is the hospitalization for a qualifying isolated CABG procedure considered for the readmission outcome.
Type	Outcome	Outcome
Data Source	Administrative claims, Electronic Clinical Data : Registry Medicare claims data, STS Adult Cardiac Surgery Database Version 2.61 Available at measure-specific web page URL identified in S.1 Attachment S.2b._-_S.15._Detailed_Risk_Model_Specifications.Risk-Adjusted_CABG_Readmission_Rate.docx	Administrative claims Administrative Claims: The measure uses Medicare Part A inpatient and outpatient and Part B outpatient claims. The Medicare data sources used to create the measure were: 1. Medicare Part A Inpatient and Outpatient and Part B outpatient claims from the Standard Analytic File, including inpatient and outpatient claims for the 12 months prior to an index admission. This dataset was used to identify the cohort (Part A inpatient) and to identify comorbidities (Part A inpatient and outpatient and Part B outpatient). 2. Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission.

		The all-payer data source used to test the measure in patients 18 years and over was: 1. 2006 California Patient Discharge Data (PDD), a large, linked database of approximately 3 million adult discharges from more than 450 non-Federal acute care hospitals. Records are linked by a unique patient identification number, allowing determination of patient history from previous hospitalizations and evaluation of both readmission and mortality rates (via linking with California vital statistics records). No data collection instrument provided Attachment Yale-CORE_CABG_Readmission_Measure_Excel_Attachment_3-26-14_Final.xlsx
Level	Facility	Facility
Setting	Hospital/Acute Care Facility	Hospital/Acute Care Facility
Time Window	Numerator – Within 30 days of the date of discharge from the index CABG hospitalization Denominator – Designated 3-year measurement period	Numerator time window: 30 days from discharge of index CABG procedure hospitalization or claim end date Denominator time window: this measure was developed using claims data from calendar year 2009. The time period for public reporting has not been determined.
Numerator Statement	Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.	The outcome for this measure is 30-day all-cause readmission. We define all-cause readmission as an unplanned inpatient admission for any cause within 30 days after the date of discharge from the index admission for patients 18 years and older discharged from the hospital after undergoing isolated CABG surgery. If a patient has one or more unplanned admissions (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission.
Numerator Details	Readmission is defined as a subsequent acute care hospital inpatient admission on or before the 30th day since the date of discharge from the index CABG episode (discharge day regarded as day 0). Transfers from the index CABG hospitalization to another acute care facility are not considered readmissions. In the case of transfer, the 30-day timeframe begins on the discharge date from the last acute care	(Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we are using this field to define the outcome and to which hospital the outcome is attributed when there are multiple hospitalizations within a single episode of care.)

	facility of the transfer chain. Regardless of transfers, events are attributed to the hospital that performed the CABG operation. If a patient has more than one admission within 30 days after discharge from the index CABG episode, only one is counted as a readmission.	This is an all-cause readmission measure and therefore any readmission within 30 days of discharge from the index hospitalization (hereafter referred to as discharge date) is included in the measure unless that readmission is deemed a "planned" readmission. The outcome is attributed to the hospital that provided the index CABG procedure. Planned Readmission Definition: Planned readmissions are scheduled admissions for elective procedures or for planned care such as chemotherapy or rehabilitation. Because planned readmissions are not necessarily a signal of quality of care, we chose to exclude planned readmissions from being considered as an outcome in this readmission measure. Although clinical experts agree that planned readmissions are rare after CABG, they likely do occur. Therefore, to identify these planned readmissions we have adapted and applied an algorithm originally created to identify planned readmissions for a hospital-wide (i.e., not condition-specific) readmission measure. This algorithm underwent two rounds of public comment, a validation study using data from a medical record review, and was finalized based upon technical input of 17 surgeons nominated by 9 surgical societies as well as 10 other expert surgeons. In brief, the algorithm identifies a short list of always planned readmissions (those where the principal discharge diagnosis is major organ transplant, obstetrical delivery, or maintenance chemotherapy) as well as those readmissions with a potentially planned procedure (e.g., total hip replacement) AND a non-acute principle discharge diagnosis code. For example, a readmission for colon resection is considered planned if the principal diagnosis is colon cancer but unplanned if the principal diagnosis is abdominal pain, as this might represent a complication of the CABG procedure or hospitalization. Readmissions that included potentially planned procedures with acute diagnoses or procedures that might represent specific complications of CABG, such as PTCA or repeat CABG are not excluded from the measure outcome as they are not considered planned in this measure. Readmissions are considered planned if any

		of the following occurs during the readmission: 1. A procedure is performed that is in one of the procedure categories that are always planned regardless of diagnosis; 2. The principal diagnosis is in one of the diagnosis categories that are always planned; or, 3. A procedure is performed that is in one of the potentially planned procedure categories and the principal diagnosis is not in the list of acute discharge diagnoses. Only the first readmission following an index hospital stay is counted in the numerator of this measure. If a patient has two or more readmissions within 30 days of discharge from the index hospital stay, only the first will be considered an outcome of interest; the second or later readmissions are not counted in the outcome. Full detail, including lists of procedures and diagnoses, are included in the Measure Methodology Report in the attached appendix. It should be noted that this approach differs from that adopted by STS for their registry-based measure, in which all 30-day readmissions were considered to be unplanned. Outcome Attribution: Attribution of the outcome in situations where a patient has multiple contiguous admissions, at least one of which involves an index CABG procedure (i.e., the patient is either transferred into the hospital that performs the index CABG or is transferred out to another hospital following the index CABG) is as follows: - If a patient undergoes a CABG procedure in the first hospital and is then transferred to a second hospital where there is no CABG procedure, the readmission outcome is attributed to the first hospital performing the index CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain. Rationale: A transfer following CABG is most likely due to a complication of the index procedure and that care provided by the hospital performing the CABG procedure likely dominates readmission risk even among transferred patients. - If a patient is admitted to a first hospital but does not receive a

		CABG procedure there and is then transferred to a second hospital where a CABG is performed, the readmission outcome is attributed to the second hospital performing the index CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain. Rationale: Care provided by the hospital performing the CABG procedure likely dominates readmission risk. -If a patient undergoes a CABG procedure in the first hospital and is transferred to a second hospital where another CABG procedure is performed, the readmission outcome is attributed to the first hospital performing the index (first) CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain. Rationale: A transfer following CABG is most likely due to a complication of the index procedure, and care provided by the hospital performing the index CABG procedure likely dominates readmission risk even among transferred patients.
Denominator Statement	Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) during the designated 3-year measurement period and are discharged alive.	This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 18 years or older. We have tested the measure in both age groups. The cohort includes admissions for patients who receive a qualifying isolated CABG procedure (see codes below) and with a complete claims history for the 12 months prior to admission. For simplicity of implementation and as testing demonstrated closely correlated patient-level and hospital-level results using models with or without age interaction terms, the only recommended modification to the measure for application to all-payer data sets is replacement of the "Age-65" variable with a fully continuous age variable.
Denominator Details	Candidate CABG admissions are identified by selecting Medicare Part A claims with an ICD-9-CM procedural code for CABG (36.1x) in any position. Records are retained for analysis if they meet the following additional criteria: (1) Linked to an STS record for isolated CABG (see below for record linkage criteria and definition of isolated CABG); (2) Eligible for Medicare fee-for-service (FFS) A and B for at least	(Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year). We therefore use this field to define the measure cohort.) The index cohort includes admissions for patients aged 18 years or older who received a qualifying "isolated" CABG procedure (CABG

	two months after discharge or until month of death, whichever is first; (3) Discharged from acute care setting within 1 year of index CABG admission; (4) Did not leave against medical advice; (5) No logically inconsistent claims data (e.g. claims with overlapping admission and discharge dates); (6) Is the first eligible operation per patient during the measurement period. Criteria for linking CMS and STS records STS and CMS records were linked using combinations of indirect identifiers (hospital, age, sex, date of admission, date of discharge). Before linking the CMS and STS databases, we applied the following inclusion criteria. From the CMS database, we selected all inpatient claims for patients 65 years or older at discharge with an ICD-9-CM procedural code for CABG (36.1x) in any position. From the STS database, we selected all records for patients 65 years or older on the date of discharge who underwent CABG (STS v2.61 "Coronary Artery Bypass" in section I "operative"). Eligible STS and CMS records were considered to link if they satisfied one or more of the following 3 criteria: 1. Agree on hospital, age, sex, date of admission, and date of discharge 2. Agree on hospital, sex, date of admission, date of discharge, with ages differ by 1 year 3. Agree on hospital, sex and age, and one of the two dates, with the other date differ by 1 day. NOTE: The record linkage strategy described above was used for exploratory analyses for developing the measure and may not be required when the measure is implemented by CMS. For implementation by CMS, it is anticipated that CMS will mandate collection of direct identifiers (e.g. name and social security number) which may obviate the need to link records based on combinations of indirect identifiers.	procedure without other concurrent major cardiac procedure such as a valve replacement). All patients in the cohort are alive at discharge (i.e., no in-hospital death). The measure was developed in a cohort of patients 65 years and older who were enrolled in Medicare FFS and admitted to non-federal hospitals. To be included in the Medicare FFS cohort, patients had to have a qualifying isolated CABG procedure AND had to be continuously enrolled in Medicare Fee-for-Service (FFS) one year prior to the first day of the index hospitalization and through 30 days post-discharge. This cohort is defined using the ICD-9 Clinical Modification (ICD-9-CM) procedure codes identified in Medicare Part A Inpatient claims data. An ICD-9 to ICD-10 crosswalk is attached in field S.2b. (Data Dictionary or Code Table). ICD-9-CM procedure codes that indicate a patient has undergone a NON-isolated CABG procedure (CABG surgeries that occur concomitantly with procedures that elevate patients' readmission risk) and thus does not meet criteria for inclusion in the measure cohort are listed in the attached Excel file (see tab S.9). ICD-9-CM codes that define the cohort: 36.1x - Aortocoronary bypass for heart revascularization, not otherwise specified 36.11 - (Aorto) coronary bypass of one coronary artery 36.12 - (Aorto coronary bypass of two coronary arteries 36.13 - (Aorto) coronary bypass of three coronary arteries 36.14 - (Aorto) coronary bypass of four or more coronary arteries 36.15 - Single internal mammary- coronary artery bypass 36.16 - Double internal mammary- coronary artery bypass 36.17 - Abdominal- coronary artery bypass 36.19 - Other bypass anastomosis for heart revascularization

	Definition of Isolated CABG Isolated CABG is defined as a stand-alone CABG operation without a concomitant valve or other major cardiac or non-cardiac procedure with the following exceptions: • CABG + ventricular assist device (VAD) implantation is counted as isolated CABG. Rationale: VAD implantation is often unplanned and may be impacted by the quality of the CABG operation and peri-operative care. Performance measures should adjust for patient factors present at the beginning of the episode of care and should not adjust for discretionary care practices that may reflect lower or higher quality of care. • CABG + transmyocardial laser revascularization (TMR) is counted as isolated CABG. Rationale: The decision to perform TMR is discretionary and susceptible to gaming. • CABG + insertion of pacemaker or automatic implantable cardioverter defibrillator is counted as isolated CABG Rationale: In the version of the Database used to develop this model, it is impossible to distinguish which such combined CABG plus pacemaker or ICD patients required these additional procedures because of a pre-existing condition versus as a result of a complication of surgery (e.g., heart block or a large perioperative MI with decrease EF and VT) Algorithm for identifying eligible isolated CABG admissions in the linked STS + CMS database Eligible isolated CABG admissions are identified by selecting linked STS-CMS records that meet the following criteria: • ICD-9-CM procedural code 36.1x in any position • STS field #1280 “coronary artery bypass grafting” = “yes” • Each of the following STS fields is “no” or “missing”: - Valve surgery (1290) - Aortic valve operation (1630)	

	- Mitral valve operation (1640) - Tricuspid valve operation (1650) - Pulmonic valve operation (1660) - Other non-cardiac procedure (1320) - Left ventricular aneurysm repair (2360) - Ventricular septal defect repair (2370) - Atrial septal defect repair (2380) - Batista (2390) - Surgical ventricular restoration (2400) - Congenital Defect Repair (2410) - Cardiac trauma (2430) - Cardiac transplant (2440) - Atrial fibrillation correction surgery (2470) - Aortic aneurysm (2510) - Other cardiac operation (1310)	
Exclusions	Exclusion – Rationale • The patient is age <65 years on date of discharge according to CMS or STS data – Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of CABG patients. • There is a CMS record but no matching STS record – STS data elements are required for identifying the cohort and for risk adjustment. • There is an STS record but not matching CMS record – Medicare data are required for ascertaining 30-day readmission status, especially readmissions to a hospital other than the CABG hospital • CABG is not a stand-alone procedure – Inclusion of combination procedures complicates risk adjustment by adding multiple relatively rare cohorts with potentially distinct characteristics and outcomes.	In order to create a clinically coherent population for risk adjustment and in accordance with existing NQF-approved CABG measures and clinical expert opinion, the measure is intended to capture isolated CABG patients (i.e., patients undergoing CABG procedures without concomitant valve or other major cardiac or vascular procedures). For all cohorts, hospitalizations are excluded if they meet any of the following criteria. Hospitalizations for: 1) Patients who leave the hospital against medical advice (AMA) Rationale: We exclude hospitalizations for patients who are discharged AMA because providers did not have the opportunity to deliver full care and prepare the patient for discharge. 2) Patients with qualifying CABG procedures subsequent to another qualifying CABG procedure during the measurement period. Rationale: CABG procedures are expected to last for several years without the need for revision or repeat revascularization. A repeat CABG procedure during the measurement period very likely represents a complication of the original CABG procedure and is a

	• The patient died prior to discharge from acute care setting – Patient is not at risk of subsequent readmission. • The patient leaves against medical advice (AMA). – Physicians and hospitals do not have the opportunity to deliver the highest quality care. • The patient does not retain Medicare fee-for-service (FFS) A and B for at least two months after discharge – Beneficiaries who switch to a Medicare advantage plan are unlikely to file inpatient claims which are required for ascertaining 30-day readmission status. • The index CABG episode is >365 days. – These patients were excluded for consistency with previous CMS readmission measures. These records may inaccurate admission and discharge dates. If not, including them would complicate risk adjustment by adding a relatively rare cohort with potentially distinct characteristics and outcomes. • Not the first eligible CABG admission per patient per measurement period. – Simplifies statistical analysis. Also, repeat CABG procedures are very rare and so loss of information is minimal.	clinically more complex and higher risk surgery. We, therefore, select the first CABG admission for inclusion in the measure and exclude subsequent CABG admissions from the cohort. For Medicare FFS patients, the measure additionally excludes: 3) Patients without at least 30 days post-discharge enrollment in FFS Medicare. Rationale: We exclude these hospitalizations because the 30-day readmission outcome cannot be assessed in this group.
Exclusion Details	Please see previous section	For all cohorts, hospitalizations for: 1) Patients who leave hospital against medical advice (AMA) are identified using the discharge disposition indicator in the Standard Analytic File (SAF). 2) Subsequent qualifying CABG procedure during the measurement period are identified by the ICD-9 codes defining CABG mentioned in denominator details. For Medicare FFS patients: 3) Patients without at least 30 days post-discharge enrollment in FFS Medicare are identified using patient enrollment status in the CMS' Enrollment Database (EDB).
Risk Adjustment	Statistical risk model Hospital-specific risk-standardized readmission rates (RSRR's) are calculated using hierarchical logistic regression with hospital-specific random intercept parameters. Covariates for the risk adjustment	Statistical risk model Our approach to risk adjustment is tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association (AHA) Scientific Statement, "Standards for

	model are derived from the STS database. The following covariates are included: 1. Ejection Fraction 2. Preoperative Atrial Fibrillation 3. Unstable Angina (no MI <= 7 days) 4. Myocardial Infarction 5. Age 6. Congestive Heart Failure 7. Renal Function 8. Status 9. Gender 10. Reoperation 11. Chronic Lung Disease 12. Diabetes 13. Preoperative IAPB or Inotrope 14. Immunosuppressive Treatment 15. PVD 16. Body Surface Area 17. CVD 18. Hypertension 19. PCI <= 6 hours 20. Left Main Disease 21. Surgery Date Methods of calculating RSRR's and associated 95% intervals are identical to prior CMS readmission measures. Available in attached Excel or csv file at S.2b	Statistical Models Used for Public Reporting of Health Outcomes" (Krumholz et al., 2006). The measure calculates readmission rates using a hierarchical logistic regression model to account for the clustering of patients within hospitals while risk-adjusting for differences in patient case-mix. We modeled the log-odds of readmission within 30 days of discharge from an index CABG admission as a function of patient demographic and clinical characteristics, and a random hospital-specific intercept. This strategy accounts for within-hospital correlation of the observed outcomes, and models the assumption that underlying differences in quality among the health care groups being evaluated lead to systematic differences in outcomes. Methodology for calculation of risk-standardized rates is noted below in the calculation algorithm section (S.18). Variables are patient-level risk-adjustors that are expected to be predictive of readmission, based on empirical analysis, prior literature, and clinical judgment, including age and indicators of comorbidity and disease severity. For each patient, covariates are obtained from Medicare claims extending 12 months prior to and including the index admission. The model adjusts for case differences based on the clinical status of the patient at the time of admission. We use condition categories (CCs), which are clinically meaningful groupings of more than 15,000 ICD-9-CM diagnosis codes. A map showing the assignment of ICD-9 codes to CCs can be found in the attached Excel file (tab 2b4.4). We do not risk-adjust for CCs that are possible adverse events of care and that are only recorded in the index admission. In addition, only comorbidities that convey information about the patient at that time or in the 12-months prior, and not complications that arise during the course of the hospitalization are included in the risk-adjustment. The risk adjustment model includes 26 variables: Demographics: Age (per year >65) Gender (Male)

		Comorbidities: History of Prior CABG or Valve Surgery Cardiogenic Shock Chronic Obstructive Pulmonary Disease Metastatic Cancer and Acute Leukemia Diabetes and DM Complications Protein-Calorie Malnutrition Disorders of Fluid/Electrolyte/Acid-Base Obesity/Disorders of Thyroid, Cholesterol, Lipids Severe Hematological Disorders Dementia or Senility Major Psychiatric Disorders Hemiplegia, Paraplegia, Paralysis, Functional Disability Polyneuropathy Congestive Heart Failure Arrhythmias Stroke Cerebrovascular Disease Vascular or Circulatory Disease Fibrosis of Lung and Other Chronic Lung Disorders Pneumonia Other Lung Disorders End-Stage Renal Disease or Dialysis Renal Failure Decubitus Ulcer or Chronic Skin Ulcer Risk model coefficients to estimate each patient's probability for the outcome: SAS procedure PROC GLIMMIX fits the statistical model to calculate the risk-adjusted coefficients and hospital-specific effects as listed in the attached Excel file (tab S.15). For random effect, the between-hospital variance is 0.04 (standard error 0.01) for the model using

		2009 full year dataset. Reference: Krumholz HM, Brindis RG, Brush JE, et al. 2006. Standards for Statistical Models Used for Public Reporting of Health Outcomes: An American Heart Association Scientific Statement From the Quality of Care and Outcomes Research Interdisciplinary Writing Group: Cosponsored by the Council on Epidemiology and Prevention and the Stroke Council Endorsed by the American College of Cardiology Foundation. Circulation 113: 456-462. Available in attached Excel or csv file at S.2b
Stratification	N/A	Results of this measure will not be stratified.
Type Score	Rate/proportion better quality = lower score	Rate/proportion better quality = lower score
Algorithm	Please refer to numerator and denominator sections for detailed information. No diagram provided	We calculate hospital-specific risk-standardized readmission rates (RSRRs). These rates are obtained as the ratio of predicted to expected readmissions, multiplied by the national unadjusted rate. The expected number of readmissions in each hospital is estimated using its patient mix and the average hospital-specific intercept. The predicted number of readmissions in each hospital is estimated given the same patient mix but the hospital-specific intercept. Operationally, the expected number of readmissions for each hospital is obtained by regressing the risk factors on the 30-day readmission using all hospitals in our sample, applying the subsequent estimated regression coefficients to the patient characteristics observed in the hospital, adding the average of the hospital-specific intercepts, summing over all patients in the hospital, and then transforming to get a count. This is a form of indirect standardization. The predicted hospital outcome is the number of expected readmissions in the "specific" hospital and not at a reference hospital. Operationally this is accomplished by estimating a hospital-specific intercept that represents baseline readmission risk within the hospital, applying the estimated regression coefficients to the patient characteristics in the hospital, summing over all patients in the hospital, and then transforming to get a count. To assess hospital performance in any given year, we re-estimate the model coefficients using that year's

		data. Please see the calculation algorithm attachment for more details. Available in attached appendix at A.1
Submission items	5.1 Identified measures: 0129 : Risk-Adjusted Prolonged Intubation (Ventilation) 0130 : Risk-Adjusted Deep Sternal Wound Infection Rate 0131 : Risk-Adjusted Stroke/Cerebrovascular Accident 0114 : Risk-Adjusted Post-operative Renal Failure 0115 : Risk-Adjusted Surgical Re-exploration 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: N/A 5b.1 If competing, why superior or rationale for additive value: N/A	5.1 Identified measures: 0114 : Risk-Adjusted Postoperative Renal Failure 0115 : Risk-Adjusted Surgical Re-exploration 0119 : Risk-Adjusted Operative Mortality for CABG 0129 : Risk-Adjusted Postoperative Prolonged Intubation (Ventilation) 0130 : Risk-Adjusted Deep Sternal Wound Infection Rate 0131 : Risk-Adjusted Stroke/Cerebrovascular Accident 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure 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 1551 : Hospital-level 30-day, all-cause risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA) 1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR) 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: The proposed CABG readmission measure, which has been developed in close collaboration with STS, has a target population (i.e., isolated CABG patients) that is harmonized with the above measures to the extent possible given the differences between clinical and administrative data. The exclusions are nearly identical to the STS measures' cohort exclusions with the exception of epicardial MAZE procedures; STS excludes these procedures from the registry-based CABG readmission measure cohort because the version of registry data used for measure development did not allow them to differentiate them from open maze procedures. The age range for the

		proposed CABG readmission and existing NQF-endorsed STS measure cohorts differs; STS measures are specified for age 18 and over, and the proposed CABG readmission measure is currently specified for age 65 and over. However, we have performed testing in patients 18 years and over and determined the measure performs well across all adult patients and payers. The proposed CABG readmission measure is harmonized with the above measures to the extent possible given the different data sources used for development and reporting. 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. 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: There are no existing NQF-endorsed measures or other measures in current use that have the same measure focus and the same target population as this measure. However, this measure was developed concurrently with a clinical registry data-based readmission measure (Risk-adjusted readmission measure for coronary artery bypass graft (CABG)). The measure steward for the registry-based readmission measure for CABG is also CMS; STS developed the measure. Effort was taken to harmonize both the registry-based and administrative-based measures to the extent possible given the differences in data sources. CMS developed these two "competing" measures at the same time to allow for maximum flexibility in implementation for quality improvement programs across different care settings. The STS cardiac surgery registry currently enrolls most, but not all, patients receiving CABG surgeries in the U.S. The proposed CABG readmission measure will capture all qualifying Medicare FFS patients undergoing CABG

		regardless of whether their hospital or surgeon participates in the STS registry. This claims-based CABG readmission measure was developed with the goal of producing a measure with the highest scientific rigor and broadest applicability. The measure is harmonized with the above existing and proposed measures to the extent possible given the different data sources used for development and reporting.

Acute Hospitalization Following the Start of Home Health

	2380 Rehospitalization During the First 30 Days of Home Health	0171 Acute care hospitalization (risk adjusted)
Steward	Centers for Medicare and Medicaid Services	Centers for Medicare & Medicaid
Description	Percentage of home health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their home health stay were admitted to an acute care hospital during the 30 days following the start of the home health stay.	Percentage of home health stays in which patients were admitted to an acute care hospital during the 60 days following the start of the home health stay.
Type	Outcome	Outcome
Data Source	Administrative claims Medicare claims data. Identification of Short Term Hospitals: https://www.cms.gov/transmittals/downloads/R29SOMA.pdf General Medicare Data Documentation: http://www.resdac.org/ddvh/index.asp No data collection instrument provided Attachment RiskModelVariables-635272074224051349.xlsx	Administrative claims Denominator: Medicare Home Health Claims Numerator: Medicare Inpatient Claims Exclusions: Medicare Home Health Claims, Medicare Enrollment Data Risk Factors: Medicare Enrollment Data, Medicare Part A & B Claims URL No data dictionary
Level	Facility	Facility
Setting	Home Health	Home Health
Time Window	Public reporting will be based on the most recent 3 years of data available. For agencies' confidential reports, agencies may select the observation period (in calendar months) they are interested in and up to 3.5 years of data are currently available.	60 days following the start of the home health stay.
Numerator Statement	Number of home health stays for patients who have a Medicare claim for an admission to an acute care hospital in the 30 days following the start of the home health stay.	Number of home health stays for patients who have a Medicare claim for an unplanned admission to an acute care hospital in the 60 days following the start of the home health stay.
Numerator Details	The 30 day time window is calculated by adding 30 days to the "from" date in the first home health claim in the series of home	The 60 day time window is calculated by adding 60 days to the "from" date in the first home health claim in the series of home health claims

	health claims that comprise the home health stay. If the patient has at least one Medicare inpatient claim from short term or critical access hospitals (identified by the CMS Certification Number ending in 0001-0879, 0800-0899, or 1300-1399) during the 30 day window, then the stay is included in the measure numerator. Numerator Exclusions: Inpatient claims for planned hospitalizations are excluded from the rehospitalization measure numerator. Planned hospitalizations are defined using the same criteria as the Hospital-Wide All-Cause Unplanned Readmission Measure as of January 2013. Specifically, a small set of readmissions, defined using Agency for Healthcare Research and Quality (AHRQ) Procedure and Diagnosis Clinical Classification Software (CCS), are always considered "planned." An additional set of admissions are categorized as "potentially planned" and are also excluded from being counted as unplanned admissions in the measure numerator unless they have a discharge condition category considered "acute or complication of care," which is defined using AHRQ Diagnosis CCS.	that comprise the home health stay. Acute care hospitalization occurs (and the home health stay is included in the numerator) if the patient has at least one Medicare inpatient claim from short term or critical access hospitals (identified by CMS Certification Number ending in 0001-0879, 0800-0899, or 1300-1399) during the 60 day window. Inpatient claims for planned hospitalizations are excluded from the measure numerator. Planned hospitalizations are defined using the same criteria as the Yale Hospital-Wide All-Cause Unplanned Readmission Measure. Specifically, admissions are categorized as "planned" based on AHRQ Procedure and Condition CCS as well as other sets of ICD-9-CM procedure codes. These admissions are excluded unless they have a discharge condition category considered "acute or complication of care," which is defined using AHRQ Condition CCS. The definitions of AHRQ CCS can be found here: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp#download The AHRQ CCS that define planned hospitalizations are found below and are AHRQ Procedure CCS unless otherwise noted. AHRQ CCS Description 45 PTCA 254 Rehabilitation (Condition CCS) 84 Cholecystectomy and common duct exploration 157 Amputation of lower extremity 44 CABG 78 Colorectal resection 51 Endarterectomy; vessel of head and neck 113 Transurethral resection of prostate 99 Other OR Gastrointestinal therapeutic procedures 48 Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator 45 Maintenance chemotherapy (Condition CCS) 211 Therapeutic radiology for cancer treatment 3 Laminectomy; excision intervertebral disc

		43 Heart valve procedures 152 Arthroplasty knee 158 Spinal fusion 55 Peripheral vascular bypass 52 Aortic resection; replacement or anastomosis 36 Lobectomy or pneumonectomy 153 Hip replacement; total and partial 60 Embolectomy and endarterectomy of lower limbs 85 Inguinal and femoral hernia repair 104 Nephrectomy; partial or complete 1 Incision and excision of CNS 124 Hysterectomy; abdominal and vaginal 167 Mastectomy 10 Thyroidectomy; partial or complete 114 Open prostatectomy 74 Gastrectomy; partial and total 119 Ooporectomy; unilateral and bilateral 154 Arthroplasty other than hip or knee ICD-9-CM procedure codes 30.5, 31.74, 34.6 Radial laryngectomy, revision of tracheostomy, scarification of pleura 166 Lumpectomy; quadrantectomy of breast 64 Bone marrow transplant 105 Kidney transplant 176 Other organ transplantation ICD-9-CM procedure codes 94.26, 94.27 Electroshock therapy Discharge AHRQ Condition CCS considered "acute or complication of care" are listed below. AHRQ CCS Description 237 Complications of device; implant or graft 106 Cardiac dysrhythmias Condition CCS 207, 225, 226, 227, 229, 230, 231, 232 Fracture

		100 Acute myocardial infarction 238 Complications of surgical procedures or medical care 108 Congestive heart failure; nonhypertensive 2 Septicemia (except in labor) 146 Diverticulosis and diverticulitis 105 Conduction disorders 109 Acute cerebrovascular disease 145 Intestinal obstruction without hernia 233 Intracranial injury 116 Aortic and peripheral arterial embolism or thrombosis 122 Pneumonia (except that caused by TB or sexually transmitted disease) 131 Respiratory failure; insufficiency; arrest (adult) 157 Acute and unspecified renal failure 201 Infective arthritis and osteomyelitis (except that caused by TB or sexually transmitted disease) 153 Gastrointestinal hemorrhage 130 Pleurisy; pneumothorax; pulmonary collapse 97 Peri-; endo-; and myocarditis; cardiomyopathy 127 Chronic obstructive pulmonary disease and bronchiectasis 55 Fluid and electrolyte disorders 159 Urinary tract infection 245 Syncope 139 Gastroduodenal ulcer (except hemorrhage) 160 Calculus of urinary tract 112 Transient cerebral ischemia
Denominator Statement	Number of home health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the home health stay. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by	Number of home health stays that begin during the 12-month observation period. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days.

	at least 60 days.	
Denominator Details	The algorithm for computing patient-level outcomes is based on a 12-month observation period and produces both monthly and yearly numerator and denominator counts; to include all valid home health stays over a three-year period for public reporting purposes, CMS will merge the data for the most recent 12-month observation period with the data from the preceding two 12-month observation periods. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health claim, so home health stays are constructed from claims data using the following procedure: 1. First, retrieve home health claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary. 2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date. 3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim. 4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n) minus Stay_End_Date(n-1) is greater than 60 days for all adjacent stays.	A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health (HH) claim, so home health stays are constructed from claims data using the following procedure. 1. First, retrieve HH claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary. 2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date. 3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim. 4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n+1) – Stay_End_Date(n) > 60 days for all adjacent stays. 5. Finally, drop stays that begin before the 12-month observation window. Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous home health claims by at least 60 days.

	5. Fifth, drop stays that begin before the 12-month observation window. 6. Finally, only stays that begin within 5 days of discharge from a short-term inpatient hospital are included in the denominator as follows: i. Link to Part A claims for 6 months prior to Stay_Start_Date for each beneficiary. ii. Define Hosp_Discharge_DT = Thru_Dt of the inpatient claim with the latest through date (thru_Dt) prior to Stay_Start_Date,. iii. Limit to home health stays where the Stay_Start_Date minus the Hosp_Discharge_DT is equal to or less than 5. Exclude stays where the IP claim is from a provider type that is not a short stay hospital . Short term hospitals are defined using the following CCN ranges in the third through sixth positions: 0001-0879, 0880-0899, and 1300-1399. Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous home health claims by at least 60 days.	
Exclusions	The measure denominator excludes several types of home health stays: First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following home health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another home health agency within a home health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months. Second, to be consistent with the Hospital-Wide All-Cause	The following are excluded: home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window (60 days following the start of the home health stay) or until death; home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim; home health stays in which the patient receives service from multiple agencies during the first 60 days; and home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior to the start of the home health stay.

	Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of home health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice. Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of home health. Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.	
Exclusion Details	The following types of home health stays are excluded from the measure denominator: 1. Stays excluded from the denominator of the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: i. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window (30 days following the start of the home health stay) or until death. Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB). These stays lack full information about the patient's utilization of health care services and so it cannot determined if care was sought in an emergency department during the numerator window. ii. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim. Exclude the stay if LUPAIND = L for the first claim in the home health stay. Home health stays designated as LUPAs are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes. iii. Home health stays in which the patient receives service from multiple agencies during the first 30 days. Define Initial_Provider = PROVIDER on the first claim in the home health stay. If	1. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window (60 days following the start of the home health stay) or until death. • Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB). 2. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim. • Exclude the stay if LUPAIND = L for the first claim in the home health stay. 3. Home health stays in which the patient receives service from multiple agencies during the first 60 days. • Define Initial_Provider = PROVIDER on the first claim in the home health stay. • If Intial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay. 4. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior to the start of the home health stay.

	Initial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay. These home health stays are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes. iv. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the six months prior to the start of the home health stay. Enrollment status is identified using the Medicare Enrollment Database (EDB). These stay are excluded because we lack information about the patient's health status prior to the beginning of home health that is needed for risk adjustment. 2. In addition, the following four types of prior admissions are excluded from being the index hospitalization: i. Admissions for the treatment of cancer. Exclude admissions with discharge diagnosis for treatment of cancer. AHRQ Diagnosis CCS are used to define cancer discharge condition categories. AHRQ Diagnosis CCS considered cancer include: AHRQ Diagnosis CCS Description 11 Cancer of head and neck 12 Cancer of esophagus 13 Cancer of stomach 14 Cancer of colon 15 Cancer of rectum and anus 16 Cancer of liver and intrahepatic bile duct 17 Cancer of pancreas 18 Cancer of other GI organs; peritoneum 19 Cancer of bronchus; lung 20 Cancer; other respiratory and intrathoracic 21 Cancer of bone and connective tissue 22 Melanomas of skin	• Enrollment status is identified using the Medicare Enrollment Database (EDB).

	23 Other non-epithelial cancer of skin 24 Cancer of breast 25 Cancer of uterus 26 Cancer of cervix 27 Cancer of ovary 28 Cancer of other female genital organs 29 Cancer of prostate 30 Cancer of testis 31 Cancer of other male genital organs 32 Cancer of bladder 33 Cancer of kidney and renal pelvis 34 Cancer of other urinary organs 35 Cancer of brain and nervous system 36 Cancer of thyroid 37 Hodgkin's disease 38 Non-Hodgkin's lymphoma 39 Leukemias 40 Multiple myeloma 41 Cancer; other and unspecified primary 42 Secondary Malignancies 43 Malignant neoplasm without specification of site 44 Neoplasms of unspecified nature or uncertain behavior 45 Maintenance chemotherapy; radiotherapy ii. Admissions for the treatment of primary psychiatric diseases. Exclude admissions with discharge diagnosis for treatment of psychiatric disease. AHRQ Diagnosis CCS are used to define psychiatric disease discharge condition categories. AHRQ Diagnosis CCS considered psychiatric disease include: AHRQ Diagnosis CCS Description 650 Adjustment disorders 651 Anxiety disorders	

	652 Attention-deficit, conduct, and disruptive behavior disorders 654 Developmental disorders 655 Disorders usually diagnosed in infancy, childhood, or adolescence 656 Impulse control disorders, NEC 657 Mood disorders 658 Personality disorders 659 Schizophrenia and other psychotic disorders 662 Suicide and intentional self-inflicted injury 670 Miscellaneous disorders iii. Admissions for rehabilitation care and the fitting of prostheses and adjustment devices. Exclude admissions with admitting diagnosis of "rehabilitation care; fitting of prostheses and adjustment devices." The AHRQ Diagnosis CCS 254 is used to define rehabilitation care. iv. Admission ending in patient discharge against medical advice. Exclude admissions with "Stus_cd"=07. Admissions for cancer have very different mortality and readmission rates than the remainder of the population. Admissions for psychiatric diseases are treated in separate psychiatric facilities not comparable to treatment received in acute care hospitals, and admissions for rehabilitation care typically do not occur in an acute care setting. Finally, admissions that end in patient discharge against medical advice are excluded because the hospital did not have a full opportunity to treat the patient. 3. Home health stays for patients who receive intervening care in the window between the index hospital discharge and the start of home health care. Intervening care is identified as any inpatient hospital use (which includes care received at inpatient rehabilitation facilities and long-term care hospitals), emergency department use without hospitalization, and skilled nursing facility treatment. These home health stays are excluded because	

	patients' health outcomes may be affected by the care they receive between hospital discharge and the start of home care. 4. Home health stays with missing payment-episode authorization strings. These stays do not include all the information needed for risk adjustment.	
Risk Adjustment	Statistical risk model The measure developer used a multinomial logistic model to account for beneficiary factors that may affect rates of hospitalization but are outside of the home health agency's control. Because these measures evaluate two different but related outcomes, one multinomial logistic framework models the three disjoint outcomes: no acute care use (no event), emergency department use without hospital readmission, and rehospitalization. A multinomial logistic model allows for the same risk factors to affect the possible outcomes in different ways while also constraining predicted probabilities of all three events to sum to one hundred percent. The risk adjustment model uses six months of claims prior to the start of home health care to obtain information about the beneficiary. The measure developer identified a set of 404 covariates that consisted of statistically significant predictors of acute care rehospitalization or emergency use without hospital readmission. CMS published the risk adjustment model specifications on the Home Health Quality Initiative page in December 2013. The five beneficiary-level risk factors included in the multinomial logistic regression model are as follows: 1. Prior Care Setting Because beneficiaries who enter home health care from different prior care settings may have different health statuses, this model takes into account beneficiaries' immediate prior care setting. The categorical variables included in this risk factor are defined by examining Medicare claims for the 6 months prior to the start of the home health stay. One categorical variable captures prior care use in the 30 days prior to the start of home health (and prior to	Statistical risk model Multinomial logit with outcomes of "No acute event", "Emergency Department without Hospitalization", and "Acute Care Hospitalization". Risk factors include: Prior Care Setting – The main categories are community (i.e., no prior care setting), outpatient emergency room, inpatient-acute (IP-acute), inpatient rehabilitation facility (IRF), psychiatric facility, long-term care facility (LTC), and skilled nursing facility (SNF). The hierarchy of setting is SNF, most recent inpatient stay, and outpatient ER. Acumen used the five cohorts from the Yale Hospital-Wide All-Cause Unplanned Readmission Measure to segregate the IP-acute category. The five cohorts are: 1. Surgery/Gynecology: admissions likely cared for by surgical or gynecological teams, based on AHRQ procedure categories; 2. Cardiorespiratory: admissions treated by the same care teams with very high readmission rates, such as for pneumonia, chronic obstructive pulmonary disease, and heart failure; 3. Cardiovascular: admissions treated by separate cardiac or cardiovascular team in large hospitals, such as for acute myocardial infarctions; 4. Neurology: admissions for neurological conditions, such as stroke, that may be treated by a separate neurology team in large hospitals; and 5. Medicine: admissions for all other non-surgical patients. These cohorts were designed to account for differences in readmission risk for surgical and non-surgical patients. Finally, the IP-acute categories and the SNF category were further

	the index hospitalization). A second variable includes information about care received more than 30 days prior to home health but within 6 months of the start of the home health stay and identifies patients with hospitalizations, SNF care, or emergency department use during this time frame. Finally, the risk adjustment model accounts for the length of index hospital stay (i.e., one to two weeks, and greater than two weeks). 2. Age and Sex Interactions The risk adjustment model includes age and sex interactions from the Enrollment Database (EDB) as covariates to account for the differing effects of age on the outcomes for each sex. Age is subdivided into 12 bins for each sex: aged 0 to 34, 35 to 44, 45 to 54, five-year age bins from 55 to 95, and a 95 and older category. Age is determined based on the patient's age at the start of the home health stay. The model includes a binary indicator for each age-bin, sex combination. The omitted category is 65-69 year old males. 3. Health Status To account for beneficiary health status, the risk adjustment model uses three measures: (i) CMS' Hierarchical Condition Categories (HCCs), (ii) Diagnosis-Related Groupings (DRGs), (iii) and Activities of Daily Living (ADLs). First, the risk adjustment uses CMS' HCCs. HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims.* While the CMS-HHC model uses a full year of claims data to calculate HCCs,** the rehospitalization and ED use without hospital readmission measures use only six months of data to limit the number of home health stays excluded due to missing claims history. Binary indicators for all HCCs and CCs from the 2008 CMS HCC model that are not hierarchically ranked and that were statistically significant predictors of rehospitalization or ED use without hospital readmission are included in the model.	refined by length of stay. Each of the five IP-acute categories are separated into stays of length 0 to 3 days, 4 to 8 days, and 9 or more days, while the SNF categories are split into stays of length 0 to 13, 14 to 41, and 42 and more days. A patient cared for in both a skilled nursing facility and an inpatient hospital during the 30 days prior to starting home health care is included in the skilled nursing categories and not the inpatient categories. The length of stay is determined from the last inpatient or skilled nursing stay prior to beginning home health care. Age and Gender Interactions – Age is subdivided into 12 bins for each gender: aged 0-34, 35-44, 45-54, five-year age bins from 55 to 95, and a 95+ category. Using a categorical age variable allows the model to account for the differing effects of age and gender. Age is determined based on the patient's age at Stay_Start_Date. CMS Hierarchical condition categories (HCCs) – HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims. While the CMS-HHC model uses a full year of claims data to calculate HCCs, for these measures, we use only 6 months of data to limit the number of home health stays excluded due to missing HCC data. All 2008 HCCs and CCs that are not hierarchically ranked that were statistically significant predictors of ACH and ED use are included in the model. Details of the CMS-HCC model and the code lists for defining the HCCs can be found here: https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp A description of the development of the CMS-HCC model can be found here: https://www.cms.gov/HealthCareFinancingReview/Downloads/04Summerpg119.pdf ESRD and Disability Status – Original End Stage Renal Disease (ESRD) and current ESRD status are

	Next, the risk adjustment model includes the DRG of the qualifying inpatient stay. DRGs are used for Medicare payment to classify inpatient stays that are clinically related and are expected to have similar levels of resource use. Most DRGs are classified based largely on the primary diagnosis on the inpatient claim.*** Finally, risk adjustment for these measures also takes into account patient functional status by including the four separate ADL scores that appear on the home health claim. These four scores range from 0 to 16 and are calculated as part of the home health payment process by combining information from several OASIS items: (i) Dressing upper or lower body (OASIS fields M1810 or M1820) (ii) Bathing (M1830) (iii) Toileting (M1840) (iv) Transferring (M1850) (v) Ambulation (M1860) While each of the four ADL scores is calculated from these OASIS items, the weight assigned to each item differs across scores. Thus, all four scores convey distinct information about patient functional status and are used for risk adjustment.**** Directly including OASIS items as risk factors is not currently feasible, due to challenges associated with linking OASIS assessments to home health claims. 4. Medicare Enrollment Status The model employs reason for Medicare eligibility, including ESRD status and disability status as covariates because beneficiaries with ESRD or who are disabled constitute a fundamentally different health profile than other Medicare beneficiaries. Additionally, the model includes interactions between original disabled status and sex. 5. Additional Interaction Terms Interaction terms account for the additional effect two risk factors	included as risk factors. Original disabled status and male, and original disabled status and female, are also included. Medicare beneficiaries with ESRD or disabled status represent a fundamentally different health profile. Interaction Terms – All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predicators of ED Use and ACH were included. Interaction terms account for the additional effect two risk factors may have when present simultaneously, which is more than the additive effect of each factor separately.

	may have when present simultaneously, which may be more or less than the additive effect of each factor separately. For example, a beneficiary with chronic heart failure and chronic obstructive pulmonary disease may be at greater risk for hospitalization than would be estimated by adding the risk of hospitalization for each condition separately. All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predictors of rehospitalization or emergency department use without readmission were included. * A description of the development of the CMS-HCC model can be found here: https://www.cms.gov/HealthCareFinancingReview/Downloads/04Summerpg119.pdf ** Details of the CMS-HCC model and the code lists for defining the HCCs can be found here: https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp *** Details of the DRG system can be found here: http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/AcutePaymtSysfctsht.pdf ****This methodology differs from the ADL score included in the Home Health Resource Grouper (HHRG), which is a categorization of one of the four ADL scores. Further information can be found at: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HomeHealthPPS/CaseMixGrouperSoftware.html Available in attached Excel or csv file at S.2b	
Stratification	The measure is not stratified.	N/A - not stratified
Type Score	Other (specify): Categorical for public reporting (i.e., categories are "Better than Expected", "Same as Expected", and "Worse than Expected'); rate for confidential reporting (better quality [all else equal] = lower rates) better quality = lower score	Rate/proportion better quality = lower score
Algorithm	The following algorithm is used to compute the “Rehospitalization	1. Construct Home Health Stays from HH Claims (see 2a1.7 for

	During the First 30 Days of Home Health" measure and the "Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health" measure: 1. Construct home health stays from HH claims. 2. Link stays to enrollment data by beneficiary. 3. Identify numerator window (30 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death. 4. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window. 5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date. 6. Link to Part A and Part B claims for 6 months prior to Stay_Start_Date for each beneficiary. 7. Calculate demographic risk factors for each stay (age, sex, etc.) using enrollment data. 8. Limit to home health stays where the Stay_Start_Date minus the Thru_Dt of an Inpatient (IP) claims is equal to or less than 5. Exclude stays where the IP claim is not for a short-term hospital or has an AHRQ Diagnosis CCS or stus_cd that excludes it from being an index admission. Retain the DRG of the index admission as a risk factor. 9. Calculate prior care setting indicators, ADLs, HCCs, and HCC interactions. 10. Exclude stays that have prior care setting indicators whose claim Thru_Dt is in between the Thru_Dt of the index hospitalization and the Stay_Start_Dt. 11. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals for numerator window (30 days following Stay_Start_Date). 12. Link to Outpatient claims with revenue center codes indicating	details) 2. Identify numerator window (60 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death. 3. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window 4. Link stays to enrollment data by beneficiary. 5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date. 6. Calculate demographic risk factors for each stay (age, gender, etc.) using enrollment data. 7. Link to Part A and Part B claims for 6 months prior to Stay_Start_Date for each beneficiary 8. Calculate prior care setting indicators, HCCs, and HCC interactions. 9. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals (excluding planned hospitalizations - see 2a1.3 for details) for numerator window (60 days following Stay_Start_Date) 10. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 9. 11. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 6 and 8, calculate the predicted probability of being included in the measure numerator for each stay (Pred_Hosp). Additionally calculate the average of Pred_Hosp across all stays that are included in the measure denominator (not excluded in steps 3 or 5) and call this value National_pred_Hosp. 12. Calculate observed and risk adjusted rates for each home health agency (Initial_Provider): a. Calculate the observed rate of Acute Care Hospitalization as the fraction all (non-excluded) HH Stays with that agency as Initial_Provider that are also included in the measure numerator

	emergency department use for the numerator window (30 days following Stay_Start_Date). 13. Calculate measure flags for each stay: a. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 11. 14. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 7 through 9, calculate the predicted probability of being included in the measure numerator, for each stay (Pred_Hosp). Additionally calculate the average of Pred_Hosp across all stays that are included in the measure denominator (not excluded in steps 3 to 5) and call these values National_Pred_Hosp. 15. Calculate observed and expected rates for the measure at each home health agency (Initial_Provider): a. Observed Rates: i. Calculate the observed rate of acute care hospitalization as the fraction all (non-excluded) HH stays with that agency as Initial_Provider that are also included in the measure numerator (Hosp_Admit = 1). Call the value Agency_Obs_Hosp. b. Expected Rates: i. Calculate the agency expected rate of acute care hospitalization by taking the average of Pred_ Hosp across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_Pred_Hosp. 16. For each agency, simulate the distribution of expected rates: a. For each stay, randomly choose an outcome (i.e. no outcome, re-hospitalization, or ED use without hospital readmission) using the stay-level predicted probability of hospitalization (Pred_Hosp). Repeat simulation 20,000 times. Call these values X1 – X20,000. b. For each simulation, calculate the agency predicted rate of hospitalization by taking the average of all stays with that agency. Call these values Agency_sim_Hosp1 – Agency_sim_Hosp20000. 17. Classify agencies as “Better than Expected” if fewer than 5% of	(Hosp_Admit = 1). Call the value Agency_obs_Hosp. b. Calculate the agency predicated rate of Acute Care Hospitalization by taking the average of Pred_ Hosp across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_pred_Hosp. c. Calculate the risk adjusted rate of Acute Care Hospitalization using the following formula: Agency_riskadj_Hosp = National_pred_Hosp + (Agency_obs_Hosp – Agency_pred_Hosp). If an agency’s calculated risk adjusted rate is negative, that agency will have a publicly reported rate of 0%

	the Agency_sim_hosp values are less than or equal to Agency_Obs_Hosp. Classify agencies as “Worse than Expected” if fewer than 5% of the Agency_sim_Hosp values are greater than or equal to Agency_Obs_Hosp. Classify all other agencies as “Same as Expected” (See Appendix for additional technical details about assigning categories). No diagram provided	
Submission items	5.1 Identified measures: 1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR) 0171 : Acute care hospitalization (risk adjusted) 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: The home health rehospitalization measures (i.e., Rehospitalization During the First 30 Days of Home Health, and ED Use without Hospital Readmission During the First 30 Days of Home Health) are harmonized with other post-acute rehospitalization measures and with CMS’ Hospital-Wide All-Cause Unplanned Readmission measure (HWR) in the types of initial hospitalizations included and in the definition of unplanned hospitalizations. They differ from other post-acute hospital readmission measures, however, in the definition of eligible post-acute stays, in the risk adjustment approach, and by measuring ED use as an outcome. The differences arise due to the unique nature of home health care as a post-acute setting. The specifications for the home health rehospitalization measures were developed by restricting the NQF-endorsed claims-based Acute Care Hospitalization (ACH) and ED Use without Hospitalization (ED Use) measures (NQF numbers 171 and 173, respectively) to home health stays that begin within five days of an acute care hospital discharge. HH stays – sequences of home health payment episodes – are defined in the same way as in the ACH and ED Use measures. The initial hospital discharge must meet the criteria for the hospital HWR measure. Home health stays are included in the measure numerator if an unplanned hospital readmission to the inpatient setting or an ED visit occurs during the first 30 days of home care. Certain home health stays, such as those in which	5.1 Identified measures: 0173 : Emergency Department Use without Hospitalization 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value: There are no other measures that report acute care hospitalization rates for home health patients.

	multiple home health agencies care for the same patient, are excluded. Finally, the measures are risk adjusted using patient-level predicted probabilities calculated from a multinomial logistic regression. Risk factors that are accounted for include demographics and health status as measured by both CMS' Hierarchical Condition Categories (HCCs) found on claims in the previous six months, the Activities of Daily Living (ADL) fields on the Outcome and Assessment Information Set (OASIS) assessment of the initial home health stay after the index hospitalization, and the Diagnosis-Related Group (DRG) on the initial inpatient claim. The home health rehospitalization measures differ from other post-acute measures in three key ways. First, while other measures exclude patients with a gap between hospital discharge and post-acute admission, the home health measures allow a gap of up to five days. Unlike other post-acute settings, HH is provided in the patient's home, and thus the patient returns to their home after hospital discharge. This results in some gap between hospital discharge and the initial visit from a home health agency. The Medicare Conditions of Participation for home health agencies require home health care to begin within 48 hours of hospital discharge or on the physician-ordered start of care date (which is usually within 1-3 days of hospital discharge). Thus, the measures as specified apply to 91 percent of patients who begin home health within 30 days of hospital discharge. Second, the other measures use different risk factors and a different functional form for risk adjustment. For consistency with the ACH and ED Use measures, which apply to all home health stays, the developer recommends using a similar set of risk factors and the same multinomial logistic form for the home health rehospitalization measures. Third, the risk-adjusted rates for the home health rehospitalization measures would not be publicly reported. Due to a large number of relatively small home health agencies treating previously hospitalized patients, the measure developer determined that reporting home health agencies' risk-adjusted rates could lead to misleading conclusions, since small home health agencies' risk-adjusted rates	

	tend to be unstable. Pursuing a categorical reporting method is consistent with condition-specific hospital readmission measures. While the rehospitalization and emergency department use without hospital readmission measures differ from other post-acute measures in some regards, these differences arise from the unique nature of home care as well as from a desire for harmonization across home health quality measures.The home health rehospitalization measures (i.e., Rehospitalization During the First 30 Days of Home Health, and ED Use without Hospital Readmission During the First 30 Days of Home Health) are harmonized with other post-acute rehospitalization measures and with CMS' Hospital-Wide All-Cause Unplanned Readmission measure (HWR) in the types of initial hospitalizations included and in the definition of unplanned hospitalizations. They differ from other post-acute hospital readmission measures, however, in the definition of eligible post-acute stays, in the risk adjustment approach, and by measuring ED use as an outcome. The differences arise due to the unique nature of home health care as a post-acute setting. The specifications for the home health rehospitalization measures were developed by restricting the NQF-endorsed claims-based Acute Care Hospitalization (ACH) and ED Use without Hospitalization (ED Use) measures (NQF numbers 171 and 173, respectively) to home health stays that begin within five days of an acute care hospital discharge. HH stays – sequences of home health payment episodes – are defined in the same way as in the ACH and ED Use measures. The initial hospital discharge must meet the criteria for the hospital HWR measure. Home health stays are included in the measure numerator if an unplanned hospital readmission to the inpatient setting or an ED visit occurs during the first 30 days of home care. Certain home health stays, such as those in which multiple home health agencies care for the same patient, are excluded. Finally, the measures are risk adjusted using patient-level predicted probabilities calculated from a multinomial logistic regression. Risk factors that are accounted for include demographics and health status as measured by both CMS'	

	Hierarchical Condition Categories (HCCs) found on claims in the previous six months, the Activities of Daily Living (ADL) fields on the Outcome and Assessment Information Set (OASIS) assessment of the initial home health stay after the index hospitalization, and the Diagnosis-Related Group (DRG) on the initial inpatient claim. The home health rehospitalization measures differ from other post-acute measures in three key ways. First, while other measures exclude patients with a gap between hospital discharge and post-acute admission, the home health measures allow a gap of up to five days. Unlike other post-acute settings, HH is provided in the patient's home, and thus the patient returns to their home after hospital discharge. This results in some gap between hospital discharge and the initial visit from a home health agency. The Medicare Conditions of Participation for home health agencies require home health care to begin within 48 hours of hospital discharge or on the physician-ordered start of care date (which is usually within 1-3 days of hospital discharge). Thus, the measures as specified apply to 91 percent of patients who begin home health within 30 days of hospital discharge. Second, the other measures use different risk factors and a different functional form for risk adjustment. For consistency with the ACH and ED Use measures, which apply to all home health stays, the developer recommends using a similar set of risk factors and the same multinomial logistic form for the home health rehospitalization measures. Third, the risk-adjusted rates for the home health rehospitalization measures would not be publicly reported. Due to a large number of relatively small home health agencies treating previously hospitalized patients, the measure developer determined that reporting home health agencies' risk-adjusted rates could lead to misleading conclusions, since small home health agencies' risk-adjusted rates tend to be unstable. Pursuing a categorical reporting method is consistent with condition-specific hospital readmission measures. While the rehospitalization and emergency department use without hospital readmission measures differ from other post-acute measures in some regards, these differences arise from the	

	unique nature of home care as well as from a desire for harmonization across home health quality measures. 5b.1 If competing, why superior or rationale for additive value: Not applicable; there are no other measures that report rehospitalization rates for home health patients.	

ED Use Following the Start of Home Health

	2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health	0173 Emergency Department Use without Hospitalization
Steward	Centers for Medicare and Medicaid Services	Centers for Medicare & Medicaid
Description	Percentage of home health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their home health stay used an emergency department but were not admitted to an acute care hospital during the 30 days following the start of the home health stay.	Percentage of home health stays in which patients used the emergency department but were not admitted to the hospital during the 60 days following the start of the home health stay.
Type	Outcome	Outcome
Data Source	Administrative claims Medicare claims data Identification of ED visits: http://www.resdac.org/Tools/TBs/TN-003_EmergencyRoominClaims_508.pdf Identification of Short Term Hospitals: https://www.cms.gov/transmittals/downloads/R29SOMA.pdf General Medicare Data Documentation: http://www.resdac.org/ddvh/index.asp No data collection instrument provided Attachment RiskModelVariables-635272073824686229.xlsx	Administrative claims Denominator: Medicare Home Health Claims Numerator: Medicare Inpatient and Outpatient Claims Exclusions: Medicare Home Health Claims, Medicare Enrollment Data Risk Factors: Medicare Enrollment Data, Medicare Part A & B Claims URLS: Identification of ED visits: http://www.resdac.org/Tools/TBs/TN-003_EmergencyRoominClaims_508.pdf Identification of Short Term Hospitals: https://www.cms.gov/transmittals/downloads/R29SOMA.pdf General Medicare Data Documentation: http://www.resdac.org/ddvh/index.asp URL No data dictionary
Level	Facility	Facility
Setting	Home Health	Home Health
Time Window	Public reporting will be based on the most recent 3 years of data	60 days following the start of the home health stay.

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	available. For agencies' confidential reports, agencies may select the observation periods (in calendar months) they are interested in and up to 3.5 years of data are currently available.	
Numerator Statement	Number of home health stays for patients who have a Medicare claim for outpatient emergency department use and no claims for acute care hospitalization in the 30 days following the start of the home health stay.	Number of home health stays for patients who have a Medicare claim for outpatient emergency department use and no claims for acute care hospitalization in the 60 days following the start of the home health stay.
Numerator Details	The 30 day time window is calculated by adding 30 days to the "from" date in the first home health claim in the series of home health claims that comprise the home health stay. If the patient has any Medicare outpatient claims with any emergency department revenue center codes (0450-0459, 0981) during the 30 day window AND if the patient has no Medicare inpatient claims for admission to an acute care hospital (identified by the CMS Certification Number on the IP claim ending in 0001-0879, 0800-0899, or 1300-1399) during the 30 day window, then the stay is included in the measure numerator. Numerator Exclusions: None.	The 60 day time window is calculated by adding 60 days to the "from" date in the first home health claim in the series of home health claims that comprise the home health stay. If the patient has any Medicare outpatient claims with any ER revenue center codes (0450-0459, 0981) during the 60 day window AND if the patient has no Medicare inpatient claims for an unplanned admission to an acute care hospital (identified by the CMS Certification Number on the IP claim ending in 0001-0879, 0800-0899, or 1300-1399) during the 60 day window, then the stay is included in the measure numerator.
Denominator Statement	Number of home health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the home health stay. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days.	Number of home health stays that begin during the 12-month observation period. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days.
Denominator Details	The algorithm for computing patient-level outcomes is based on a 12-month observation period and produces both monthly and yearly numerator and denominator counts; to include all valid home health stays over a three-year period for public reporting purposes, CMS will merge the data for the most recent 12-month observation period with the data from the preceding two 12-month observation periods. A home health stay is a sequence of home health payment episodes	A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health (HH) claim, so home health stays are constructed from claims data using the following procedure. 1. First, retrieve HH claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by

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	separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health (HH) claim, so home health stays are constructed from claims data using the following procedure: 1. First, retrieve home health claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary. 2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date. 3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim. 4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n) minus Stay_End_Date(n-1) is greater than 60 days for all adjacent stays. 5. Fifth, drop stays that begin before the 12-month observation window. 6. Finally, only stays that begin within 5 days of discharge from a short-term inpatient hospital are included in the denominator as follows: i. Link to Part A claims for 6 months prior to Stay_Start_Date for each beneficiary. ii. Define Hosp_Discharge_DT = Thru_Dt of the inpatient claim with	"from" date for each beneficiary. 2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date. 3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim. 4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n+1) – Stay_End_Date(n) > 60 days for all adjacent stays. 5. Finally, drop stays that begin before the 12-month observation window. Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous home health claims by at least 60 days.

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	the latest through date (thru_Dt) prior to Stay_Start_Date,. iii. Limit to home health stays where the Stay_Start_Date minus the Hosp_Discharge_DT is equal to or less than 5. Exclude stays where the IP claim is from a provider type that is not a short stay hospital . Short term hospitals are defined using the following CCN ranges in the third through sixth positions: 001-0879, 0880-0899, and 1300-1399. Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous home health claims by at least 60 days.	
Exclusions	The measure denominator excludes several types of home health stays: First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following home health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another home health agency within a home health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months. Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of home health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.	The following are excluded: home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window (60 days following the start of the home health stay) or until death; home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim; home health stays in which the patient receives service from multiple agencies during the first 60 days; and home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior the start of the home health stay.

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	Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of home health. Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.	
Exclusion Details	The following types of home health stays are excluded from the measure denominator: 1. Stays excluded from the denominator of the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: i. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window (30 days following the start of the home health stay) or until death. Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB). These stays lack full information about the patient's utilization of health care services and so it cannot determined if care was sought in an emergency department during the numerator window. ii. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim. Exclude the stay if LUPAIND = L for the first claim in the home health stay. Home health stays designated as LUPAs are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes. iii. Home health stays in which the patient receives service from multiple agencies during the first 30 days. Define Initial_Provider = PROVIDER on the first claim in the home health stay. If Initial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay. These home health stays are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes. iv. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the six months prior to the start of	1. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 60 days following the start of the home health stay or until death. • Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB). 2. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim. • Exclude the stay if LUPAIND = L for the first claim in the home health stay. 3. Home health stays in which the patient receives service from multiple agencies during the first 60 days. • Define Initial_Provider = PROVIDER on the first claim in the home health stay. • If Intial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay. 4. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior to the start of the home health stay. • Enrollment status is identified using the Medicare Enrollment Database (EDB).

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	the home health stay. Enrollment status is identified using the Medicare Enrollment Database (EDB). These stay are excluded because we lack information about the patient's health status prior to the beginning of home health that is needed for risk adjustment. 2. In addition, the following four types of prior admissions are excluded from being the index hospitalization: i. Admissions for the treatment of cancer. Exclude admissions with discharge diagnosis for treatment of cancer. AHRQ Diagnosis CCS are used to define cancer discharge condition categories. AHRQ Diagnosis CCS considered cancer include: AHRQ Diagnosis CCS Description 11 Cancer of head and neck 12 Cancer of esophagus 13 Cancer of stomach 14 Cancer of colon 15 Cancer of rectum and anus 16 Cancer of liver and intrahepatic bile duct 17 Cancer of pancreas 18 Cancer of other GI organs; peritoneum 19 Cancer of bronchus; lung 20 Cancer; other respiratory and intrathoracic 21 Cancer of bone and connective tissue 22 Melanomas of skin 23 Other non-epithelial cancer of skin 24 Cancer of breast 25 Cancer of uterus 26 Cancer of cervix 27 Cancer of ovary 28 Cancer of other female genital organs 29 Cancer of prostate 30 Cancer of testis 31 Cancer of other male genital organs	

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	32 Cancer of bladder 33 Cancer of kidney and renal pelvis 34 Cancer of other urinary organs 35 Cancer of brain and nervous system 36 Cancer of thyroid 37 Hodgkin's disease 38 Non-Hodgkin's lymphoma 39 Leukemias 40 Multiple myeloma 41 Cancer; other and unspecified primary 42 Secondary Malignancies 43 Malignant neoplasm without specification of site 44 Neoplasms of unspecified nature or uncertain behavior 45 Maintenance chemotherapy; radiotherapy ii. Admissions for the treatment of primary psychiatric diseases. Exclude admissions with discharge diagnosis for treatment of psychiatric disease. AHRQ Diagnosis CCS are used to define psychiatric disease discharge condition categories. AHRQ Diagnosis CCS considered psychiatric disease include: AHRQ Diagnosis CCS Description 650 Adjustment disorders 651 Anxiety disorders 652 Attention-deficit, conduct, and disruptive behavior disorders 654 Developmental disorders 655 Disorders usually diagnosed in infancy, childhood, or adolescence 656 Impulse control disorders, NEC 657 Mood disorders 658 Personality disorders 659 Schizophrenia and other psychotic disorders 662 Suicide and intentional self-inflicted injury 670 Miscellaneous disorders	

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	iii. Admissions for rehabilitation care and the fitting of prostheses and adjustment devices. Exclude admissions with admitting diagnosis of "rehabilitation care; fitting of prostheses and adjustment devices." The AHRQ Diagnosis CCS 254 is used to define rehabilitation care. iv. Admission ending in patient discharge against medical advice. Exclude admissions with "Stus_cd"=07. Admissions for cancer have very different mortality and readmission rates than the remainder of the population. Admissions for psychiatric diseases are treated in separate psychiatric facilities not comparable to treatment received in acute care hospitals, and admissions for rehabilitation care typically do not occur in an acute care setting. Finally, admissions that end in patient discharge against medical advice are excluded because the hospital did not have a full opportunity to treat the patient. 3. Home health stays for patients who receive intervening care in the window between the index hospital discharge and the start of home health care. Intervening care is identified as any inpatient hospital use (which includes care received at inpatient rehabilitation facilities and long-term care hospitals), emergency department use without hospitalization, and skilled nursing facility treatment. These home health stays are excluded because patients' health outcomes may be affected by the care they receive between hospital discharge and the start of home care. 4. Home health stays with missing payment-episode authorization strings. These stays do not include all the information needed for risk adjustment.	
Risk Adjustment	Statistical risk model The measure developer used a multinomial logistic model to account for beneficiary factors that may affect rates of hospitalization but are outside of the home health agency's control. Because these measures evaluate two different but related outcomes, one multinomial logistic framework models the three	Statistical risk model Multinomial logit with outcomes of "No acute event", "Emergency Department use but no Hospitalization", and "Acute Care Hospitalization". Risk factors include: Prior Care Setting – The main categories are community (i.e., no prior

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	disjoint outcomes: no acute care use (no event), emergency department use without hospital readmission, and rehospitalization. A multinomial logistic model allows for the same risk factors to affect the possible outcomes in different ways while also constraining predicted probabilities of all three events to sum to one hundred percent. The risk adjustment model uses six months of claims prior to the start of home health care to obtain information about the beneficiary. The measure developer identified a set of 404 covariates that consisted of statistically significant predictors of acute care rehospitalization or emergency use without hospital readmission. CMS published the risk adjustment model specifications on the Home Health Quality Initiative page in December 2013. The five beneficiary-level risk factors included in the multinomial logistic regression model are as follows: 1. Prior Care Setting Because beneficiaries who enter home health care from different prior care settings may have different health statuses, this model takes into account beneficiaries' immediate prior care setting. The categorical variables included in this risk factor are defined by examining Medicare claims for the 6 months prior to the start of the home health stay. One categorical variable captures prior care use in the 30 days prior to the start of home health (and prior to the index hospitalization). A second variable includes information about care received more than 30 days prior to home health but within 6 months of the start of the home health stay and identifies patients with hospitalizations, SNF care, or emergency department use during this time frame. Finally, the risk adjustment model accounts for the length of index hospital stay (i.e., one to two weeks, and greater than two weeks). 2. Age and Sex Interactions The risk adjustment model includes age and sex interactions from the Enrollment Database (EDB) as covariates to account for the	care setting), outpatient emergency room, inpatient-acute (IP-acute), inpatient rehabilitation facility (IRF), psychiatric facility, long-term care facility (LTC), and skilled nursing facility (SNF). The hierarchy of setting is SNF, most recent inpatient stay, and outpatient ER. Acumen used the five cohorts from the Yale Hospital-Wide All-Cause Risk Standardization Readmission Measure to segregate the IP-acute category. The five cohorts are: 1. Surgery/Gynecology: admissions likely cared for by surgical or gynecological teams, based on AHRQ procedure categories; 2. Cardiorespiratory: admissions treated by the same care teams with very high readmission rates, such as for pneumonia, chronic obstructive pulmonary disease, and heart failure; 3. Cardiovascular: admissions treated by separate cardiac or cardiovascular team in large hospitals, such as for acute myocardial infarctions; 4. Neurology: admissions for neurological conditions, such as stroke, that may be treated by a separate neurology team in large hospitals; and 5. Medicine: admissions for all other non-surgical patients. These cohorts were designed to account for differences in readmission risk for surgical and non-surgical patients. Finally, the IP-acute categories and the SNF category were further refined by length of stay. Each of the five IP-acute categories are separated into stays of length 0 to 3 days, 4 to 8 days, and 9 or more days, while the SNF categories are split into stays of length 0 to 13, 14 to 41, and 42 and more days. A patient cared for in both a skilled nursing facility and an inpatient hospital during the 30 days prior to starting home health care is included in the skilled nursing categories and not the inpatient categories. The length of stay is determined from the last inpatient or skilled nursing stay prior to beginning home health care. Age and Gender Interactions – Age is subdivided into 12 bins for each gender: aged 0-34, 35-44, 45-

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	differing effects of age on the outcomes for each sex. Age is subdivided into 12 bins for each sex: aged 0 to 34, 35 to 44, 45 to 54, five-year age bins from 55 to 95, and a 95 and older category. Age is determined based on the patient's age at the start of the home health stay. The model includes a binary indicator for each age-bin, sex combination. The omitted category is 65-69 year old males. 3. Health Status To account for beneficiary health status, the risk adjustment model uses three measures: (i) CMS' Hierarchical Condition Categories (HCCs), (ii) Diagnosis-Related Groupings (DRGs), (iii) and Activities of Daily Living (ADLs). First, the risk adjustment uses CMS' HCCs. HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims.* While the CMS-HHC model uses a full year of claims data to calculate HCCs,** the rehospitalization and ED use without hospital readmission measures use only six months of data to limit the number of home health stays excluded due to missing claims history. Binary indicators for all HCCs and CCs from the 2008 CMS HCC model that are not hierarchically ranked and that were statistically significant predictors of rehospitalization or ED use without hospital readmission are included in the model. Next, the risk adjustment model includes the DRG of the qualifying inpatient stay. DRGs are used for Medicare payment to classify inpatient stays that are clinically related and are expected to have similar levels of resource use. Most DRGs are classified based largely on the primary diagnosis on the inpatient claim.*** Finally, risk adjustment for these measures also takes into account patient functional status by including the four separate ADL scores that appear on the home health claim. These four scores range from 0 to 16 and are calculated as part of the home health payment process by combining information from several OASIS items: (i) Dressing upper or lower body (OASIS fields M1810 or M1820)	54, five-year age bins from 55 to 95, and a 95+ category. Using a categorical age variable allows the model to account for the differing effects of age and gender. Age is determined based on the patient's age at Stay_Start_Date. CMS Hierarchical condition categories (HCCs) – HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims. While the CMS-HHC model uses a full year of claims data to calculate HCCs, for these measures, we use only 6 months of data to limit the number of home health stays excluded due to missing HCC data. All 2008 HCCs and CCs that are not hierarchically ranked that were statistically significant predictors of ACH and ED use are included in the model. Details of the CMS-HCC model and the code lists for defining the HCCs can be found here: https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp A description of the development of the CMS-HCC model can be found here: https://www.cms.gov/HealthCareFinancingReview/Downloads/04Summerpg119.pdf ESRD and Disability Status – Original End Stage Renal Disease (ESRD) and current ESRD status are included as risk factors. Original disabled status and male, and original disabled status and female, are also included. Medicare beneficiaries with ESRD or disabled status represent a fundamentally different health profile. Interaction Terms – All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predicators of ED Use and ACH were included. Interaction terms account for the additional effect two risk factors may have when present simultaneously, which is more than the additive effect of each factor

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	(ii) Bathing (M1830) (iii) Toileting (M1840) (iv) Transferring (M1850) (v) Ambulation (M1860) While each of the four ADL scores is calculated from these OASIS items, the weight assigned to each item differs across scores. Thus, all four scores convey distinct information about patient functional status and are used for risk adjustment.**** Directly including OASIS items as risk factors is not currently feasible, due to challenges associated with linking OASIS assessments to home health claims. 4. Medicare Enrollment Status The model employs reason for Medicare eligibility, including ESRD status and disability status as covariates because beneficiaries with ESRD or who are disabled constitute a fundamentally different health profile than other Medicare beneficiaries. Additionally, the model includes interactions between original disabled status and sex. 5. Additional Interaction Terms Interaction terms account for the additional effect two risk factors may have when present simultaneously, which may be more or less than the additive effect of each factor separately. For example, a beneficiary with chronic heart failure and chronic obstructive pulmonary disease may be at greater risk for hospitalization than would be estimated by adding the risk of hospitalization for each condition separately. All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predictors of rehospitalization or emergency department use without readmission were included. * A description of the development of the CMS-HCC model can be found here: https://www.cms.gov/HealthCareFinancingReview/Downloads/04Su	separately.

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	mmerpg119.pdf ** Details of the CMS-HCC model and the code lists for defining the HCCs can be found here: https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp *** Details of the DRG system can be found here: http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/AcutePaymtSysfctsht.pdf ****This methodology differs from the ADL score included in the Home Health Resource Grouper (HHRG), which is a categorization of one of the four ADL scores. Further information can be found at: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HomeHealthPPS/CaseMixGrouperSoftware.html Available in attached Excel or csv file at S.2b	
Stratification	The measure is not stratified.	Measure is not stratified.
Type Score	Other (specify): Categorical for public reporting (i.e., categories are "Better than Expected", "Same as Expected", and "Worse than Expected'); rate for confidential reporting (better quality [all else equal] = lower rates) better quality = lower score	Rate/proportion better quality = lower score
Algorithm	1. Construct home health stays from HH claims. 2. Link stays to enrollment data by beneficiary. 3. Identify numerator window (30 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death. 4. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window. 5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date. 6. Link to Part A and Part B claims for 6 months prior to	1. Construct Home Health Stays from HH Claims (see 2a1.7 for details) 2. Identify numerator window (60 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death. 3. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window 4. Link stays to enrollment data by beneficiary. 5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date.

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	Stay_Start_Date for each beneficiary. 7. Calculate demographic risk factors for each stay (age, sex, etc.) using enrollment data. 8. Limit to home health stays where the Stay_Start_Date minus the Thru_Dt of an Inpatient (IP) claims is equal to or less than 5. Exclude stays where the IP claim is not for a short-term hospital or has an AHRQ CCS or stus_cd that excludes it from being an index admission. Retain the DRG of the index admission as a risk factor. 9. Calculate prior care setting indicators, ADLs, HCCs, and HCC interactions. 10. Exclude stays that have prior care setting indicators whose claim Thru_Dt is in between the Thru_Dt of the index hospitalization and the Stay_Start_Dt. 11. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals for numerator window (30 days following Stay_Start_Date). 12. Link to Outpatient claims with revenue center codes indicating emergency department use for the numerator window (30 days following Stay_Start_Date). 13. Calculate measure flags for each stay: a. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 11. b. Set Outpatient ED Use indicator (OP_ED = 1) if any outpatient claims are linked to the stay in step 12. c. Set ED Use without Hospitalization indicator (ED_noHosp = 1) if OP_ED =1 and NOT Hosp_Admit = 1. 14. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 7 through 9, calculate the predicted probability of being included in the measure numerator, for each stay (Pred_ED). Additionally calculate the average of Pred_ED across all stays that are included in the measure denominator (not excluded in steps 3 to 5) and call these values National_Pred_ED. 15. Calculate observed and expected rates for the measure at each	6. Calculate demographic risk factors for each stay (age, gender, etc.) using enrollment data. 7. Link to Part A and Part B claims for 6 months prior to Stay_Start_Date for each beneficiary 8. Calculate prior care setting indicators, HCCs, and HCC interactions. 9. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals(excluding planned hospitalizations) for the numerator window (60 days following Stay_Start_Date) – see specifications for the home health Acute Care Hospitalization (NQF 0171) measure for details. 10. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 9. These stays are not included in the ED Use without Hospitalization measure numerator. 11. Link to Outpatient claims with revenue center codes indicating Emergency Department use for the numerator window (60 days following Stay_Start_Date). 12. Set Outpatient ED Use indicator (OP_ED = 1) if any outpatient claims are linked to the stay in step 11. 13. Flag stays for inclusion in the measure numerator (ED_noHosp = 1) if OP_ED =1 and NOT Hosp_Admit = 1. 14. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 6 and 8, calculate the predicted probability of being included in the measure numerator for each stay (Pred_ED_noHosp). Additionally calculate the average of Pred_ED_noHosp across all stays that are included in the measure denominator (not excluded in steps 3 or 5) and call this value National_pred_ED. 15. Calculate observed and risk adjusted rates for each home health agency (Initial_Provider): a. Calculate the observed rate of Emergency Department Use without Hospitalization as the fraction all (non-excluded) HH Stays with that agency as Initial_Provider that are also included in the

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	home health agency (Initial_Provider): a. Observed Rates: i. Calculate the observed rate of acute care hospitalization as the fraction all (non-excluded) HH stays with that agency as Initial_Provider that are also included in the measure numerator (ED_noHosp = 1). Call the value Agency_Obs_ED_NoHosp b. Expected Rates: i. Calculate the agency expected rate of ED use without hospital readmission by taking the average of Pred_ED across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_Pred_ED. 16. For each agency, simulate the distribution of expected rates: a. For each stay, randomly choose an outcome (i.e. no outcome, re-hospitalization, or ED use without hospital readmission) using the stay-level predicted probability of hospitalization (Pred_ED). Repeat simulation 20,000 times. Call these values X1 – X20,000. b. For each simulation, calculate the agency predicted rate of ED use without rehospitalization by taking the average of all stays with that agency. Call these values Agency_sim_ED1 – Agency_sim_ED20000. 17. Classify agencies as "Better than Expected" if fewer than 5% of the Agency_sim_ED values are less than or equal to Agency_Obs_ED_NoHosp. Classify agencies as "Worse than Expected" if fewer than 5% of the Agency_sim_ED values are greater than or equal to Agency_Obs_ED_NoHosp. Classify all other agencies as "Same as Expected." (See Technical Brief about assigning categories for additional technical details -- included as appendix.) No diagram provided	measure numerator (ED_noHosp = 1). Call the value Agency_obs_ED. b. Calculate the agency predicated rate of Emergency Department use without Hospitalization by taking the average of Pred_ED_noHosp across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_pred_ED. c. Calculate the risk adjusted rate of Emergency Department use without Hospitalization using the following formula: Agency_riskadj_ED = National_pred_ED + (Agency_obs_ED – Agency_pred_ED). If an agency's calculated risk adjusted rate is negative, that agency will have a publicly reported rate of 0% URL
Submission items	5.1 Identified measures: 1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR) 0173 : Emergency Department Use without Hospitalization 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: The home health rehospitalization measures (i.e.,	5.1 Identified measures: 0171 : Acute care hospitalization (risk adjusted) 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact:

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	Rehospitalization During the First 30 Days of Home Health, and ED Use without Hospital Readmission During the First 30 Days of Home Health) are harmonized with other post-acute rehospitalization measures and with CMS' Hospital-Wide All-Cause Unplanned Readmission measure (HWR) in the types of initial hospitalizations included and in the definition of unplanned hospitalizations. They differ from other post-acute hospital readmission measures, however, in the definition of eligible post-acute stays, in the risk adjustment approach, and by measuring ED use as an outcome. The differences arise due to the unique nature of home health care as a post-acute setting. The specifications for the home health rehospitalization measures were developed by restricting the NQF-endorsed claims-based Acute Care Hospitalization (ACH) and ED Use without Hospitalization (ED Use) measures (NQF numbers 171 and 173, respectively) to home health stays that begin within five days of an acute care hospital discharge. HH stays – sequences of home health payment episodes – are defined in the same way as in the ACH and ED Use measures. The initial hospital discharge must meet the criteria for the hospital HWR measure. Home health stays are included in the measure numerator if an unplanned hospital readmission to the inpatient setting or an ED visit occurs during the first 30 days of home care. Certain home health stays, such as those in which multiple home health agencies care for the same patient, are excluded. Finally, the measures are risk adjusted using patient-level predicted probabilities calculated from a multinomial logistic regression. Risk factors that are accounted for include demographics and health status as measured by both CMS' Hierarchical Condition Categories (HCCs) found on claims in the previous six months, the Activities of Daily Living (ADL) fields on the Outcome and Assessment Information Set (OASIS) assessment of the initial home health stay after the index hospitalization, and the Diagnosis-Related Group (DRG) on the initial inpatient claim. The home health rehospitalization measures differ from other post-acute measures in	5b.1 If competing, why superior or rationale for additive value: The Home Health Acute Care Hospitalization Measure (NQF# 0171)is specified so that it reports all acute care hospitalizations during the 60-day period following the beginning of the home health stay. This measure is specified so that it only reports emergent care use for patients that are not admitted to an acute care setting. No other measures report Emergent Care use among home health patients.

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	three key ways. First, while other measures exclude patients with a gap between hospital discharge and post-acute admission, the home health measures allow a gap of up to five days. Unlike other post-acute settings, HH is provided in the patient's home, and thus the patient returns to their home after hospital discharge. This results in some gap between hospital discharge and the initial visit from a home health agency. The Medicare Conditions of Participation for home health agencies require home health care to begin within 48 hours of hospital discharge or on the physician-ordered start of care date (which is usually within 1-3 days of hospital discharge). Thus, the measures as specified apply to 91 percent of patients who begin home health within 30 days of hospital discharge. Second, the other measures use different risk factors and a different functional form for risk adjustment. For consistency with the ACH and ED Use measures, which apply to all home health stays, the developer recommends using a similar set of risk factors and the same multinomial logistic form for the home health rehospitalization measures. Third, the risk-adjusted rates for the home health rehospitalization measures would not be publicly reported. Due to a large number of relatively small home health agencies treating previously hospitalized patients, the measure developer determined that reporting home health agencies' risk-adjusted rates could lead to misleading conclusions, since small home health agencies' risk-adjusted rates tend to be unstable. Pursuing a categorical reporting method is consistent with condition-specific hospital readmission measures. While the rehospitalization and emergency department use without hospital readmission measures differ from other post-acute measures in some regards, these differences arise from the unique nature of home care as well as from a desire for harmonization across home health quality measures. 5b.1 If competing, why superior or rationale for additive value: Not applicable; there are no other measures that report emergency	

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	department use without hospital readmission for home health patients.	

SNF Readmission

	2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)	2375 PointRight OnPoint-30 SNF Rehospitalizations
Steward	Centers for Medicare and Medicaid Services	American Health Care Association
Description	This measure estimates the risk-standardized rate of all-cause, unplanned, hospital readmissions for patients who have been admitted to a Skilled Nursing Facility (SNF) (Medicare fee-for-service [FFS] beneficiaries) within 30 days of discharge from their prior proximal hospitalization. The prior proximal hospitalization is defined as an admission to an IPPS, CAH, or a psychiatric hospital. The measure is based on data for 12 months of SNF admissions. A risk-adjusted readmission rate for each facility is calculated as follows: Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates. Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate. For this measure, readmissions that are usually for planned procedures are excluded. Please refer to the Appendix, Tables 1 - 5 for a list of planned procedures. The measure specifications are designed to harmonize with CMS'	PointRight OnPoint-30 is an all-cause, risk adjusted rehospitalization measure. It provides the rate at which all patients (regardless of payer status or diagnosis) who enter skilled nursing facilities (SNFs) from acute hospitals and are subsequently rehospitalized during their SNF stay, within 30 days from their admission to the SNF.

	hospital-wide readmission (HWR) measure to the greatest extent possible. The HWR (NQF #1789) estimates the hospital-level, risk-standardize rate of unplanned, all-cause readmissions within 30 days of a hospital discharge and uses the same 30-day risk window as the SNFRM.	
Type	Outcome	Outcome
Data Source	Administrative claims, Other This measure is for Medicare beneficiaries and uses the data in the Medicare eligibility files and inpatient claims data. The eligibility files provide information on date of birth, sex, reasons for Medicare eligibility, periods of Part A coverage and periods in the fee-for-service program. The data elements from the Medicare FFS claims are those basic to the operation of the Medicare payment systems and include date of admission, date of discharge, diagnoses, procedures, indicators for use of dialysis services and indicators of whether the Part A benefit is exhausted. The inpatient claims data files contain beneficiary-level SNF and other hospital records. No data beyond the bills submitted in the normal course of business are required from the providers for the calculation of this measure. The measure uses one year of data to calculate the measure rate for the Skilled Nursing Facility Readmission Measure, which we believe is sufficient to calculate this measure in a statistically reliable manner. This is because the reliability of a SNF's measure rate is related to its sample size. Following are the specific files and links to the documentation: • Medicare Inpatient claims - standard analytical files (2007-2012), index SNF claims (2009-2011) Documentation for the Medicare claims data is provided online by the CMS contractor, Research Data Assistance Center (ResDAC) at the University of Minnesota. The following web page includes data dictionaries for these files: Standard analytical files (Inpatient RIF): http://www.resdac.org/cms-data/files/ip-rif/data-documentation • Medicare Enrollment Database Information about the Enrollment Database may be found here:	Electronic Clinical Data Resident Assessment Instrument Minimum Data Set (MDS) version 3.0 Available in attached appendix at A.1 No data dictionary

	http://aspe.hhs.gov/datacncl/datadir/cms.htm • Medicare Denominator files (2009-2011) Documentation available at: http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/IdentifiableDataFiles/DenominatorFile.html • AHRQ CCS groupings of ICD-9 codes Documentation available at: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp • CMS-HCC mappings of ICD-9 codes Mappings are included in the software at the following website: http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html No data collection instrument provided Attachment SNFRM.S.2b.Tables6to9_includingmodelresults02.05.2014-635272170634634515.xlsx	
Level	Facility	Facility
Setting	Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility	Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility
Time Window	The time period for the SNF all-cause readmission measure (SNFRM) is one year. The time window for the numerator of the SNF all-cause readmission measure (SNFRM) is 30 days after discharge from the prior proximal hospitalization. To be included in the denominator a patient must have a SNF admission within 1 day after being discharged from the prior proximal hospital stay and that SNF admission must occur within the target 12 month period. The measure denominator is based on SNF admissions so individuals may be included in the measure multiple times within a given year. Patients admitted to SNFs in December are included in the measure and observed for 30 days after their prior proximal hospitalization; all or part of the 30 day risk period may fall into January of the following year.	The numerator time window is 30 days after the date of admission to a SNF from an acute care hospital. If a rehospitalization does not occur during this time window, the admission is not counted as part of the numerator. Rehospitalizations that occur after an individual is discharged to the community but are within the 30 day time window are not counted. The measure only takes into consideration rehospitalizations that occur during a SNF stay. The data sample time window is the target rolling 12 month time period, updated quarterly. All admissions to SNFs from acute hospitals that have an entry date that falls in the target period and have an MDS 3.0 admission assessment are included in the denominator.
Numerator Statement	This measure is designed to capture the outcome of unplanned all-cause hospital readmissions (IPPS or CAH) of SNF patients occurring	The numerator is the number of patients sent back to any acute care hospital (excluding emergency room only visits) during their SNF stay

	within 30 days of discharge from the patient's prior proximal acute hospitalization. The numerator is more specifically defined as the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge from the prior proximal acute hospitalization. The numerator is mathematically related to the number of SNF stays where there was hospitalization readmission, but the measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. The numerator, as defined, includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix. Hospital readmissions that occur after discharge from the SNF stay but within 30 days of the proximal hospitalization are also included in the numerator. Readmissions identified using the Planned Readmission algorithm (see Section S.6) are excluded from the numerator. This measure does not include observation stays as a readmission (see Section S.6).	within 30 days from a SNF admission, as indicated on the MDS 3.0 discharge assessment during the 12 month measurement period.
Numerator Details	The numerator is the risk-adjusted estimate of the number of all-cause, unplanned readmissions to an acute care or critical access hospital that occurred within 30 days of discharge from an eligible prior proximal hospitalization. In addition, the patient will be required to have been admitted to a SNF within one day after discharge from an eligible hospitalization. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix. The numerator uses a model estimated on full national data; it is applied to the facility's patients and includes the facility effect term for that facility. The prediction equation is based on a logistic statistical model with a 2-level hierarchical structure. The SNF stays in the model have an indicator as to which SNF they were admitted and the effect of the facility is measured as a positive or negative shift in the intercept term of the equation. The facility effects are modeled as belonging to a normal (Gaussian) distribution centered at 0, and are estimated	The numerator is the number of patients that are discharged from a SNF to an acute hospital within 30 days of entry from an acute hospital as indicated by MDS item A2100=03 (indicating 'discharge to acute hospitals') and MDS item A0310F=10/11 (indicating discharge status). The length of stay before rehospitalization is calculated by subtracting MDS item A1600 (entry date) from MDS item A2000 (discharge date).

	along with the effects of patient characteristics in the model. The data are from Medicare inpatient claims and eligibility and enrollment data. See section 2a1.26 for more details on the data sources. Observation stays: This measure does not include observation stays as a readmission. Rationale: In a recently published analysis, researchers at Brown University evaluated how frequently SNF patients had observation stays with and without formal admission to the hospital (Feng et al., 2012). In 2009, of the approximately 2.5 million SNF stays among FFS Medicare beneficiaries aged 65+ nationwide, there were roughly 18,000 observation stays (0.7%) and few readmissions within 30 days after the observation stay (Feng 2012). The results indicated that the vast majority of hospital observation stays in 2009 (over one million in total) originated from the community (83% from community without home health and 8% from community with home health care). Only a small number and proportion of observation stays were originated from a SNF (i.e. preceded immediately by a SNF stay): N=17,731 or 1.7 percent of all observation stays, nationally. Consistent with the pattern of their origins, the vast majority of hospital observation stays were discharged to the community (80% without home health and 11 percent with home health care). Again, only a small number and proportion of observation stays were discharged to a SNF (regardless of their origin): N=25,884 or 2.6 percent of all observations stays (Feng 2012). These results suggest that excluding hospital observation stays from the SNF hospital readmission measure will not make a meaningful difference in the SNF facility-level rate of hospital readmissions or in the relative ranking of SNF providers according to this measure. Second, although the overall prevalence of hospital observation stays has been on the rise, raising legitimate concerns about their causes and consequences, the number of observation stays that originated from and subsequently discharged to SNF settings is very small relative to other settings (mostly communities). A recent report by the Office of Inspector General (OIG) shows that this trend has indeed	

	continued in more recent years. According to this report, Medicare beneficiaries had 1.5 million observations stays in 2012, and an additional 1.4 million long outpatient stays that lasted at least one night but were not coded as observation stays (Office of Inspector General 2013). However, this study did not break down the data by setting, that is, the setting from which observation patients came. Based on our preliminary analysis results above, we want to emphasize again that despite an increasing number of Medicare beneficiaries held for observation in hospitals at the national level, the vast majority of them are from community settings and relatively few come from or are discharged to SNFs. We agree that the rising trend of hospital observation stays is an important issue that warrants continuous monitoring and policy attention. Third, and perhaps most importantly, mingling outpatient observation stays with inpatient admissions raises serious questions as to whether other types of hospital outpatient stays, such as emergency department (ED) visits or prolonged outpatient stays other than observation care in the hospital, should also be counted as admissions. RTI argues that this could introduce bias into the measure from a technical and conceptual perspective, and send a mixed signal to SNF providers and hospitals with the potential to compromise patient care. For SNFs, their 30-day readmission rate would increase, more or less, depending on how many of their patients were sent back to the hospital via the ED and held for observation there within the 30-day tracking window. Counting observation stays in the SNFRM measure could potentially increase perverse incentives already identified as a general concern with public reporting of any quality measure. Namely, SNFs may have an incentive to NOT send patients to the ED even though the patients truly require hospital care, or may deliberately postpone doing so, until after the 30-day measurement period ends to lower their publically reported readmission rate. Including observation stays in the measure could potentially contribute to these incentives. The increased use of hospital observation stays as outpatient care is an important issue which may have significant adverse impact on	

	Medicare beneficiaries in terms of reducing eligibility for SNF services due to lack of a qualifying prior acute admission and therefore increase out-of-pocket spending. However, when looking at SNF readmissions, the absolute number and percentage share of observation stays involving Medicare beneficiaries in the SNF setting are small relative to other settings. Most importantly, there remain significant conceptual and practical challenges in the consideration of counting observation stays in the SNFRM measure. A decision to do so would require a better understanding of possible negative consequences, including postponing transfer of SNF patients to the ED. Planned readmissions: The SNFRM used a modified version of CMS' Hospital-Wide Readmission (HWR) planned readmissions algorithm to identify readmissions that are classified as planned, and should therefore not be included in the numerator. Planned readmissions should not be counted against facilities, because, as stated in the documentation for the HWR measure, "…planned readmissions are not a signal of quality of care." The algorithm is based on two main principles: 1. Planned readmissions are those in which one of a pre-specified list of procedures took place or those for transplants (bone marrow, kidney, other); Cesarean section; forceps, vacuum, and breech delivery. Also planned diagnosis categories include maintenance chemotherapy, forceps delivery, normal pregnancy and/or delivery, and rehabilitation. Readmissions to psychiatric hospitals or units are also classified as planned readmissions. 2. Admissions for acute illness or for complications of care are not 'planned.' Even a typically planned procedure performed during an admission for an acute illness would not likely have been planned. We used the principal diagnosis and all of the procedure codes from the readmission to identify planned readmissions. The algorithm developed to identify planned readmissions uses procedure codes and discharge diagnosis categories for each readmission coded using the Agency for Healthcare Research and	

	Quality (AHRQ) Clinical Classification System (CCS) software. According to CMS' HWR planned readmission algorithm, a planned readmission is defined as any non-acute readmission in which one of a set of typically planned sets of procedures or diagnoses occurred (see Appendix, Tables 1 through 3). A subset of these procedures and diagnoses shown in Appendix Tables 1 and 2 are always considered planned. However, if any of the procedures denoted as "planned" in Table 3 occur in conjunction with a diagnosis that disqualifies a readmission from being considered planned (see Appendix, Table 4), the readmission will be considered unplanned. Additional procedures were added to the final HWR planned readmission algorithm special to post-acute care settings based on feedback from a convened by CMS contractor RTI International. These additional procedures were codified by a certified nosologist prior to use (see Appendix, Table 5). These procedures and diagnoses are currently defined by ICD-9 procedure and diagnosis codes grouped by the Clinical Classification Software (CCS), developed by the AHRQ, where large clusters were appropriate and by individual codes, if necessary. The provisional mapping of these ICD-9s to ICD-10s is provided in Section Sb.2, Table 9. We are awaiting the ICD-10 versions of the HWR planned readmissions codes. Readmissions to psychiatric hospitals or units are also classified as planned readmissions. Unless a readmission was considered planned, it was considered unplanned and counted as a readmission in the measure. In 2011, there were 2,215,398 SNF stays, of which 467,107included an unplanned hospital readmission (21.1%). An additional 1.3 percent of SNF stays (or 27,956 stays) ended with readmissions that were classified as planned and not included in the numerator of the measure. These planned readmissions represented only 5.6 percent of all readmissions. References Feng Z, Wright B, Mor V. Sharp Rise in Medicare Enrollees Being Held in Hospitals for Observation Raises Concerns about Causes and	

	Consequences. Health Affairs (2012). 31:6, 1251-1259. Feng Z. Hospital Observation Stays: Analysis Update. Memo prepared for the Centers for Medicare and Medicaid Services, 22 September 2012. Wright S. (2013). Memorandum Report: Hospitals' Use of Observation Stays and Short Inpatient Stays for Medicare Beneficiaries, OEI-02-12-00040. Department of Health and Human Services Office of the Inspector General, Washington, DC.	
Denominator Statement	The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded SNF stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of SNF admissions within 1 day of a prior proximal hospital discharge during a target year, taking denominator exclusions into account. Prior proximal hospitalizations are defined as admissions to an IPPS acute-care hospital, CAH, or psychiatric hospital.	The denominator is the number of all admissions,regardless of payer status and diagnosis, with an MDS 3.0 admission assessment to a SNF from an acute hospital during the target rolling 12 month period.
Denominator Details	The denominator includes all patients who have been admitted to a SNF within 1 day of discharge from a prior proximal hospitalization, taking denominator exclusions into account. Patients with SNF stays in swing bed facilities are included in the measure. The prior proximal hospitalization must include admissions to an IPPS acute-care hospital, CAH, or a psychiatric hospital.	The total number of admissions to the facility, from an acute hospital, during the 12 month measure period are determined using the MDS item A1800=03, indicating 'entered from hospital'.The entry date is determined using 2 MDS variables: A1600 (entry date) and A0310F=01 (indicating 'entry tracking records').
Exclusions	The following are excluded from the denominator: 1. SNF stays where the patient had one or more intervening post-acute care (PAC) admissions (inpatient rehabilitation facility [IRF] or long-term care hospital [LTCH]) which occurred either between the prior proximal hospital discharge and SNF admission or after the SNF discharge, within the 30-day risk window. Also excluded are SNF admissions where the patient had multiple SNF admissions after the prior proximal hospitalization, within the 30-day risk window. Rationale: For patients who have IRF or LTCH admissions prior to their first SNF admission, these patients are starting their SNF admission later in the 30-day risk window and receiving other additional types of	The denominator has 2 different exclusions: individual level and provider level. At the individual level the exclusion is related to incomplete assessments. At the provider level the exclusion is related to the amount of data necessary to calculate the measure that is missing. Payer status and clinical conditions are not used for any exclusions.

	services as compared to patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions. Additionally, when patients have multiple PAC admissions, evaluating quality of care coordination is confounded and even controversial in terms of attributing responsibility for a readmission among multiple PAC providers. Similarly, assigning responsibility for a readmission for patients who have multiple SNF admissions subsequent to their prior proximal hospitalization is also controversial. 2. SNF stays with a gap of greater than 1 day between discharge from the prior proximal hospitalization and the SNF admission. Rationale: These patients are starting their SNF admissions later in the 30-day risk window than patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions. 3. SNF stays where the patient did not have at least 12 months of FFS Medicare enrollment prior to the proximal hospital discharge (measured as enrollment during the month of proximal hospital discharge and the for 11 months prior to that discharge). Rationale: FFS Medicare claims are used to identify comorbidities during the 12-month period prior to the proximal hospital discharge for risk adjustment. Multiple studies have shown that using lookback scans of a year or more of claims data provide superior predictive power for outcomes including rehospitalization as compared to using data from a single hospitalization (e.g., Klabunde et al., 2000; Preen et al, 2006; Zhang et al., 1999). 4. SNF stays in which the patient did not have FFS Medicare enrollment for the entire risk period (measured as enrollment during the month of proximal hospital discharge and the month following the month of discharge). Rationale: Readmissions occurring within the 30-day risk window when the patient does not have FFS Medicare coverage cannot be detected using claims.	

	5. SNF stays in which the principal diagnosis for the prior proximal hospitalization was for the medical treatment of cancer. Patients with cancer whose principal diagnosis from the prior proximal hospitalization was for other diagnoses or for surgical treatment of their cancer remain in the measure. Rationale: These admissions have a very different mortality and readmission risk than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions. 6. SNF stays where the patient was discharged from the SNF against medical advice. Rationale: The SNF was not able to complete care as needed. 7. SNF stays in which the principal primary diagnosis for the prior proximal hospitalization was for "rehabilitation care; fitting of prostheses and for the adjustment of devices". Rationale: Hospital admissions for these conditions are not for acute care.	
Exclusion Details	Denominator exclusions are based on data from the MedPAR and the Medicare Denominator files, specifically: 1. SNF stays where the patient had one or more intervening PAC admissions (IRF or LTCH), which occurred either between the prior proximal hospital discharge and SNF admission or after the SNF discharge, within the 30-day risk window or where the patient had multiple SNF admissions after the prior proximal hospitalization were identified using the MedPAR files. 2. SNF stays with a gap of greater than 1 day between discharge from the prior proximal hospitalization and the SNF admission were identified using the MedPAR files. 3. Lack of 12 months of FFS Medicare enrollment prior to the proximal hospital discharge was identified by patient enrollment status in Part A FFS using the Medicare Denominator file. Enrollment must be indicated during the month of prior proximal hospital discharge and the 11 months preceding the prior proximal hospital discharge.	Individual level exclusions are made for admissions that do not have either a discharge assessment or a quarterly (annual or change of status) assessments within 120 days of admissions, as they are considered incomplete.

	4. Lack of FFS Medicare enrollment during the 30 days after discharge from the prior proximal hospitalization was identified by patient enrollment status in Part A FFS using the Medicare Denominator file. Enrollment must be indicated for the month(s) falling within 30 days of discharge from the prior proximal hospitalization. 5. Appendix Table 10 indicates all cancer discharge condition categories excluded from the measure. Cases are identified using claims in the MedPAR files for prior proximal hospitalization. 6. Discharges from the SNF against medical advice were identified using the discharge disposition indicator on the corresponding SNF claim from the MedPAR files. 7. "Rehabilitation care: fitting of prostheses and for the adjustment of devices" are identified by principal diagnosis codes (ICD-9 codes) included in CCS 254, using claims from the MedPAR files for prior proximal hospitalization.	
Risk Adjustment	Statistical risk model Due to the natural clustering of observations within SNFs, we used hierarchical logistic regression to model the log-odds of readmission for each index SNF stay. Readmission within 30 days was modeled as a function of patient-level demographic and clinical characteristics and a random SNF-level intercept. This model specification accounts for within-SNF correlation of the observed outcomes and assumes that underlying differences in quality among the SNF facilities being evaluated lead to systematic differences in outcomes. Specifically, we estimated a hierarchical logistic regression model, which is described in more detail including an equation in the Appendix, Section S.14. The risk adjustment model for the SNFRM accounts for variation across SNFs in case-mix and patient characteristics predictive of readmission using a hierarchical logistic regression model. The goal of risk adjustment is to account for differences across SNFs in patient demographic and clinical characteristics that might be related to the outcome but are unrelated to quality of care. For this reason, we have	Statistical risk model Risk adjustment for PointRight OnPoint-30 was completed by means of logistic regression using independent variables drawn from the first MDS 3.0 assessment performed after admission to the SNF. In some cases, this was a combined admission/discharge assessment. The following lists the variables used in the logistic regression risk adjustment model. The MDS 3.0 codes used to determine whether or not each variable contributes to the calculation are provided below in S.18. Demographic -Age less than 65 -Male -Medicare Functional Status -Total Bowel Incontinence -Eating Dependence -Two-person Assist

	to take patient frailty (case mix) into account by including primary diagnosis and comorbidities in our models. In addition, we included demographic variables (age and sex), and other health service factors such as length of stay during the patient's prior proximal hospitalization, whether the patients were in the intensive care unit (ICU), and number of previous hospitalizations in the previous 365 days (see Section S2.b, Table 8). NQF guidelines regarding disparities in care quality state that socioeconomic status, sex, race, or ethnicity should not be included as adjustment variables in models because the standards of care should not vary by these patient demographics. However, for some outcomes, an argument can be made that some potential markers of vulnerability for disparities (sex and age) are also associated with demonstrated clinical/physiologic differences at the time the patient enters the SNF that can determine risk, independent of the quality of care being provided. Analyses indicate that readmission risk does vary by sex, with higher readmission rates associated with males ages 70 and older (see Figure 2 in the "Measure Exclusions" portion of the MJF). Additionally, these findings are consistent with evidence from prior published research that readmissions among SNF patients do vary by sex (O'Malley, Caudry, Grabowski 2011), so we included sex in our models. To capture patients' primary reason for their prior proximal hospitalization, we aggregated the principal discharge diagnosis and all the procedures from the prior proximal hospitalization using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classification System (CCS) single-level codes. The CCS collapses more than 15,000 diagnosis codes and 4,000 procedure codes from the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) into a clinically meaningful, mutually exclusive set of 280 condition categories and 231 procedure categories. AHRQ has posted a beta version of the mapping between ICD-10 procedure codes and the CCS codes on their website (http://www.hcup-us.ahrq.gov/toolssoftware/beta/icd_10_beta.jsp). We plan to use the same CCS groupings in our models after the transition to ICD-10. The grouper is expected in October 2014. We will	-Cognition Not Intact or Complete Prognosis -End-stage Prognosis -Re-entry -Respiratory Failure -Hospice Care Clinical Condition -Daily Pain -Stage Two Pressure Ulcer -Stage Three Pressure Ulcer -Stage Four Pressure Ulcer -Unstageable Pressure Ulcer -Venous Arterial Ulcer -Diabetic Foot Ulcer Diagnosis -Anemia -Asthma -Diabetes Mellitus -Heart Failure -Septicemia -Viral Hepatitis -Internal Bleeding Services and Treatment -Dialysis -Insulin -Ostomy Care -Cancer Chemotherapy -Radiation Therapy -Continue IV Medication -Continue Oxygen

	continue to monitor and review these mappings of CCS codes to ICD-10 in order to identify any potential changes that may impact this measure. Our model controls for 198 primary conditions using the AHRQ CCS grouper and two additional groupings—one that summed over 29 CCS categories with few patients in each that increased readmission risk and another that summed over 5 CCS categories with few patients that decreased readmission risk. See Tables 6 and 7 uploaded in excel in Section S.2b.Data Dictionary, Code Table, or Value Sets. We also included 72 comorbidities grouped using CMS' hierarchical condition categories (HCCs) in our models. The CMS contractor for the HCCs is currently finalizing the ICD-10 mapping into the HCCs. We plan to use the same set of HCCs, and will review the mapping to ensure that there are no changes that impact this measure. Covariates used in models: - Age - Sex - Length of stay during prior proximal hospitalization - Any time spent in the intensive care unit (ICU) during the prior proximal hospitalization - Disabled as a reason for Medicare coverage - End-stage renal disease (ESRD) - Number of acute care hospitalizations in the 365 days prior to the prior proximal hospitalization - Principal diagnosis as categorized using AHRQ's single-level CCS - System-specific surgical indicators - Individual comorbidities as grouped by CMS' hierarchical condition categories (HCCs) or other comorbidity indices - Presence of multiple comorbidities, modeled using two variables: (a) the count of HCCs if count is >2 and (b) the square of this count of HCCs References	-Continue Tracheostomy Provided in response box S.15a

	1. O'Malley AJ, Caudry DJ, and Grabowski DC: Predictors of Nursing Home Residents' Time to Hospitalization. Health Serv. Res., 46(1p1), 82-104, 2011. Available in attached Excel or csv file at S.2b	
Stratification	Not applicable	N/A
Type Score	Rate/proportion better quality = lower score	Rate/proportion better quality = lower score
Algorithm	Using a diagram (Figure 1 attached in the Appendix), we depict the SNF readmission measure 30-day risk window starting from the prior proximal hospitalization discharge date. If the readmission occurred during the SNF stay within the 30-day risk window or after the SNF stay but still within the 30-day risk window, it is counted in the numerator. Step one: Identify patients meeting the denominator criteria. Step two: Identify patients meeting the numerator criteria taking into account the planned readmission algorithm. Step three: Identify presence or absence of risk adjustment variables for each patient. Step four: Calculate the predicted and expected number of readmissions for each SNF using the hierarchical logistic regression model, and the SNF standardized risk ratio. These calculations are specified in more detail with equations in the Appendix, Section S.18. Step five: Calculate the risk-standardized SNF 30-day readmission rate To aid interpretation, the SNF standardized risk ratio, or SRR, which is calculated in Step four, is then multiplied by the overall national raw readmission rate for all SNF stays to produce the SNF risk-standardized readmission rate (RSRR). See the Appendix, Section S.18 for the corresponding equation for this step. NOTE: Because the statistic described in Step five is a complex function of parameter estimates, re-sampling and simulation techniques (e.g., bootstrapping) are necessary to derive a confidence interval estimate for the final risk-standardized rate, to characterize the uncertainty of the estimate. The results of bootstrapping are reported in the Identification of Statistically Significant &	The formula for a facility's adjusted rehospitalization rate is as follows: (Observed Rate of Rehospitalization within 30 days) / (Expected Rate of Rehospitalization within 30 days) * (National rate).Note- the national rate and the expected rate need to be calculated for the same measure period. 1. Observed Rate Calculation •The formula for a facility's observed Rehospitalization rate is as follows: (Observed count of discharges to hospitals within 30 days of admission) / (Observed count of admissions from hospitals) •The denominator is the number of any admissions from a hospital during a rolling 12 month time period. (This is a count of events, not of residents.) •The numerator is the number of all admissions to the SNF during a rolling 12 month time period who then went back to the hospital within 30 days of their admission date. (This is a count of events, not of residents.) 2. Expected Rate Calculation 2.1 First the expected rate for every single resident admission is calculated using the formula below. The calculation must be performed at least 45 days after the end of the target rolling 12-month period. This is to allow 30 days to elapse to capture rehospitalizations that occur from admission to the SNF on the last day of the target period and another 14 days to allow facilities to submit data to CMS. We recommend waiting an additional 2 to 3 weeks to ensure maximum data availability for MDS assessments not

	Meaningful Differences in Performance (Section 2b5.) of the Measure Testing form. Available in attached appendix at A.1	submitted during the 14 day period. VARIABLE CALCULATION Intercept: -2.8252 Age Under 65: if age<65 then Variable=1; else Variable=0; (If Date of Birth is missing, then Variable=0) End Stage Prognosis:if J1400=1 then Variable=1; else Variable=0; Hospice Care: if O0100K2=1 then Variable=1; else Variable=0; Male: if A0800=1 then Variable=1; else Variable=0; Medicare: if A0310B = 01 or 06, then Variable=1;else Variable=0; SNF Admission is Return to Same SNF Following Hospitalization: if A0310B=06 AND A1600 minus A2000 (on a previous MDS where A2100=3) < 30 then Variable=1; else if A1700=2 then Variable=1; else Variable=0; Diagnoses Anemia: if I0200=1 then Variable=1; else Variable=0; Asthma: if I6200=1 then Variable=1; else Variable=0; Diabetes Mellitus: if I2900=1 then Variable=1; else Variable=0; Diabetic Foot Ulcer: if M1040B=1 then Variable=1; else Variable=0; Pressure Ulcer Stage 2: if M0300B2>0 then Variable=1; else Variable=0; Pressure Ulcer Stage 3: if M0300C2>0 then Variable=1; else Variable=0; Pressure Ulcer Stage 4: if M0300D2>0 then Variable=1; else Variable=0; Pressure Ulcer Unstageable: if M0300E2>0 or M0300F2>0 or M0300G2>0 then Variable=1; else Variable=0; Respiratory Failure: if I6300=1 then Variable=1; else Variable=0; Septicemia: if I2100=1 then Variable=1; else Variable=0; Vascular Ulcer: if M1030>0 then Variable=1; else Variable=0; Viral Hepatitis: if I2400=1 then Variable=1; else Variable=0; Heart Failure: if I0600=1 then Variable=1; else Variable=0; Internal Bleeding:if J1550D=1 then Variable=1; else Variable=0;

		Functional Status Daily Pain: if J0400=1 or J0850=3 then Variable=1; else Variable=0; Eating Dependence- Total: if G0110H1 = 4,7, or 8, then Variable=1; else Variable=0; Two Person assist Needed with One or More ADLs: if G0110A2=3 or G0110B2=3 or G0110C2=3 or G0110D2=3 or G0110E2=3 or G0110F2=3 or G0110G2=3 or G0110H2=3 or G0110I2=3 or G0110J2=3 then Variable=1; else Variable=0; Cognition not Completely Intact: if C0100=1 AND if C0500=15 then Variable=0; if C0100=1 AND if C0500 <>15 then Variable=1;if C0100=0 AND if C0700=0 AND C0800=0 AND C1000=0 AND C0900A=1 AND C0900B=1 AND C0900C=1 AND C0900D=1 then Variable=0; else Variable=1; Total Bowel Incontinence: if H0400>0 then Variable=1; else Variable=0; Treatment Cancer Chemotherapy: if O0100A1=1 then Variable=1; else Variable=0; Dialysis: if O0100J1=1 then Variable=1; else Variable=0; Insulin: if N0350A>0 or N0350B>0 then Variable=1; else Variable=0; IV Medications Continuing from Hospital: if O0100H1=1 and O0100H2=1 then Variable=1; else Variable=0; Ostomy Care: if H0100C=1 then Variable=1; else Variable=0; Oxygen Continuing from Hospital: if O0100C1=1 and O0100C2=1 then Variable=1; else Variable=0; Radiation Therapy: if O0100B1=1 then Variable=1; else Variable=0; Tracheostomy Continuing from Hospital: if O0100E1=1 and O0100E2=1 then Variable=1; else Variable=0; FORMULA LogOdds= - 2.8252 - 0.7846 * End Stage Prognosis - 1.5085 * Hospice_care

			+	0.0923	*	Anemia
			+	0.1033	*	Asthma
			+	0.0611	*	Daily Pain
			+	0.0462	*	Diabetes_Mellitus
			+	0.1459	*	Diabetic Foot Ulcer
			+	0.6038	*	Dialysis
			+	0.1777	*	Insulin
			+	0.3263	*	Ostomy Care
			+	0.167	*	Pressure Ulcer Stage 2
			+	0.1334	*	Pressure Ulcer Stage 3
			+	0.1569	*	Pressure Ulcer Stage 4
			+	0.181	*	Pressure Ulcer Unstageable
			+	0.0891	*	Septicemia
			+	0.1848	*	Total Bowel Incontinence
			+	0.1862	*	Venous Arterial Ulcer
			+	0.4017	*	Viral Hepatitis
			+	0.177	*	Age Under 65
			+	0.6001	*	Cancer Chemotherapy
			+	0.188	*	IV Medication Continued from Hospital
			+	0.3395	*	Oxygen Continuing from Hospital
			+	0.1336	*	Tracheostomy Continuing from Hospital
			+	0.4718	*	Eating Dependency
			+	0.2004	*	Heart Failure
			+	0.892	*	Internal Bleeding
			+	0.1622	*	Male
			+	0.14	*	Return to Same SNF Following Hospitalizations

		+ 0.5543 * Medicare + 0.2389 * Two Person Assist Required for One or More ADLs + 0.6111 * Radiation Therapy + 0.1159 * Respiratory Failure + 0.3327 * Cognition Not Completely Intact 30day_Rehosp_Risk_Probability= 1/(1+exp(-LogOdds)) 2.2 Once the above calculation is performed for all admissions within the sample time-frame, the results should be averaged to obtain the facility's expected rate for the measure.Hence, the expected rate for a facility is the average of the expected rehospitalization probabilities for each admission during the target time period. Procedure for Calculating the Measure 1. Establish the 12 month rolling time period and collect all assessments with entry dates that fall within the time period. The count of these entries is the observed denominator. 2. For each entry date, determine whether the resident was discharged back to an acute hospital within 30 days of the entry date. The count of these discharges is the observed numerator. 3. Divide the numerator by the denominator to obtain the observed rate for the SNF. 4. Calculate the expected rate for the facility using the expected probability model for admissions during the sample period, then averaging them for the 12-month period. 5. Divide the observed rate by the expected rate and multiply by the national rate to obtain the adjusted all cause rate for the facility. No diagram provided
Submission items	5.1 Identified measures: 1551 : Hospital-level 30-day, all-cause risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA) 0330 : Hospital 30-day, all-cause, risk-standardized readmission rate	5.1 Identified measures: 5a.1 Are specs completely harmonized?

	(RSRR) following heart failure hospitalization 0506 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization 0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization. 0695 : Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI) 1550 : Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and total knee arthroplasty (TKA) 0001 : Asthma assessment 1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR) 1768 : Plan All-Cause Readmissions (PCR) 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: The SNFRM is harmonized to the greatest extent possible with CMS' 30-day All-Cause Hospital-Wide Unplanned Readmission Measure (HWR), developed by Yale University. The SNFRM is harmonized to some extent with the several other measures (listed below) developed using the same modeling techniques and applied to disease specific patient populations. However, the HWR measure is the primary focus for harmonization, as it has the same general population approach (as opposed to a disease specific approach) as the SNFRM. As the HWR population is different from the SNFRM population, this necessitates different approaches to stratification, risk adjustment, and the exclusion of planned readmissions; however, the overall analytic approach is harmonized as much as possible. The risk adjustment method is similar in that hierarchical logistic regression is applied to account for SNFs as clusters, but the exact covariates used to adjust the model are different to account for the differences in patient population. The HWR measure has created different stratifications (i.e., cohorts), based on the principal diagnosis, which correspond to hospital care teams. The SNFRM	5a.2 If not completely harmonized, identify difference, rationale, impact: N/A 5b.1 If competing, why superior or rationale for additive value: N/A

	tested the use of SNF cohorts and found that they did not improve the risk adjustment model, so SNF cohorts were not applied in the final model. Patient frailty over the previous 12 months was taken into account by including a count of the number of HCCs for each patient as well as a quadratic term to account for nonlinearity of the effect of additional comorbidities (i.e., that a patient's readmission risk increases exponentially as the number of HCCs increases.) Also, the list of planned readmissions excluded from the HWR measure was expanded for the SNFRM measure, to include procedures commonly seen in the SNF population that may not be seen in the general Medicare population (See Appendix A). The other measure specifications, with regard to other exclusions, numerator/denominator specifications, time windows, and others, are harmonized. Additionally, the American Health Care Association (AHCA) is developing a Re-Hospitalization Metric, AHCA's PointRight's OnPoint30 Re-Hospitalization Metric, which was examined for potential alignment and harmonization. The SNFRM and PointRight's OnPoint30 Re-Hospitalization Metric each provide different insights into the issue of hospital readmissions from Skilled Nursing Facilities (SNFs). Although both are all-cause hospital readmission measures, these two measures provide SNFs with two different perspectives on their hospital readmission rates. The SNFRM is designed more for quality reporting purposes by focusing on the readmissions most likely to be attributable to the facility, by reporting the rate of unplanned readmissions on a more selected set of patients. The SNFRM excludes certain types of hospitalizations, including planned readmissions, observation stays, and readmissions for medical cancer treatment, whereas PointRight's measure does not contain any such exclusions. The broader population captured by the PointRight metric, provides a more comprehensive general rate useful for quality improvement efforts. SNFs may even find it useful to compare the readmission rates, to determine what factors are driving their individual results. Additionally, the two measures rely on different data sources - the SNFRM uses Medicare fee-for-service claims (FFS), whereas PointRight uses the MDS. There are distinct advantages and	

	disadvantages to each. The SNFRM was designed based on FFS claims, in order to be harmonized with CMS' current Hospital-Wide Readmission measure as well as other readmission measures being developed for other settings (i.e., inpatient rehabilitation facilities (IRFs), long-term care hospitals (LTCHs), home health agencies (HHAs), and end-stage renal (ESRD) facilities), and to promote shared accountability for improving care transitions across all settings. One disadvantage to claims data however, is that there is a six month lag in the availability of claims, meaning that it is more difficult for SNFs to use claims to monitor the results of quality improvement efforts, whereas MDS data is available sooner. Therefore, the PointRight measure can provide facilities with information about their readmission rates on a faster and more frequent time scale. Facilities may find it useful to supplement their annual readmission rates as determine from the claims data with more real-time information from the MDS in order to evaluate rapid-cycle quality improvement activities, allowing for both measures to add value to the process. 5b.1 If competing, why superior or rationale for additive value: There are no measures with the same SNF target population and same measure focus.	

Appendix G2: Related and Competing Measures (Narrative Format)

CABG Readmission

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate
2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Steward

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

The Society of Thoracic Surgeons

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Centers for Medicare & Medicaid Services (CMS)

Description

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Risk-adjusted percentage of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

The measure estimates a hospital-level risk-standardized readmission rate (RSRR), defined as unplanned readmission for any cause within 30 days from the date of discharge of the index CABG procedure, for patients 18 years and older discharged from the hospital after undergoing a qualifying isolated CABG procedure. The measure was developed using Medicare Fee-for-Service (FFS) patients 65 years and older and was tested in all-payer patients 18 years and older.

An index admission is the hospitalization for a qualifying isolated CABG procedure considered for the readmission outcome.

Type

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Outcome

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Outcome

Data Source

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Administrative claims, Electronic Clinical Data : Registry Medicare claims data, STS Adult Cardiac Surgery Database Version 2.61

Available at measure-specific web page URL identified in S.1 Attachment S.2b._-_S.15._Detailed_Risk_Model_Specifications.Risk-Adjusted_CABG_Readmission_Rate.docx

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Administrative claims Administrative Claims:

The measure uses Medicare Part A inpatient and outpatient and Part B outpatient claims.

The Medicare data sources used to create the measure were:

1. Medicare Part A Inpatient and Outpatient and Part B outpatient claims from the Standard Analytic File, including inpatient and outpatient claims for the 12 months prior to an index admission. This dataset was used to identify the cohort (Part A inpatient) and to identify comorbidities (Part A inpatient and outpatient and Part B outpatient).

2. Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This dataset was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission.

The all-payer data source used to test the measure in patients 18 years and over was:

1. 2006 California Patient Discharge Data (PDD), a large, linked database of approximately 3 million adult discharges from more than 450 non-Federal acute care hospitals. Records are linked by a unique patient identification number, allowing determination of patient history from previous hospitalizations and evaluation of both readmission and mortality rates (via linking with California vital statistics records).

No data collection instrument provided Attachment Yale-CORE_CABG_Readmission_Measure_Excel_Attachment_3-26-14_Final.xlsx

Level

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Facility

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Facility

Setting

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Hospital/Acute Care Facility

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Hospital/Acute Care Facility

Time Window

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Numerator – Within 30 days of the date of discharge from the index CABG hospitalization

Denominator – Designated 3-year measurement period

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Numerator time window: 30 days from discharge of index CABG procedure hospitalization or claim end date

Denominator time window: this measure was developed using claims data from calendar year 2009. The time period for public reporting has not been determined.

Numerator Statement

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) and are discharged alive but have a subsequent acute care hospital inpatient admission within 30 days of the date of discharge from the CABG hospitalization.

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

The outcome for this measure is 30-day all-cause readmission. We define all-cause readmission as an unplanned inpatient admission for any cause within 30 days after the date of discharge from the index admission for patients 18 years and older discharged from the hospital after undergoing isolated CABG surgery. If a patient has one or more unplanned admissions (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission.

Numerator Details

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Readmission is defined as a subsequent acute care hospital inpatient admission on or before the 30th day since the date of discharge from the index CABG episode (discharge day regarded as day 0). Transfers from the index CABG hospitalization to another acute care facility are not considered readmissions. In the case of transfer, the 30-day timeframe begins on the discharge date from the last acute care facility of the transfer chain. Regardless of transfers, events are attributed to the hospital that performed the CABG operation. If a patient has more than one admission within 30 days after discharge from the index CABG episode, only one is counted as a readmission.

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

(Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we are using this field to define the outcome and to which hospital the outcome is attributed when there are multiple hospitalizations within a single episode of care.)

This is an all-cause readmission measure and therefore any readmission within 30 days of discharge from the index hospitalization (hereafter referred to as discharge date) is included in the measure unless that readmission is deemed a “planned” readmission. The outcome is attributed to the hospital that provided the index CABG procedure.

Planned Readmission Definition:

Planned readmissions are scheduled admissions for elective procedures or for planned care such as chemotherapy or rehabilitation. Because planned readmissions are not necessarily a signal of quality of care, we chose to exclude planned readmissions from being considered as an outcome in this readmission measure. Although clinical experts agree that planned readmissions are rare after CABG, they likely do occur. Therefore, to identify these planned readmissions we have adapted and applied an algorithm originally created to identify planned readmissions for a hospital-wide (i.e., not condition-specific) readmission measure. This algorithm underwent two rounds of public comment, a validation study using data from a medical record review, and was finalized based upon technical input of 17 surgeons nominated by 9 surgical societies as well as 10 other expert surgeons.

In brief, the algorithm identifies a short list of always planned readmissions (those where the principal discharge diagnosis is major organ transplant, obstetrical delivery, or maintenance chemotherapy) as well as those readmissions with a potentially planned procedure (e.g., total hip replacement) AND a non-acute principle discharge diagnosis code. For example, a readmission for colon resection is considered planned if the principal diagnosis is colon cancer but unplanned if the principal diagnosis is abdominal pain, as this might represent a complication of the CABG procedure or hospitalization. Readmissions that included potentially planned procedures with acute diagnoses or procedures that might represent specific complications of CABG, such as PTCA or repeat CABG are not excluded from the measure outcome as they are not considered planned in this measure. Readmissions are considered planned if any of the following occurs during the readmission:

1. A procedure is performed that is in one of the procedure categories that are always planned regardless of diagnosis;

2. The principal diagnosis is in one of the diagnosis categories that are always planned; or,

3. A procedure is performed that is in one of the potentially planned procedure categories and the principal diagnosis is not in the list of acute discharge diagnoses.

Only the first readmission following an index hospital stay is counted in the numerator of this measure. If a patient has two or more readmissions within 30 days of discharge from the index hospital stay, only the first will be considered an outcome of interest; the second or later readmissions are not counted in the outcome.

Full detail, including lists of procedures and diagnoses, are included in the Measure Methodology Report in the attached appendix.

It should be noted that this approach differs from that adopted by STS for their registry-based measure, in which all 30-day readmissions were considered to be unplanned.

Outcome Attribution:

Attribution of the outcome in situations where a patient has multiple contiguous admissions, at least one of which involves an index CABG procedure (i.e., the patient is either transferred into the hospital that performs the index CABG or is transferred out to another hospital following the index CABG) is as follows:

- If a patient undergoes a CABG procedure in the first hospital and is then transferred to a second hospital where there is no CABG procedure, the readmission outcome is attributed to the first hospital performing the index CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain.

Rationale: A transfer following CABG is most likely due to a complication of the index procedure and that care provided by the hospital performing the CABG procedure likely dominates readmission risk even among transferred patients.

- If a patient is admitted to a first hospital but does not receive a CABG procedure there and is then transferred to a second hospital where a CABG is performed, the readmission outcome is attributed to the second hospital performing the index CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain.

Rationale: Care provided by the hospital performing the CABG procedure likely dominates readmission risk.

-If a patient undergoes a CABG procedure in the first hospital and is transferred to a second hospital where another CABG procedure is performed, the readmission outcome is attributed to the first hospital performing the index (first) CABG procedure and the 30-day window starts with the date of discharge from the final hospital in the chain.

Rationale: A transfer following CABG is most likely due to a complication of the index procedure, and care provided by the hospital performing the index CABG procedure likely dominates readmission risk even among transferred patients.

Denominator Statement

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Number of Medicare fee-for-service beneficiaries aged 65 and older who undergo isolated coronary artery bypass grafting (CABG) during the designated 3-year measurement period and are discharged alive.

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

This claims-based measure can be used in either of two patient cohorts: (1) patients aged 65 years or older or (2) patients aged 18 years or older. We have tested the measure in both age groups.

The cohort includes admissions for patients who receive a qualifying isolated CABG procedure (see codes below) and with a complete claims history for the 12 months prior to admission. For simplicity of implementation and as testing demonstrated closely correlated patient-level and hospital-level results using models with or without age interaction terms, the only recommended modification to the measure for application to all-payer data sets is replacement of the “Age-65” variable with a fully continuous age variable.

Denominator Details

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Candidate CABG admissions are identified by selecting Medicare Part A claims with an ICD-9-CM procedural code for CABG (36.1x) in any position. Records are retained for analysis if they meet the following additional criteria:

(1) Linked to an STS record for isolated CABG (see below for record linkage criteria and definition of isolated CABG);

(2) Eligible for Medicare fee-for-service (FFS) A and B for at least two months after discharge or until month of death, whichever is first;

(3) Discharged from acute care setting within 1 year of index CABG admission;

(4) Did not leave against medical advice;

(5) No logically inconsistent claims data (e.g. claims with overlapping admission and discharge dates);

(6) Is the first eligible operation per patient during the measurement period.

Criteria for linking CMS and STS records

STS and CMS records were linked using combinations of indirect identifiers (hospital, age, sex, date of admission, date of discharge). Before linking the CMS and STS databases, we applied the following inclusion criteria. From the CMS database, we selected all inpatient claims for patients 65 years or older at discharge with an ICD-9-CM procedural code for CABG (36.1x) in any position. From the STS database, we selected all records for patients 65 years or older on the date of discharge who underwent CABG (STS v2.61 "Coronary Artery Bypass" in section I "operative"). Eligible STS and CMS records were considered to link if they satisfied one or more of the following 3 criteria:

1. Agree on hospital, age, sex, date of admission, and date of discharge
2. Agree on hospital, sex, date of admission, date of discharge, with ages differ by 1 year
3. Agree on hospital, sex and age, and one of the two dates, with the other date differ by 1 day.

NOTE: The record linkage strategy described above was used for exploratory analyses for developing the measure and may not be required when the measure is implemented by CMS. For implementation by CMS, it is anticipated that CMS will mandate collection of direct identifiers (e.g. name and social security number) which may obviate the need to link records based on combinations of indirect identifiers.

Definition of Isolated CABG

Isolated CABG is defined as a stand-alone CABG operation without a concomitant valve or other major cardiac or non-cardiac procedure with the following exceptions:

- CABG + ventricular assist device (VAD) implantation is counted as isolated CABG.

Rationale: VAD implantation is often unplanned and may be impacted by the quality of the CABG operation and peri-operative care. Performance measures should adjust for patient factors present at the beginning of the episode of care and should not adjust for discretionary care practices that may reflect lower or higher quality of care.

- CABG + transmyocardial laser revascularization (TMR) is counted as isolated CABG.

Rationale: The decision to perform TMR is discretionary and susceptible to gaming.

- CABG + insertion of pacemaker or automatic implantable cardioverter defibrillator is counted as isolated CABG

Rationale: In the version of the Database used to develop this model, it is impossible to distinguish which such combined CABG plus pacemaker or ICD patients required these additional procedures because of a pre-existing condition versus as a result of a complication of surgery (e.g., heart block or a large perioperative MI with decrease EF and VT)

Algorithm for identifying eligible isolated CABG admissions in the linked STS + CMS database

Eligible isolated CABG admissions are identified by selecting linked STS-CMS records that meet the following criteria:

- ICD-9-CM procedural code 36.1x in any position
- STS field #1280 “coronary artery bypass grafting” = “yes”
- Each of the following STS fields is “no” or “missing”:
- Valve surgery (1290)
- Aortic valve operation (1630)
- Mitral valve operation (1640)
- Tricuspid valve operation (1650)
- Pulmonic valve operation (1660)
- Other non-cardiac procedure (1320)
- Left ventricular aneurysm repair (2360)
- Ventricular septal defect repair (2370)
- Atrial septal defect repair (2380)
- Batista (2390)
- Surgical ventricular restoration (2400)
- Congenital Defect Repair (2410)
- Cardiac trauma (2430)
- Cardiac transplant (2440)
- Atrial fibrillation correction surgery (2470)
- Aortic aneurysm (2510)
- Other cardiac operation (1310)

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

(Note: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year). We therefore use this field to define the measure cohort.)

The index cohort includes admissions for patients aged 18 years or older who received a qualifying “isolated” CABG procedure (CABG procedure without other concurrent major cardiac procedure such as a valve replacement). All patients in the cohort are alive at discharge (i.e., no in-hospital death). The measure was developed in a cohort of patients 65 years and older who were enrolled in Medicare FFS and admitted to non-federal hospitals. To be included in the Medicare FFS cohort, patients had to have a qualifying isolated CABG procedure AND had to be continuously enrolled in Medicare Fee-for-Service (FFS) one year prior to the first day of the index hospitalization and through 30 days post-discharge.

This cohort is defined using the ICD-9 Clinical Modification (ICD-9-CM) procedure codes identified in Medicare Part A Inpatient claims data. An ICD-9 to ICD-10 crosswalk is attached in field S.2b. (Data Dictionary or Code Table). ICD-9-CM procedure codes that indicate a patient has undergone a NON-isolated CABG procedure (CABG surgeries that occur concomitantly with procedures that elevate patients’ readmission risk) and thus does not meet criteria for inclusion in the measure cohort are listed in the attached Excel file (see tab S.9).

ICD-9-CM codes that define the cohort:

36.1x - Aortocoronary bypass for heart revascularization, not otherwise specified

36.11 - (Aorto) coronary bypass of one coronary artery

36.12 - (Aorto coronary bypass of two coronary arteries

36.13 - (Aorto) coronary bypass of three coronary arteries

36.14 - (Aorto) coronary bypass of four or more coronary arteries

36.15 - Single internal mammary- coronary artery bypass

36.16 - Double internal mammary- coronary artery bypass

36.17 - Abdominal- coronary artery bypass

36.19 - Other bypass anastomosis for heart revascularization

Exclusions

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Exclusion – Rationale

- The patient is age <65 years on date of discharge according to CMS or STS data – Patients younger than 65 in the Medicare dataset represent a distinct population that qualifies for Medicare due to disability. The characteristics and outcomes of these patients may be less representative of the larger population of CABG patients.
- There is a CMS record but no matching STS record – STS data elements are required for identifying the cohort and for risk adjustment.
- There is an STS record but not matching CMS record – Medicare data are required for ascertaining 30-day readmission status, especially readmissions to a hospital other than the CABG hospital
- CABG is not a stand-alone procedure – Inclusion of combination procedures complicates risk adjustment by adding multiple relatively rare cohorts with potentially distinct characteristics and outcomes.
- The patient died prior to discharge from acute care setting – Patient is not at risk of subsequent readmission.
- The patient leaves against medical advice (AMA). – Physicians and hospitals do not have the opportunity to deliver the highest quality care.
- The patient does not retain Medicare fee-for-service (FFS) A and B for at least two months after discharge – Beneficiaries who switch to a Medicare advantage plan are unlikely to file inpatient claims which are required for ascertaining 30-day readmission status.
- The index CABG episode is >365 days. – These patients were excluded for consistency with previous CMS readmission measures. These records may inaccurate admission and discharge dates. If not, including them would complicate risk adjustment by adding a relatively rare cohort with potentially distinct characteristics and outcomes.
- Not the first eligible CABG admission per patient per measurement period. – Simplifies statistical analysis. Also, repeat CABG procedures are very rare and so loss of information is minimal.

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

In order to create a clinically coherent population for risk adjustment and in accordance with existing NQF-approved CABG measures and clinical expert opinion, the measure is intended to capture isolated CABG patients (i.e., patients undergoing CABG procedures without concomitant valve or other major cardiac or vascular procedures).

For all cohorts, hospitalizations are excluded if they meet any of the following criteria. Hospitalizations for:

1) Patients who leave the hospital against medical advice (AMA)

Rationale: We exclude hospitalizations for patients who are discharged AMA because providers did not have the opportunity to deliver full care and prepare the patient for discharge.

2) Patients with qualifying CABG procedures subsequent to another qualifying CABG procedure during the measurement period.

Rationale: CABG procedures are expected to last for several years without the need for revision or repeat revascularization. A repeat CABG procedure during the measurement period very likely represents a complication of the original CABG procedure and is a clinically more complex and higher risk surgery. We, therefore, select the first CABG admission for inclusion in the measure and exclude subsequent CABG admissions from the cohort.

For Medicare FFS patients, the measure additionally excludes:

3) Patients without at least 30 days post-discharge enrollment in FFS Medicare.

Rationale: We exclude these hospitalizations because the 30-day readmission outcome cannot be assessed in this group.

Exclusion Details

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Please see previous section

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

For all cohorts, hospitalizations for:

1) Patients who leave hospital against medical advice (AMA) are identified using the discharge disposition indicator in the Standard Analytic File (SAF).

2) Subsequent qualifying CABG procedure during the measurement period are identified by the ICD-9 codes defining CABG mentioned in denominator details.

For Medicare FFS patients:

3) Patients without at least 30 days post-discharge enrollment in FFS Medicare are identified using patient enrollment status in the CMS' Enrollment Database (EDB).

Risk Adjustment

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Statistical risk model

Hospital-specific risk-standardized readmission rates (RSRR's) are calculated using hierarchical logistic regression with hospital-specific random intercept parameters. Covariates for the risk adjustment model are derived from the STS database. The following covariates are included:

1. Ejection Fraction
2. Preoperative Atrial Fibrillation
3. Unstable Angina (no MI <= 7 days)
4. Myocardial Infarction
5. Age
6. Congestive Heart Failure

7. Renal Function
8. Status
9. Gender
10. Reoperation
11. Chronic Lung Disease
12. Diabetes
13. Preoperative IAPB or Inotrope
14. Immunosuppressive Treatment
15. PVD
16. Body Surface Area
17. CVD
18. Hypertension
19. PCI <= 6 hours
20. Left Main Disease
21. Surgery Date

Methods of calculating RSRR's and associated 95% intervals are identical to prior CMS readmission measures.

Available in attached Excel or csv file at S.2b

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Statistical risk model

Our approach to risk adjustment is tailored to and appropriate for a publicly reported outcome measure, as articulated in the American Heart Association (AHA) Scientific Statement, "Standards for Statistical Models Used for Public Reporting of Health Outcomes" (Krumholz et al., 2006).

The measure calculates readmission rates using a hierarchical logistic regression model to account for the clustering of patients within hospitals while risk-adjusting for differences in patient case-mix. We modeled the log-odds of readmission within 30 days of discharge from an index CABG admission as a function of patient demographic and clinical characteristics, and a random hospital-specific intercept. This strategy accounts for within-hospital correlation of the observed outcomes, and models the assumption that underlying differences in quality among the health care groups being evaluated lead to systematic differences in outcomes.

Methodology for calculation of risk-standardized rates is noted below in the calculation algorithm section (S.18).

Variables are patient-level risk-adjustors that are expected to be predictive of readmission, based on empirical analysis, prior literature, and clinical judgment, including age and indicators of comorbidity and disease severity. For each patient, covariates are obtained from Medicare claims extending 12 months prior to and including the index admission. The model adjusts for case differences based on the clinical status of the patient at the time of admission. We use condition categories (CCs), which are clinically meaningful groupings of more than 15,000 ICD-9-CM diagnosis codes. A map showing the assignment of ICD-9 codes to CCs can be found in the attached Excel file (tab 2b4.4). We do not risk-adjust for CCs that are possible adverse events of care and that are only recorded in the index admission. In addition, only comorbidities that convey information about the patient at that time or in the 12-months prior, and not complications that arise during the course

of the hospitalization are included in the risk-adjustment. The risk adjustment model includes 26 variables:

Demographics:

Age (per year >65)

Gender (Male)

Comorbidities:

History of Prior CABG or Valve Surgery

Cardiogenic Shock

Chronic Obstructive Pulmonary Disease

Metastatic Cancer and Acute Leukemia

Diabetes and DM Complications

Protein-Calorie Malnutrition

Disorders of Fluid/Electrolyte/Acid-Base

Obesity/Disorders of Thyroid, Cholesterol, Lipids

Severe Hematological Disorders

Dementia or Senility

Major Psychiatric Disorders

Hemiplegia, Paraplegia, Paralysis, Functional Disability

Polyneuropathy

Congestive Heart Failure

Arrhythmias

Stroke

Cerebrovascular Disease

Vascular or Circulatory Disease

Fibrosis of Lung and Other Chronic Lung Disorders

Pneumonia

Other Lung Disorders

End-Stage Renal Disease or Dialysis

Renal Failure

Decubitus Ulcer or Chronic Skin Ulcer

Risk model coefficients to estimate each patient's probability for the outcome:

SAS procedure PROC GLIMMIX fits the statistical model to calculate the risk-adjusted coefficients and hospital-specific effects as listed in the attached Excel file (tab S.15). For random effect, the between-hospital variance is 0.04 (standard error 0.01) for the model using 2009 full year dataset.

Reference:

Krumholz HM, Brindis RG, Brush JE, et al. 2006. Standards for Statistical Models Used for Public Reporting of Health Outcomes: An American Heart Association Scientific Statement From the Quality of Care and Outcomes Research Interdisciplinary Writing Group: Cosponsored by the Council on Epidemiology and Prevention and the Stroke Council Endorsed by the American College of Cardiology Foundation. Circulation 113: 456-462.

Available in attached Excel or csv file at S.2b

Stratification

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

N/A

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Results of this measure will not be stratified.

Type Score

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Rate/proportion better quality = lower score

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

Rate/proportion better quality = lower score

Algorithm

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

Please refer to numerator and denominator sections for detailed information. No diagram provided

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

We calculate hospital-specific risk-standardized readmission rates (RSRRs). These rates are obtained as the ratio of predicted to expected readmissions, multiplied by the national unadjusted rate. The expected number of readmissions in each hospital is estimated using its patient mix and the average hospital-specific intercept. The predicted number of readmissions in each hospital is estimated given the same patient mix but the hospital-specific intercept. Operationally, the expected number of readmissions for each hospital is obtained by regressing the risk factors on the 30-day readmission using all hospitals in our sample, applying the subsequent estimated regression coefficients to the patient characteristics observed in the hospital, adding the average of the hospital-specific intercepts, summing over all patients in the hospital, and then transforming to get a count. This is a form of indirect standardization. The predicted hospital outcome is the number of expected readmissions in the "specific" hospital and not at a reference hospital. Operationally this is accomplished by estimating a hospital-specific intercept that represents baseline readmission risk within the hospital, applying the estimated regression coefficients to the patient characteristics in the hospital, summing over all patients in the hospital, and then transforming to get a count. To assess hospital performance in any given year, we re-estimate the model coefficients using that year's data.

Please see the calculation algorithm attachment for more details. Available in attached appendix at A.1

Submission items

2514 Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate

5.1 Identified measures: 0129 : Risk-Adjusted Prolonged Intubation (Ventilation)

0130 : Risk-Adjusted Deep Sternal Wound Infection Rate

0131 : Risk-Adjusted Stroke/Cerebrovascular Accident

0114 : Risk-Adjusted Post-operative Renal Failure

0115 : Risk-Adjusted Surgical Re-exploration

5a.1 Are specs completely harmonized?

5a.2 If not completely harmonized, identify difference, rationale, impact: N/A

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

2515 Hospital 30-day, all-cause, unplanned, risk-standardized readmission rate (RSRR) following coronary artery bypass graft (CABG) surgery

5.1 Identified measures: 0114 : Risk-Adjusted Postoperative Renal Failure

0115 : Risk-Adjusted Surgical Re-exploration

0119 : Risk-Adjusted Operative Mortality for CABG

0129 : Risk-Adjusted Postoperative Prolonged Intubation (Ventilation)

0130 : Risk-Adjusted Deep Sternal Wound Infection Rate

0131 : Risk-Adjusted Stroke/Cerebrovascular Accident

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

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

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

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: The proposed CABG readmission measure, which has been developed in close collaboration with STS, has a target population (i.e., isolated CABG patients) that is harmonized with the above measures to the extent possible given the differences between clinical and administrative data. The exclusions are nearly identical to the STS measures' cohort exclusions with the exception of epicardial MAZE procedures; STS excludes these procedures from the registry-based CABG readmission measure cohort because the version of registry data used for measure development did not allow them to differentiate them from open maze procedures. The age range for the proposed CABG readmission and existing NQF-endorsed STS measure cohorts differs; STS measures are specified for age 18 and over, and the proposed CABG readmission measure is currently specified for age 65 and over. However, we have performed testing in patients 18 years and over and determined the measure performs well across all adult patients and payers. The proposed CABG readmission measure is harmonized with the above measures to the extent possible given the different data sources used for development and reporting. 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. 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: There are no existing NQF-endorsed measures or other measures in current use that have the same measure focus and the same target population as this measure. However, this measure was developed concurrently with a clinical registry data-based readmission measure (Risk-adjusted readmission measure for coronary artery bypass graft (CABG)). The measure steward for the registry-based readmission measure for CABG is also CMS; STS developed the measure. Effort was taken to harmonize both the registry-based and administrative-based measures to the extent possible given the differences in data sources.

CMS developed these two "competing" measures at the same time to allow for maximum flexibility in implementation for quality improvement programs across different care settings. The STS cardiac surgery registry currently enrolls most, but not all, patients receiving CABG surgeries in the U.S. The proposed CABG readmission measure will capture all qualifying Medicare FFS patients undergoing CABG regardless of whether their hospital or surgeon participates in the STS registry.

This claims-based CABG readmission measure was developed with the goal of producing a measure with the highest scientific rigor and broadest applicability. The measure is harmonized with the above existing and proposed measures to the extent possible given the different data sources used for development and reporting.

Acute Hospitalization Following the Start of Home Health

2380 Rehospitalization During the First 30 Days of Home Health

0171 Acute care hospitalization (risk adjusted)

Steward

2380 Rehospitalization During the First 30 Days of Home Health

Centers for Medicare and Medicaid Services

0171 Acute care hospitalization (risk adjusted)

Centers for Medicare & Medicaid

Description

2380 Rehospitalization During the First 30 Days of Home Health

Percentage of home health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their home health stay were admitted to an acute care hospital during the 30 days following the start of the home health stay.

0171 Acute care hospitalization (risk adjusted)

Percentage of home health stays in which patients were admitted to an acute care hospital during the 60 days following the start of the home health stay.

Type

2380 Rehospitalization During the First 30 Days of Home Health

Outcome

0171 Acute care hospitalization (risk adjusted)

Outcome

Data Source

2380 Rehospitalization During the First 30 Days of Home Health

Administrative claims Medicare claims data.

Identification of Short Term Hospitals: https://www.cms.gov/transmittals/downloads/R29SOMA.pdf

General Medicare Data Documentation: http://www.resdac.org/ddvh/index.asp

No data collection instrument provided Attachment RiskModelVariables-635272074224051349.xlsx

0171 Acute care hospitalization (risk adjusted)

Administrative claims Denominator: Medicare Home Health Claims

Numerator: Medicare Inpatient Claims

Exclusions: Medicare Home Health Claims, Medicare Enrollment Data

Risk Factors: Medicare Enrollment Data, Medicare Part A & B Claims

URL No data dictionary

Level

2380 Rehospitalization During the First 30 Days of Home Health

Facility

0171 Acute care hospitalization (risk adjusted)

Facility

Setting

2380 Rehospitalization During the First 30 Days of Home Health

Home Health

0171 Acute care hospitalization (risk adjusted)

Home Health

Time Window

2380 Rehospitalization During the First 30 Days of Home Health

Public reporting will be based on the most recent 3 years of data available. For agencies' confidential reports, agencies may select the observation period (in calendar months) they are interested in and up to 3.5 years of data are currently available.

0171 Acute care hospitalization (risk adjusted)

60 days following the start of the home health stay.

Numerator Statement

2380 Rehospitalization During the First 30 Days of Home Health

Number of home health stays for patients who have a Medicare claim for an admission to an acute care hospital in the 30 days following the start of the home health stay.

0171 Acute care hospitalization (risk adjusted)

Number of home health stays for patients who have a Medicare claim for an unplanned admission to an acute care hospital in the 60 days following the start of the home health stay.

Numerator Details

2380 Rehospitalization During the First 30 Days of Home Health

The 30 day time window is calculated by adding 30 days to the "from" date in the first home health claim in the series of home health claims that comprise the home health stay. If the patient has at least one Medicare inpatient claim from short term or critical access hospitals (identified by the CMS Certification Number ending in 0001-0879, 0800-0899, or 1300-1399) during the 30 day window, then the stay is included in the measure numerator.

Numerator Exclusions: Inpatient claims for planned hospitalizations are excluded from the rehospitalization measure numerator. Planned hospitalizations are defined using the same criteria as the Hospital-Wide All-Cause Unplanned Readmission Measure as of January 2013. Specifically, a small set of readmissions, defined using Agency for Healthcare Research and Quality (AHRQ) Procedure and Diagnosis Clinical Classification Software (CCS), are always considered "planned." An additional set of admissions are categorized as "potentially planned" and are

also excluded from being counted as unplanned admissions in the measure numerator unless they have a discharge condition category considered “acute or complication of care,” which is defined using AHRQ Diagnosis CCS.

0171 Acute care hospitalization (risk adjusted)

The 60 day time window is calculated by adding 60 days to the “from” date in the first home health claim in the series of home health claims that comprise the home health stay. Acute care hospitalization occurs (and the home health stay is included in the numerator) if the patient has at least one Medicare inpatient claim from short term or critical access hospitals (identified by CMS Certification Number ending in 0001-0879, 0800-0899, or 1300-1399) during the 60 day window.

Inpatient claims for planned hospitalizations are excluded from the measure numerator. Planned hospitalizations are defined using the same criteria as the Yale Hospital-Wide All-Cause Unplanned Readmission Measure. Specifically, admissions are categorized as “planned” based on AHRQ Procedure and Condition CCS as well as other sets of ICD-9-CM procedure codes. These admissions are excluded unless they have a discharge condition category considered “acute or complication of care,” which is defined using AHRQ Condition CCS. The definitions of AHRQ CCS can be found here:

http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp#download

The AHRQ CCS that define planned hospitalizations are found below and are AHRQ Procedure CCS unless otherwise noted.

AHRQ CCS Description

45 PTCA

254 Rehabilitation (Condition CCS)

84 Cholecystectomy and common duct exploration

157 Amputation of lower extremity

44 CABG

78 Colorectal resection

51 Endarterectomy; vessel of head and neck

113 Transurethral resection of prostate

99 Other OR Gastrointestinal therapeutic procedures

48 Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator

45 Maintenance chemotherapy (Condition CCS)

211 Therapeutic radiology for cancer treatment

3 Laminectomy; excision intervertebral disc

43 Heart valve procedures

152 Arthroplasty knee

158 Spinal fusion

55 Peripheral vascular bypass

52 Aortic resection; replacement or anastomosis

36 Lobectomy or pneumonectomy

153 Hip replacement; total and partial

60 Embolectomy and endarterectomy of lower limbs

85 Inguinal and femoral hernia repair

104 Nephrectomy; partial or complete

1 Incision and excision of CNS

124 Hysterectomy; abdominal and vaginal

167 Mastectomy

10 Thyroidectomy; partial or complete

114 Open prostatectomy

74 Gastrectomy; partial and total

119 Ooporectomy; unilateral and bilateral

154 Arthroplasty other than hip or knee

ICD-9-CM procedure codes 30.5, 31.74, 34.6 Radial laryngectomy, revision of tracheostomy, scarification of pleura

166 Lumpectomy; quadrantectomy of breast

64 Bone marrow transplant

105 Kidney transplant

176 Other organ transplantation

ICD-9-CM procedure codes 94.26, 94.27 Electroshock therapy

Discharge AHRQ Condition CCS considered "acute or complication of care" are listed below.

AHRQ CCS Description

237 Complications of device; implant or graft

106 Cardiac dysrhythmias

Condition CCS 207, 225, 226, 227, 229, 230, 231, 232 Fracture

100 Acute myocardial infarction

238 Complications of surgical procedures or medical care

108 Congestive heart failure; nonhypertensive

2 Septicemia (except in labor)

146 Diverticulosis and diverticulitis

105 Conduction disorders

109 Acute cerebrovascular disease

145 Intestinal obstruction without hernia

233 Intracranial injury

116 Aortic and peripheral arterial embolism or thrombosis

122 Pneumonia (except that caused by TB or sexually transmitted disease)

131 Respiratory failure; insufficiency; arrest (adult)

157 Acute and unspecified renal failure

201 Infective arthritis and osteomyelitis (except that caused by TB or sexually transmitted disease)

153 Gastrointestinal hemorrhage

130 Pleurisy; pneumothorax; pulmonary collapse

97 Peri-; endo-; and myocarditis; cardiomyopathy

127 Chronic obstructive pulmonary disease and bronchiectasis

55 Fluid and electrolyte disorders

159 Urinary tract infection

245 Syncope

139 Gastroduodenal ulcer (except hemorrhage)

160 Calculus of urinary tract

112 Transient cerebral ischemia

Denominator Statement

2380 Rehospitalization During the First 30 Days of Home Health

Number of home health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the home health stay. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days.

0171 Acute care hospitalization (risk adjusted)

Number of home health stays that begin during the 12-month observation period. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days.

Denominator Details

2380 Rehospitalization During the First 30 Days of Home Health

The algorithm for computing patient-level outcomes is based on a 12-month observation period and produces both monthly and yearly numerator and denominator counts; to include all valid home health stays over a three-year period for public reporting purposes, CMS will merge the data for the most recent 12-month observation period with the data from the preceding two 12-month observation periods.

A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health claim, so home health stays are constructed from claims data using the following procedure:

1. First, retrieve home health claims with a “from” date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by “from” date for each beneficiary.

2. Second, drop claims with the same “from” date and “through” date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same “from” date, keep only the claim with the most recent process date.

3. Third, set Stay_Start_Date(1) equal to the “from” date on the beneficiary’s first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim “from” date is more than 60 days after the “through” date on the previous claim, then the claim begins a new stay. If the claim “from” date is within 60 days of the “through” date on the previous claim, then the claim continues the stay associated with the previous claim.

4. Fourth, for each stay, set Stay_Start_Date(n) equal to the “from” date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the “through” date on the last claim in that stay. Confirm that Stay_Start_Date(n) minus Stay_End_Date(n-1) is greater than 60 days for all adjacent stays.

5. Fifth, drop stays that begin before the 12-month observation window.

6. Finally, only stays that begin within 5 days of discharge from a short-term inpatient hospital are included in the denominator as follows:

i. Link to Part A claims for 6 months prior to Stay_Start_Date for each beneficiary.

ii. Define Hosp_Discharge_DT = Thru_Dt of the inpatient claim with the latest through date (thru_Dt) prior to Stay_Start_Date,.

iii. Limit to home health stays where the Stay_Start_Date minus the Hosp_Discharge_DT is equal to or less than 5. Exclude stays where the IP claim is from a provider type that is not a short stay hospital . Short term hospitals are defined using the following CCN ranges in the third through sixth positions: 0001-0879, 0880-0899, and 1300-1399.

Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous home health claims by at least 60 days.

0171 Acute care hospitalization (risk adjusted)

A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health (HH) claim, so home health stays are constructed from claims data using the following procedure.

1. First, retrieve HH claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary.
2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date.
3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim.
4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n+1) – Stay_End_Date(n) > 60 days for all adjacent stays.
5. Finally, drop stays that begin before the 12-month observation window.

Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous home health claims by at least 60 days.

Exclusions

2380 Rehospitalization During the First 30 Days of Home Health

The measure denominator excludes several types of home health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following home health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another home health agency within a home health payment episode (60 days); and

(iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of home health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of home health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

0171 Acute care hospitalization (risk adjusted)

The following are excluded: home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window (60 days following the start of the home health stay) or until death; home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim; home health stays in which the patient receives service from multiple agencies during the first 60 days; and home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior to the start of the home health stay.

Exclusion Details

2380 Rehospitalization During the First 30 Days of Home Health

The following types of home health stays are excluded from the measure denominator:

1. Stays excluded from the denominator of the all-patient claims-based NQF 0171 Acute Care Hospitalization measure:

i. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window (30 days following the start of the home health stay) or until death. Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB). These stays lack full information about the patient's utilization of health care services and so it cannot determined if care was sought in an emergency department during the numerator window.

ii. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim. Exclude the stay if LUPAIND = L for the first claim in the home health stay. Home health stays designated as LUPAs are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes.

iii. Home health stays in which the patient receives service from multiple agencies during the first 30 days. Define Initial_Provider = PROVIDER on the first claim in the home health stay. If Initial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay. These home health stays are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes.

iv. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the six months prior to the start of the home health stay. Enrollment status is identified using the Medicare Enrollment Database (EDB). These stay are excluded because we lack information about the patient's health status prior to the beginning of home health that is needed for risk adjustment.

2. In addition, the following four types of prior admissions are excluded from being the index hospitalization:

i. Admissions for the treatment of cancer. Exclude admissions with discharge diagnosis for treatment of cancer. AHRQ Diagnosis CCS are used to define cancer discharge condition categories. AHRQ Diagnosis CCS considered cancer include:

AHRQ Diagnosis CCS	Description
11	Cancer of head and neck
12	Cancer of esophagus
13	Cancer of stomach
14	Cancer of colon
15	Cancer of rectum and anus
16	Cancer of liver and intrahepatic bile duct
17	Cancer of pancreas
18	Cancer of other GI organs; peritoneum
19	Cancer of bronchus; lung
20	Cancer; other respiratory and intrathoracic
21	Cancer of bone and connective tissue
22	Melanomas of skin
23	Other non-epithelial cancer of skin
24	Cancer of breast
25	Cancer of uterus
26	Cancer of cervix
27	Cancer of ovary
28	Cancer of other female genital organs
29	Cancer of prostate
30	Cancer of testis
31	Cancer of other male genital organs
32	Cancer of bladder
33	Cancer of kidney and renal pelvis
34	Cancer of other urinary organs
35	Cancer of brain and nervous system
36	Cancer of thyroid
37	Hodgkin's disease
38	Non-Hodgkin's lymphoma
39	Leukemias
40	Multiple myeloma
41	Cancer; other and unspecified primary
42	Secondary Malignancies
43	Malignant neoplasm without specification of site

44	Neoplasms of unspecified nature or uncertain behavior
45	Maintenance chemotherapy; radiotherapy

ii. Admissions for the treatment of primary psychiatric diseases. Exclude admissions with discharge diagnosis for treatment of psychiatric disease. AHRQ Diagnosis CCS are used to define psychiatric disease discharge condition categories. AHRQ Diagnosis CCS considered psychiatric disease include:

AHRQ Diagnosis CCS	Description
650	Adjustment disorders
651	Anxiety disorders
652	Attention-deficit, conduct, and disruptive behavior disorders
654	Developmental disorders
655	Disorders usually diagnosed in infancy, childhood, or adolescence
656	Impulse control disorders, NEC
657	Mood disorders
658	Personality disorders
659	Schizophrenia and other psychotic disorders
662	Suicide and intentional self-inflicted injury
670	Miscellaneous disorders

iii. Admissions for rehabilitation care and the fitting of prostheses and adjustment devices. Exclude admissions with admitting diagnosis of "rehabilitation care; fitting of prostheses and adjustment devices." The AHRQ Diagnosis CCS 254 is used to define rehabilitation care.

iv. Admission ending in patient discharge against medical advice. Exclude admissions with "Stus_cd"=07.

Admissions for cancer have very different mortality and readmission rates than the remainder of the population. Admissions for psychiatric diseases are treated in separate psychiatric facilities not comparable to treatment received in acute care hospitals, and admissions for rehabilitation care typically do not occur in an acute care setting. Finally, admissions that end in patient discharge against medical advice are excluded because the hospital did not have a full opportunity to treat the patient.

3. Home health stays for patients who receive intervening care in the window between the index hospital discharge and the start of home health care. Intervening care is identified as any inpatient hospital use (which includes care received at inpatient rehabilitation facilities and long-term care hospitals), emergency department use without hospitalization, and skilled nursing facility treatment. These home health stays are excluded because patients' health outcomes may be affected by the care they receive between hospital discharge and the start of home care.

4. Home health stays with missing payment-episode authorization strings. These stays do not include all the information needed for risk adjustment.

0171 Acute care hospitalization (risk adjusted)

1. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window (60 days following the start of the home health stay) or until death.

- Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB).

2. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim.

- Exclude the stay if LUPAIND = L for the first claim in the home health stay.

3. Home health stays in which the patient receives service from multiple agencies during the first 60 days.

- Define Initial_Provider = PROVIDER on the first claim in the home health stay.
- If Intial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay.

4. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior to the start of the home health stay.

- Enrollment status is identified using the Medicare Enrollment Database (EDB).

Risk Adjustment

2380 Rehospitalization During the First 30 Days of Home Health

Statistical risk model

The measure developer used a multinomial logistic model to account for beneficiary factors that may affect rates of hospitalization but are outside of the home health agency's control. Because these measures evaluate two different but related outcomes, one multinomial logistic framework models the three disjoint outcomes: no acute care use (no event), emergency department use without hospital readmission, and rehospitalization. A multinomial logistic model allows for the same risk factors to affect the possible outcomes in different ways while also constraining predicted probabilities of all three events to sum to one hundred percent. The risk adjustment model uses six months of claims prior to the start of home health care to obtain information about the beneficiary. The measure developer identified a set of 404 covariates that consisted of statistically significant predictors of acute care rehospitalization or emergency use without hospital readmission. CMS published the risk adjustment model specifications on the Home Health Quality Initiative page in December 2013. The five beneficiary-level risk factors included in the multinomial logistic regression model are as follows:

1. Prior Care Setting

Because beneficiaries who enter home health care from different prior care settings may have different health statuses, this model takes into account beneficiaries' immediate prior care setting. The categorical variables included in this risk factor are defined by examining Medicare claims for the 6 months prior to the start of the home health stay. One categorical variable captures prior care use in the 30 days prior to the start of home health (and prior to the index hospitalization). A second variable includes information about care received more than 30 days prior to home health but within 6 months of the start of the home health stay and identifies patients with hospitalizations, SNF care, or emergency department use during this time frame. Finally, the risk adjustment model accounts for the length of index hospital stay (i.e., one to two weeks, and greater than two weeks).

2. Age and Sex Interactions

The risk adjustment model includes age and sex interactions from the Enrollment Database (EDB) as covariates to account for the differing effects of age on the outcomes for each sex. Age is subdivided into 12 bins for each sex: aged 0 to 34, 35 to 44, 45 to 54, five-year age bins from 55 to 95, and a 95 and older category. Age is determined based on the patient's age at the start of the home health stay. The

model includes a binary indicator for each age-bin, sex combination. The omitted category is 65-69 year old males.

3. Health Status

To account for beneficiary health status, the risk adjustment model uses three measures: (i) CMS' Hierarchical Condition Categories (HCCs), (ii) Diagnosis-Related Groupings (DRGs), (iii) and Activities of Daily Living (ADLs). First, the risk adjustment uses CMS' HCCs. HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims.* While the CMS-HHC model uses a full year of claims data to calculate HCCs,** the rehospitalization and ED use without hospital readmission measures use only six months of data to limit the number of home health stays excluded due to missing claims history. Binary indicators for all HCCs and CCs from the 2008 CMS HCC model that are not hierarchically ranked and that were statistically significant predictors of rehospitalization or ED use without hospital readmission are included in the model.

Next, the risk adjustment model includes the DRG of the qualifying inpatient stay. DRGs are used for Medicare payment to classify inpatient stays that are clinically related and are expected to have similar levels of resource use. Most DRGs are classified based largely on the primary diagnosis on the inpatient claim.***

Finally, risk adjustment for these measures also takes into account patient functional status by including the four separate ADL scores that appear on the home health claim. These four scores range from 0 to 16 and are calculated as part of the home health payment process by combining information from several OASIS items:

(i) Dressing upper or lower body (OASIS fields M1810 or M1820)

(ii) Bathing (M1830)

(iii) Toileting (M1840)

(iv) Transferring (M1850)

(v) Ambulation (M1860)

While each of the four ADL scores is calculated from these OASIS items, the weight assigned to each item differs across scores. Thus, all four scores convey distinct information about patient functional status and are used for risk adjustment.**** Directly including OASIS items as risk factors is not currently feasible, due to challenges associated with linking OASIS assessments to home health claims.

4. Medicare Enrollment Status

The model employs reason for Medicare eligibility, including ESRD status and disability status as covariates because beneficiaries with ESRD or who are disabled constitute a fundamentally different health profile than other Medicare beneficiaries. Additionally, the model includes interactions between original disabled status and sex.

5. Additional Interaction Terms

Interaction terms account for the additional effect two risk factors may have when present simultaneously, which may be more or less than the additive effect of each factor separately. For example, a beneficiary with chronic heart failure and chronic obstructive pulmonary disease may be at greater risk for hospitalization than would be estimated by adding the risk of hospitalization for each condition separately. All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predictors of rehospitalization or emergency department use without readmission were included.

* A description of the development of the CMS-HCC model can be found here: https://www.cms.gov/HealthCareFinancingReview/Downloads/04Summerpg119.pdf

** Details of the CMS-HCC model and the code lists for defining the HCCs can be found here: https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp

*** Details of the DRG system can be found here:

http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/AcutePaymtSysfctsht.pdf

****This methodology differs from the ADL score included in the Home Health Resource Grouper (HHRG), which is a categorization of one of the four ADL scores. Further information can be found at: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HomeHealthPPS/CaseMixGrouperSoftware.html

Available in attached Excel or csv file at S.2b

0171 Acute care hospitalization (risk adjusted)

Statistical risk model

Multinomial logit with outcomes of “No acute event”, “Emergency Department without Hospitalization”, and “Acute Care Hospitalization”.

Risk factors include:

Prior Care Setting –

The main categories are community (i.e., no prior care setting), outpatient emergency room, inpatient-acute (IP-acute), inpatient rehabilitation facility (IRF), psychiatric facility, long-term care facility (LTC), and skilled nursing facility (SNF). The hierarchy of setting is SNF, most recent inpatient stay, and outpatient ER. Acumen used the five cohorts from the Yale Hospital-Wide All-Cause Unplanned Readmission Measure to segregate the IP-acute category. The five cohorts are:

1. Surgery/Gynecology: admissions likely cared for by surgical or gynecological teams, based on AHRQ procedure categories;
2. Cardiorespiratory: admissions treated by the same care teams with very high readmission rates, such as for pneumonia, chronic obstructive pulmonary disease, and heart failure;
3. Cardiovascular: admissions treated by separate cardiac or cardiovascular team in large hospitals, such as for acute myocardial infarctions;
4. Neurology: admissions for neurological conditions, such as stroke, that may be treated by a separate neurology team in large hospitals; and
5. Medicine: admissions for all other non-surgical patients.

These cohorts were designed to account for differences in readmission risk for surgical and non-surgical patients.

Finally, the IP-acute categories and the SNF category were further refined by length of stay. Each of the five IP-acute categories are separated into stays of length 0 to 3 days, 4 to 8 days, and 9 or more days, while the SNF categories are split into stays of length 0 to 13, 14 to 41, and 42 and more days. A patient cared for in both a skilled nursing facility and an inpatient hospital during the 30 days prior to starting home health care is included in the skilled nursing categories and not the inpatient categories. The length of stay is determined from the last inpatient or skilled nursing stay prior to beginning home health care.

Age and Gender Interactions –

Age is subdivided into 12 bins for each gender: aged 0-34, 35-44, 45-54, five-year age bins from 55 to 95, and a 95+ category. Using a categorical age variable allows the model to account for the differing effects of age and gender. Age is determined based on the patient's age at Stay_Start_Date.

CMS Hierarchical condition categories (HCCs) –

HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims. While the CMS-HHC model uses a full year of claims data to calculate HCCs, for these measures, we use only 6 months of data to limit the number of home health stays excluded due to missing HCC data. All 2008 HCCs and CCs that are not hierarchically ranked that were statistically significant predictors of ACH and ED use are included in the model.

Details of the CMS-HCC model and the code lists for defining the HCCs can be found here:
https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp

A description of the development of the CMS-HCC model can be found here:
https://www.cms.gov/HealthCareFinancingReview/Downloads/04Summerpg119.pdf

ESRD and Disability Status –

Original End Stage Renal Disease (ESRD) and current ESRD status are included as risk factors. Original disabled status and male, and original disabled status and female, are also included. Medicare beneficiaries with ESRD or disabled status represent a fundamentally different health profile.

Interaction Terms –

All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predicators of ED Use and ACH were included. Interaction terms account for the additional effect two risk factors may have when present simultaneously, which is more than the additive effect of each factor separately.

Stratification

2380 Rehospitalization During the First 30 Days of Home Health

The measure is not stratified.

0171 Acute care hospitalization (risk adjusted)

N/A - not stratified

Type Score

2380 Rehospitalization During the First 30 Days of Home Health

Other (specify): Categorical for public reporting (i.e., categories are "Better than Expected", "Same as Expected", and "Worse than Expected'); rate for confidential reporting (better quality [all else equal] = lower rates) better quality = lower score

0171 Acute care hospitalization (risk adjusted)

Rate/proportion better quality = lower score

Algorithm

2380 Rehospitalization During the First 30 Days of Home Health

The following algorithm is used to compute the "Rehospitalization During the First 30 Days of Home Health" measure and the "Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health" measure:

1. Construct home health stays from HH claims.

2. Link stays to enrollment data by beneficiary.

3. Identify numerator window (30 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death.

4. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window.

5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date.

6. Link to Part A and Part B claims for 6 months prior to Stay_Start_Date for each beneficiary.

7. Calculate demographic risk factors for each stay (age, sex, etc.) using enrollment data.

8. Limit to home health stays where the Stay_Start_Date minus the Thru_Dt of an Inpatient (IP) claims is equal to or less than 5. Exclude stays where the IP claim is not for a short-term hospital or has an AHRQ Diagnosis CCS or stus_cd that excludes it from being an index admission. Retain the DRG of the index admission as a risk factor.

9. Calculate prior care setting indicators, ADLs, HCCs, and HCC interactions.

10. Exclude stays that have prior care setting indicators whose claim Thru_Dt is in between the Thru_Dt of the index hospitalization and the Stay_Start_Dt.

11. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals for numerator window (30 days following Stay_Start_Date).

12. Link to Outpatient claims with revenue center codes indicating emergency department use for the numerator window (30 days following Stay_Start_Date).

13. Calculate measure flags for each stay:

a. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 11.

14. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 7 through 9, calculate the predicted probability of being included in the measure numerator, for each stay (Pred_Hosp). Additionally calculate the average of Pred_Hosp across all stays that are included in the measure denominator (not excluded in steps 3 to 5) and call these values National_Pred_Hosp.

15. Calculate observed and expected rates for the measure at each home health agency (Initial_Provider):

a. Observed Rates:

i. Calculate the observed rate of acute care hospitalization as the fraction all (non-excluded) HH stays with that agency as Initial_Provider that are also included in the measure numerator (Hosp_Admit = 1). Call the value Agency_Obs_Hosp.

b. Expected Rates:

i. Calculate the agency expected rate of acute care hospitalization by taking the average of Pred_ Hosp across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_Pred_Hosp.

16. For each agency, simulate the distribution of expected rates:

a. For each stay, randomly choose an outcome (i.e. no outcome, re-hospitalization, or ED use without hospital readmission) using the stay-level predicted probability of hospitalization (Pred_Hosp). Repeat simulation 20,000 times. Call these values X1 – X20,000.

b. For each simulation, calculate the agency predicted rate of hospitalization by taking the average of all stays with that agency. Call these values Agency_sim_Hosp1 – Agency_sim_Hosp20000.

17. Classify agencies as "Better than Expected" if fewer than 5% of the Agency_sim_hosp values are less than or equal to Agency_Obs_Hosp. Classify agencies as "Worse than Expected" if fewer than 5% of the Agency_sim_Hosp values are greater than or equal to Agency_Obs_Hosp. Classify all other agencies as "Same as Expected" (See Appendix for additional technical details about assigning categories). No diagram provided

0171 Acute care hospitalization (risk adjusted)

1. Construct Home Health Stays from HH Claims (see 2a1.7 for details)

2. Identify numerator window (60 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death.

3. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window

4. Link stays to enrollment data by beneficiary.

5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date.

6. Calculate demographic risk factors for each stay (age, gender, etc.) using enrollment data.

7. Link to Part A and Part B claims for 6 months prior to Stay_Start_Date for each beneficiary

8. Calculate prior care setting indicators, HCCs, and HCC interactions.

9. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals (excluding planned hospitalizations - see 2a1.3 for details) for numerator window (60 days following Stay_Start_Date)

10. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 9.

11. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 6 and 8, calculate the predicted probability of being included in the measure numerator for each stay (Pred_Hosp). Additionally calculate the average of Pred_Hosp across all stays that are included in the measure denominator (not excluded in steps 3 or 5) and call this value National_pred_Hosp.

12. Calculate observed and risk adjusted rates for each home health agency (Initial_Provider):

a. Calculate the observed rate of Acute Care Hospitalization as the fraction all (non-excluded) HH Stays with that agency as Initial_Provider that are also included in the measure numerator (Hosp_Admit = 1). Call the value Agency_obs_Hosp.

b. Calculate the agency predicated rate of Acute Care Hospitalization by taking the average of Pred_ Hosp across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_pred_Hosp.

c. Calculate the risk adjusted rate of Acute Care Hospitalization using the following formula: Agency_riskadj_Hosp = National_pred_Hosp + (Agency_obs_Hosp – Agency_pred_Hosp). If an agency's calculated risk adjusted rate is negative, that agency will have a publicly reported rate of 0%

Submission items

2380 Rehospitalization During the First 30 Days of Home Health

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

0171 : Acute care hospitalization (risk adjusted)

5a.1 Are specs completely harmonized? No

5a.2 If not completely harmonized, identify difference, rationale, impact: The home health rehospitalization measures (i.e., Rehospitalization During the First 30 Days of Home Health, and ED Use without Hospital Readmission During the First 30 Days of Home Health) are harmonized with other post-acute rehospitalization measures and with CMS' Hospital-Wide All-Cause Unplanned Readmission measure (HWR) in the types of initial hospitalizations included and in the definition of unplanned hospitalizations. They differ from other post-acute hospital readmission measures, however, in the definition of eligible post-acute stays, in the risk adjustment approach, and by measuring ED use as an outcome. The differences arise due to the unique nature of home health care as a post-acute setting. The specifications for the home health rehospitalization measures were developed by restricting the NQF-endorsed claims-based Acute Care Hospitalization (ACH) and ED Use without Hospitalization (ED Use) measures (NQF numbers 171 and 173, respectively) to home health stays that begin within five days of an acute care hospital discharge. HH stays – sequences of home health payment episodes – are defined in the same way as in the ACH and ED Use measures. The initial hospital discharge must meet the criteria for the hospital HWR measure. Home health stays are included in the measure numerator if an unplanned hospital readmission to the inpatient setting or an ED visit occurs during the first 30 days of home care. Certain home health stays, such as those in which multiple home health agencies care for the same patient, are excluded. Finally, the measures are risk adjusted using patient-level predicted probabilities calculated from a multinomial logistic regression. Risk factors that are accounted for include demographics and health status as measured by both CMS' Hierarchical Condition Categories (HCCs) found on claims in the previous six months, the Activities of Daily Living (ADL) fields on the Outcome and Assessment Information Set (OASIS) assessment of the initial home health stay after the index hospitalization, and the Diagnosis-Related Group (DRG) on the initial inpatient claim. The home health rehospitalization measures differ from other post-acute measures in three key ways. First, while other measures exclude patients with a gap between hospital discharge and post-acute admission, the home health measures allow a gap of up to five days. Unlike other post-acute settings, HH is provided in the patient's home, and thus the patient returns to their home after hospital discharge. This results in some gap between hospital discharge and the initial visit from a home health agency. The Medicare Conditions of Participation for home health agencies require home health care to begin within 48 hours of hospital discharge or on the physician-ordered start of care date (which is usually within 1-3 days of hospital discharge). Thus, the measures as specified apply to 91

percent of patients who begin home health within 30 days of hospital discharge. Second, the other measures use different risk factors and a different functional form for risk adjustment. For consistency with the ACH and ED Use measures, which apply to all home health stays, the developer recommends using a similar set of risk factors and the same multinomial logistic form for the home health rehospitalization measures. Third, the risk-adjusted rates for the home health rehospitalization measures would not be publicly reported. Due to a large number of relatively small home health agencies treating previously hospitalized patients, the measure developer determined that reporting home health agencies' risk-adjusted rates could lead to misleading conclusions, since small home health agencies' risk-adjusted rates tend to be unstable. Pursuing a categorical reporting method is consistent with condition-specific hospital readmission measures. While the rehospitalization and emergency department use without hospital readmission measures differ from other post-acute measures in some regards, these differences arise from the unique nature of home care as well as from a desire for harmonization across home health quality measures.The home health rehospitalization measures (i.e., Rehospitalization During the First 30 Days of Home Health, and ED Use without Hospital Readmission During the First 30 Days of Home Health) are harmonized with other post-acute rehospitalization measures and with CMS' Hospital-Wide All-Cause Unplanned Readmission measure (HWR) in the types of initial hospitalizations included and in the definition of unplanned hospitalizations. They differ from other post-acute hospital readmission measures, however, in the definition of eligible post-acute stays, in the risk adjustment approach, and by measuring ED use as an outcome. The differences arise due to the unique nature of home health care as a post-acute setting. The specifications for the home health rehospitalization measures were developed by restricting the NQF-endorsed claims-based Acute Care Hospitalization (ACH) and ED Use without Hospitalization (ED Use) measures (NQF numbers 171 and 173, respectively) to home health stays that begin within five days of an acute care hospital discharge. HH stays – sequences of home health payment episodes – are defined in the same way as in the ACH and ED Use measures. The initial hospital discharge must meet the criteria for the hospital HWR measure. Home health stays are included in the measure numerator if an unplanned hospital readmission to the inpatient setting or an ED visit occurs during the first 30 days of home care. Certain home health stays, such as those in which multiple home health agencies care for the same patient, are excluded. Finally, the measures are risk adjusted using patient-level predicted probabilities calculated from a multinomial logistic regression. Risk factors that are accounted for include demographics and health status as measured by both CMS' Hierarchical Condition Categories (HCCs) found on claims in the previous six months, the Activities of Daily Living (ADL) fields on the Outcome and Assessment Information Set (OASIS) assessment of the initial home health stay after the index hospitalization, and the Diagnosis-Related Group (DRG) on the initial inpatient claim. The home health rehospitalization measures differ from other post-acute measures in three key ways. First, while other measures exclude patients with a gap between hospital discharge and post-acute admission, the home health measures allow a gap of up to five days. Unlike other post-acute settings, HH is provided in the patient's home, and thus the patient returns to their home after hospital discharge. This results in some gap between hospital discharge and the initial visit from a home health agency. The Medicare Conditions of Participation for home health agencies require home health care to begin within 48 hours of hospital discharge or on the physician-ordered start of care date (which is usually within 1-3 days of hospital discharge). Thus, the measures as specified apply to 91 percent of patients who begin home health within 30 days of hospital discharge. Second, the other measures use different risk factors and a

different functional form for risk adjustment. For consistency with the ACH and ED Use measures, which apply to all home health stays, the developer recommends using a similar set of risk factors and the same multinomial logistic form for the home health rehospitalization measures. Third, the risk-adjusted rates for the home health rehospitalization measures would not be publicly reported. Due to a large number of relatively small home health agencies treating previously hospitalized patients, the measure developer determined that reporting home health agencies' risk-adjusted rates could lead to misleading conclusions, since small home health agencies' risk-adjusted rates tend to be unstable. Pursuing a categorical reporting method is consistent with condition-specific hospital readmission measures. While the rehospitalization and emergency department use without hospital readmission measures differ from other post-acute measures in some regards, these differences arise from the unique nature of home care as well as from a desire for harmonization across home health quality measures.

5b.1 If competing, why superior or rationale for additive value: Not applicable; there are no other measures that report rehospitalization rates for home health patients.

0171 Acute care hospitalization (risk adjusted)

5.1 Identified measures: 0173 : Emergency Department Use without Hospitalization

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact:

5b.1 If competing, why superior or rationale for additive value: There are no other measures that report acute care hospitalization rates for home health patients.

ED Use Following the Start of Home Health

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

0173 Emergency Department Use without Hospitalization

Steward

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Centers for Medicare and Medicaid Services

0173 Emergency Department Use without Hospitalization

Centers for Medicare & Medicaid

Description

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Percentage of home health stays in which patients who had an acute inpatient hospitalization in the 5 days before the start of their home health stay used an emergency department but were not admitted to an acute care hospital during the 30 days following the start of the home health stay.

0173 Emergency Department Use without Hospitalization

Percentage of home health stays in which patients used the emergency department but were not admitted to the hospital during the 60 days following the start of the home health stay.

Type

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Outcome

0173 Emergency Department Use without Hospitalization

Outcome

Data Source

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Administrative claims Medicare claims data

Identification of ED visits: http://www.resdac.org/Tools/TBs/TN-003_EmergencyRoominClaims_508.pdf

Identification of Short Term Hospitals: https://www.cms.gov/transmittals/downloads/R29SOMA.pdf

General Medicare Data Documentation: http://www.resdac.org/ddvh/index.asp

No data collection instrument provided Attachment RiskModelVariables-635272073824686229.xlsx

0173 Emergency Department Use without Hospitalization

Administrative claims Denominator: Medicare Home Health Claims

Numerator: Medicare Inpatient and Outpatient Claims

Exclusions: Medicare Home Health Claims, Medicare Enrollment Data

Risk Factors: Medicare Enrollment Data, Medicare Part A & B Claims

URLS:

Identification of ED visits: http://www.resdac.org/Tools/TBs/TN-003_EmergencyRoominClaims_508.pdf

Identification of Short Term Hospitals: https://www.cms.gov/transmittals/downloads/R29SOMA.pdf

General Medicare Data Documentation: http://www.resdac.org/ddvh/index.asp

URL No data dictionary

Level

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Facility

0173 Emergency Department Use without Hospitalization

Facility

Setting

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Home Health

0173 Emergency Department Use without Hospitalization

Home Health

Time Window

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Public reporting will be based on the most recent 3 years of data available. For agencies' confidential reports, agencies may select the observation periods (in calendar months) they are interested in and up to 3.5 years of data are currently available.

0173 Emergency Department Use without Hospitalization

60 days following the start of the home health stay.

Numerator Statement

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Number of home health stays for patients who have a Medicare claim for outpatient emergency department use and no claims for acute care hospitalization in the 30 days following the start of the home health stay.

0173 Emergency Department Use without Hospitalization

Number of home health stays for patients who have a Medicare claim for outpatient emergency department use and no claims for acute care hospitalization in the 60 days following the start of the home health stay.

Numerator Details

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

The 30 day time window is calculated by adding 30 days to the "from" date in the first home health claim in the series of home health claims that comprise the home health stay. If the patient has any Medicare outpatient claims with any emergency department revenue center codes (0450-0459, 0981) during the 30 day window AND if the patient has no Medicare inpatient claims for admission to an acute care hospital (identified by the CMS Certification Number on the IP claim ending in 0001-0879, 0800-0899, or 1300-1399) during the 30 day window, then the stay is included in the measure numerator.

Numerator Exclusions: None.

0173 Emergency Department Use without Hospitalization

The 60 day time window is calculated by adding 60 days to the "from" date in the first home health claim in the series of home health claims that comprise the home health stay. If the patient has any Medicare outpatient claims with any ER revenue center codes (0450-0459, 0981) during the 60 day window AND if the patient has no Medicare inpatient claims for an unplanned admission to an acute care hospital (identified by the CMS Certification Number on the IP claim ending in 0001-0879, 0800-0899, or 1300-1399) during the 60 day window, then the stay is included in the measure numerator.

Denominator Statement

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Number of home health stays that begin during the relevant observation period for patients who had an acute inpatient hospitalization in the five days prior to the start of the home health stay. A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days.

0173 Emergency Department Use without Hospitalization

Number of home health stays that begin during the 12-month observation period.

A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days.

Denominator Details

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

The algorithm for computing patient-level outcomes is based on a 12-month observation period and produces both monthly and yearly numerator and denominator counts; to include all valid home health stays over a three-year period for public reporting purposes, CMS will merge the data for the most recent 12-month observation period with the data from the preceding two 12-month observation periods.

A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health (HH) claim, so home health stays are constructed from claims data using the following procedure:

1. First, retrieve home health claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary.

2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date.

3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim.

4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n) minus Stay_End_Date(n-1) is greater than 60 days for all adjacent stays.

5. Fifth, drop stays that begin before the 12-month observation window.

6. Finally, only stays that begin within 5 days of discharge from a short-term inpatient hospital are included in the denominator as follows:

i. Link to Part A claims for 6 months prior to Stay_Start_Date for each beneficiary.

ii. Define Hosp_Discharge_DT = Thru_Dt of the inpatient claim with the latest through date (thru_Dt) prior to Stay_Start_Date,.

iii. Limit to home health stays where the Stay_Start_Date minus the Hosp_Discharge_DT is equal to or less than 5. Exclude stays where the IP claim is from a provider type that is not a short stay hospital . Short term hospitals are defined using the following CCN ranges in the third through sixth positions: 001-0879, 0880-0899, and 1300-1399.

Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the

observation period are in fact separated from previous home health claims by at least 60 days.

0173 Emergency Department Use without Hospitalization

A home health stay is a sequence of home health payment episodes separated from other home health payment episodes by at least 60 days. Each home health payment episode is associated with a Medicare home health (HH) claim, so home health stays are constructed from claims data using the following procedure.

1. First, retrieve HH claims with a "from" date (FROM_DT) during the 12-month observation period or the 120 days prior to the beginning of the observation period and sequence these claims by "from" date for each beneficiary.
2. Second, drop claims with the same "from" date and "through" date (THROUGH_DT) and claims listing no visits and no payment. Additionally, if multiple claims have the same "from" date, keep only the claim with the most recent process date.
3. Third, set Stay_Start_Date(1) equal to the "from" date on the beneficiary's first claim. Step through the claims sequentially to determine which claims begin new home health stays. If the claim "from" date is more than 60 days after the "through" date on the previous claim, then the claim begins a new stay. If the claim "from" date is within 60 days of the "through" date on the previous claim, then the claim continues the stay associated with the previous claim.
4. Fourth, for each stay, set Stay_Start_Date(n) equal to the "from" date of the first claim in the sequence of claims defining that stay. Set Stay_End_Date(n) equal to the "through" date on the last claim in that stay. Confirm that Stay_Start_Date(n+1) – Stay_End_Date(n) > 60 days for all adjacent stays.
5. Finally, drop stays that begin before the 12-month observation window.

Note the examining claims from the 120 days before the beginning of the 12-month observation period is necessary to ensure that stays beginning during the observation period are in fact separated from previous home health claims by at least 60 days.

Exclusions

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

The measure denominator excludes several types of home health stays:

First, the measure denominator for the Rehospitalization During the First 30 Days of Home Health measure excludes the following home health stays that are also excluded from the all-patient claims-based NQF 0171 Acute Care Hospitalization measure: (i) Stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window; (ii) Stays that begin with a Low-Utilization Payment Adjustment (LUPA). Stays with four or fewer visits to the beneficiary qualify for LUPAs; (iii) Stays in which the patient is transferred to another home health agency within a home health payment episode (60 days); and (iv) Stays in which the patient is not continuously enrolled in Medicare fee-for-service during the previous six months.

Second, to be consistent with the Hospital-Wide All-Cause Unplanned Readmission measure (as of January 2013), the measure denominator excludes stays in which the hospitalization occurring within 5 days of the start of home health care is not a qualifying inpatient stay. Hospitalizations that do not qualify as index hospitalizations include admissions for the medical treatment of cancer, primary

psychiatric disease, or rehabilitation care, and admissions ending in patient discharge against medical advice.

Third, the measure denominator excludes stays in which the patient receives treatment in another setting in the 5 days between hospital discharge and the start of home health.

Finally, stays with missing payment-episode authorization strings (needed for risk-adjustment) are excluded.

0173 Emergency Department Use without Hospitalization

The following are excluded: home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window (60 days following the start of the home health stay) or until death; home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim; home health stays in which the patient receives service from multiple agencies during the first 60 days; and home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior the start of the home health stay.

Exclusion Details

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

The following types of home health stays are excluded from the measure denominator:

1. Stays excluded from the denominator of the all-patient claims-based NQF 0171 Acute Care Hospitalization measure:

i. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare during the measure numerator window (30 days following the start of the home health stay) or until death. Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB). These stays lack full information about the patient's utilization of health care services and so it cannot determined if care was sought in an emergency department during the numerator window.

ii. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim. Exclude the stay if LUPAIND = L for the first claim in the home health stay. Home health stays designated as LUPAs are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes.

iii. Home health stays in which the patient receives service from multiple agencies during the first 30 days. Define Initial_Provider = PROVIDER on the first claim in the home health stay. If Initial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay. These home health stays are excluded because it is unclear that the initial home health agency had an opportunity to impact the patient's health outcomes.

iv. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the six months prior to the start of the home health stay. Enrollment status is identified using the Medicare Enrollment Database (EDB). These stay are excluded because we lack information about the patient's health status prior to the beginning of home health that is needed for risk adjustment.

2. In addition, the following four types of prior admissions are excluded from being the index hospitalization:

i. Admissions for the treatment of cancer. Exclude admissions with discharge diagnosis for treatment of cancer. AHRQ Diagnosis CCS are used to define cancer discharge condition categories. AHRQ Diagnosis CCS considered cancer include:

AHRQ Diagnosis CCS	Description
11	Cancer of head and neck
12	Cancer of esophagus
13	Cancer of stomach
14	Cancer of colon
15	Cancer of rectum and anus
16	Cancer of liver and intrahepatic bile duct
17	Cancer of pancreas
18	Cancer of other GI organs; peritoneum
19	Cancer of bronchus; lung
20	Cancer; other respiratory and intrathoracic
21	Cancer of bone and connective tissue
22	Melanomas of skin
23	Other non-epithelial cancer of skin
24	Cancer of breast
25	Cancer of uterus
26	Cancer of cervix
27	Cancer of ovary
28	Cancer of other female genital organs
29	Cancer of prostate
30	Cancer of testis
31	Cancer of other male genital organs
32	Cancer of bladder
33	Cancer of kidney and renal pelvis
34	Cancer of other urinary organs
35	Cancer of brain and nervous system
36	Cancer of thyroid
37	Hodgkin's disease
38	Non-Hodgkin's lymphoma
39	Leukemias
40	Multiple myeloma
41	Cancer; other and unspecified primary
42	Secondary Malignancies
43	Malignant neoplasm without specification of site
44	Neoplasms of unspecified nature or uncertain behavior
45	Maintenance chemotherapy; radiotherapy

ii. Admissions for the treatment of primary psychiatric diseases. Exclude admissions with discharge diagnosis for treatment of psychiatric disease. AHRQ

Diagnosis CCS are used to define psychiatric disease discharge condition categories. AHRQ Diagnosis CCS considered psychiatric disease include:

AHRQ Diagnosis CCS	Description
650	Adjustment disorders
651	Anxiety disorders
652	Attention-deficit, conduct, and disruptive behavior disorders
654	Developmental disorders
655	Disorders usually diagnosed in infancy, childhood, or adolescence
656	Impulse control disorders, NEC
657	Mood disorders
658	Personality disorders
659	Schizophrenia and other psychotic disorders
662	Suicide and intentional self-inflicted injury
670	Miscellaneous disorders

iii. Admissions for rehabilitation care and the fitting of prostheses and adjustment devices. Exclude admissions with admitting diagnosis of "rehabilitation care; fitting of prostheses and adjustment devices." The AHRQ Diagnosis CCS 254 is used to define rehabilitation care.

iv. Admission ending in patient discharge against medical advice. Exclude admissions with "Stus_cd"=07.

Admissions for cancer have very different mortality and readmission rates than the remainder of the population. Admissions for psychiatric diseases are treated in separate psychiatric facilities not comparable to treatment received in acute care hospitals, and admissions for rehabilitation care typically do not occur in an acute care setting. Finally, admissions that end in patient discharge against medical advice are excluded because the hospital did not have a full opportunity to treat the patient.

3. Home health stays for patients who receive intervening care in the window between the index hospital discharge and the start of home health care. Intervening care is identified as any inpatient hospital use (which includes care received at inpatient rehabilitation facilities and long-term care hospitals), emergency department use without hospitalization, and skilled nursing facility treatment. These home health stays are excluded because patients' health outcomes may be affected by the care they receive between hospital discharge and the start of home care.

4. Home health stays with missing payment-episode authorization strings. These stays do not include all the information needed for risk adjustment.

0173 Emergency Department Use without Hospitalization

1. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 60 days following the start of the home health stay or until death.

- Both enrollment status and beneficiary death date are identified using the Medicare Enrollment Database (EDB).

2. Home health stays that begin with a Low Utilization Payment Adjustment (LUPA) claim.

- Exclude the stay if LUPAIND = L for the first claim in the home health stay.

3. Home health stays in which the patient receives service from multiple agencies during the first 60 days.

- Define Initial_Provider = PROVIDER on the first claim in the home health stay.
- If Intial_Provider does not equal PROVIDER for a subsequent claim in the home health stay AND if the "from" date of the subsequent claim is within 60 days of Stay_Start_Date, then exclude the stay.

4. Home health stays for patients who are not continuously enrolled in fee-for-service Medicare for the 6 months prior to the start of the home health stay.

- Enrollment status is identified using the Medicare Enrollment Database (EDB).

Risk Adjustment

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Statistical risk model

The measure developer used a multinomial logistic model to account for beneficiary factors that may affect rates of hospitalization but are outside of the home health agency's control. Because these measures evaluate two different but related outcomes, one multinomial logistic framework models the three disjoint outcomes: no acute care use (no event), emergency department use without hospital readmission, and rehospitalization. A multinomial logistic model allows for the same risk factors to affect the possible outcomes in different ways while also constraining predicted probabilities of all three events to sum to one hundred percent. The risk adjustment model uses six months of claims prior to the start of home health care to obtain information about the beneficiary. The measure developer identified a set of 404 covariates that consisted of statistically significant predictors of acute care rehospitalization or emergency use without hospital readmission. CMS published the risk adjustment model specifications on the Home Health Quality Initiative page in December 2013. The five beneficiary-level risk factors included in the multinomial logistic regression model are as follows:

1. Prior Care Setting

Because beneficiaries who enter home health care from different prior care settings may have different health statuses, this model takes into account beneficiaries' immediate prior care setting. The categorical variables included in this risk factor are defined by examining Medicare claims for the 6 months prior to the start of the home health stay. One categorical variable captures prior care use in the 30 days prior to the start of home health (and prior to the index hospitalization). A second variable includes information about care received more than 30 days prior to home health but within 6 months of the start of the home health stay and identifies patients with hospitalizations, SNF care, or emergency department use during this time frame. Finally, the risk adjustment model accounts for the length of index hospital stay (i.e., one to two weeks, and greater than two weeks).

2. Age and Sex Interactions

The risk adjustment model includes age and sex interactions from the Enrollment Database (EDB) as covariates to account for the differing effects of age on the outcomes for each sex. Age is subdivided into 12 bins for each sex: aged 0 to 34, 35 to 44, 45 to 54, five-year age bins from 55 to 95, and a 95 and older category. Age is determined based on the patient's age at the start of the home health stay. The model includes a binary indicator for each age-bin, sex combination. The omitted category is 65-69 year old males.

3. Health Status

To account for beneficiary health status, the risk adjustment model uses three measures: (i) CMS' Hierarchical Condition Categories (HCCs), (ii) Diagnosis-Related Groupings (DRGs), (iii) and Activities of Daily Living (ADLs). First, the risk adjustment uses CMS' HCCs. HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims.* While the CMS-HHC model uses a full year of claims data to calculate HCCs,** the rehospitalization and ED use without hospital readmission measures use only six months of data to limit the number of home health stays excluded due to missing claims history. Binary indicators for all HCCs and CCs from the 2008 CMS HCC model that are not hierarchically ranked and that were statistically significant predictors of rehospitalization or ED use without hospital readmission are included in the model.

Next, the risk adjustment model includes the DRG of the qualifying inpatient stay. DRGs are used for Medicare payment to classify inpatient stays that are clinically related and are expected to have similar levels of resource use. Most DRGs are classified based largely on the primary diagnosis on the inpatient claim.***

Finally, risk adjustment for these measures also takes into account patient functional status by including the four separate ADL scores that appear on the home health claim. These four scores range from 0 to 16 and are calculated as part of the home health payment process by combining information from several OASIS items:

(i) Dressing upper or lower body (OASIS fields M1810 or M1820)

(ii) Bathing (M1830)

(iii) Toileting (M1840)

(iv) Transferring (M1850)

(v) Ambulation (M1860)

While each of the four ADL scores is calculated from these OASIS items, the weight assigned to each item differs across scores. Thus, all four scores convey distinct information about patient functional status and are used for risk adjustment.**** Directly including OASIS items as risk factors is not currently feasible, due to challenges associated with linking OASIS assessments to home health claims.

4. Medicare Enrollment Status

The model employs reason for Medicare eligibility, including ESRD status and disability status as covariates because beneficiaries with ESRD or who are disabled constitute a fundamentally different health profile than other Medicare beneficiaries. Additionally, the model includes interactions between original disabled status and sex.

5. Additional Interaction Terms

Interaction terms account for the additional effect two risk factors may have when present simultaneously, which may be more or less than the additive effect of each factor separately. For example, a beneficiary with chronic heart failure and chronic obstructive pulmonary disease may be at greater risk for hospitalization than would be estimated by adding the risk of hospitalization for each condition separately. All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predictors of rehospitalization or emergency department use without readmission were included.

* A description of the development of the CMS-HCC model can be found here: https://www.cms.gov/HealthCareFinancingReview/Downloads/04Summerpg119.pdf

** Details of the CMS-HCC model and the code lists for defining the HCCs can be found here:
https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp

*** Details of the DRG system can be found here:

http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/AcutePaymtSysfctsht.pdf

****This methodology differs from the ADL score included in the Home Health Resource Grouper (HHRG), which is a categorization of one of the four ADL scores. Further information can be found at: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HomeHealthPPS/CaseMixGrouperSoftware.html

Available in attached Excel or csv file at S.2b

0173 Emergency Department Use without Hospitalization

Statistical risk model

Multinomial logit with outcomes of “No acute event”, “Emergency Department use but no Hospitalization”, and “Acute Care Hospitalization”.

Risk factors include:

Prior Care Setting – The main categories are community (i.e., no prior care setting), outpatient emergency room, inpatient-acute (IP-acute), inpatient rehabilitation facility (IRF), psychiatric facility, long-term care facility (LTC), and skilled nursing facility (SNF). The hierarchy of setting is SNF, most recent inpatient stay, and outpatient ER. Acumen used the five cohorts from the Yale Hospital-Wide All-Cause Risk Standardization Readmission Measure to segregate the IP-acute category. The five cohorts are:

1. Surgery/Gynecology: admissions likely cared for by surgical or gynecological teams, based on AHRQ procedure categories;
2. Cardiorespiratory: admissions treated by the same care teams with very high readmission rates, such as for pneumonia, chronic obstructive pulmonary disease, and heart failure;
3. Cardiovascular: admissions treated by separate cardiac or cardiovascular team in large hospitals, such as for acute myocardial infarctions;
4. Neurology: admissions for neurological conditions, such as stroke, that may be treated by a separate neurology team in large hospitals; and
5. Medicine: admissions for all other non-surgical patients.

These cohorts were designed to account for differences in readmission risk for surgical and non-surgical patients.

Finally, the IP-acute categories and the SNF category were further refined by length of stay. Each of the five IP-acute categories are separated into stays of length 0 to 3 days, 4 to 8 days, and 9 or more days, while the SNF categories are split into stays of length 0 to 13, 14 to 41, and 42 and more days. A patient cared for in both a skilled nursing facility and an inpatient hospital during the 30 days prior to starting home health care is included in the skilled nursing categories and not the inpatient categories. The length of stay is determined from the last inpatient or skilled nursing stay prior to beginning home health care.

Age and Gender Interactions –

Age is subdivided into 12 bins for each gender: aged 0-34, 35-44, 45-54, five-year age bins from 55 to 95, and a 95+ category. Using a categorical age variable allows the model to account for the differing effects of age and gender. Age is determined based on the patient’s age at Stay_Start_Date.

CMS Hierarchical condition categories (HCCs) –

HCCs were developed for the risk adjustment model used in determining capitation payments to Medicare Advantage plans and are calculated using Part A and B Medicare claims. While the CMS-HHC model uses a full year of claims data to calculate HCCs, for these measures, we use only 6 months of data to limit the number of home health stays excluded due to missing HCC data. All 2008 HCCs and CCs that are not hierarchically ranked that were statistically significant predictors of ACH and ED use are included in the model.

Details of the CMS-HCC model and the code lists for defining the HCCs can be found here:
https://www.cms.gov/MedicareAdvtgSpecRateStats/06_Risk_adjustment.asp

A description of the development of the CMS-HCC model can be found here:
https://www.cms.gov/HealthCareFinancingReview/Downloads/04Summerpg119.pdf

ESRD and Disability Status –

Original End Stage Renal Disease (ESRD) and current ESRD status are included as risk factors. Original disabled status and male, and original disabled status and female, are also included. Medicare beneficiaries with ESRD or disabled status represent a fundamentally different health profile.

Interaction Terms –

All interaction terms included in the 2008 and 2012 HCC risk adjustment models that were statistically significant predicators of ED Use and ACH were included. Interaction terms account for the additional effect two risk factors may have when present simultaneously, which is more than the additive effect of each factor separately.

Stratification

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

The measure is not stratified.

0173 Emergency Department Use without Hospitalization

Measure is not stratified.

Type Score

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

Other (specify): Categorical for public reporting (i.e., categories are “Better than Expected”, “Same as Expected”, and “Worse than Expected’); rate for confidential reporting (better quality [all else equal] = lower rates) better quality = lower score

0173 Emergency Department Use without Hospitalization

Rate/proportion better quality = lower score

Algorithm

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

1. Construct home health stays from HH claims.
2. Link stays to enrollment data by beneficiary.

3. Identify numerator window (30 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death.

4. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window.

5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date.

6. Link to Part A and Part B claims for 6 months prior to Stay_Start_Date for each beneficiary.

7. Calculate demographic risk factors for each stay (age, sex, etc.) using enrollment data.

8. Limit to home health stays where the Stay_Start_Date minus the Thru_Dt of an Inpatient (IP) claims is equal to or less than 5. Exclude stays where the IP claim is not for a short-term hospital or has an AHRQ CCS or stus_cd that excludes it from being an index admission. Retain the DRG of the index admission as a risk factor.

9. Calculate prior care setting indicators, ADLs, HCCs, and HCC interactions.

10. Exclude stays that have prior care setting indicators whose claim Thru_Dt is in between the Thru_Dt of the index hospitalization and the Stay_Start_Dt.

11. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals for numerator window (30 days following Stay_Start_Date).

12. Link to Outpatient claims with revenue center codes indicating emergency department use for the numerator window (30 days following Stay_Start_Date).

13. Calculate measure flags for each stay:

a. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 11.

b. Set Outpatient ED Use indicator (OP_ED = 1) if any outpatient claims are linked to the stay in step 12.

c. Set ED Use without Hospitalization indicator (ED_noHosp = 1) if OP_ED =1 and NOT Hosp_Admit = 1.

14. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 7 through 9, calculate the predicted probability of being included in the measure numerator, for each stay (Pred_ED). Additionally calculate the average of Pred_ED across all stays that are included in the measure denominator (not excluded in steps 3 to 5) and call these values National_Pred_ED.

15. Calculate observed and expected rates for the measure at each home health agency (Initial_Provider):

a. Observed Rates:

i. Calculate the observed rate of acute care hospitalization as the fraction all (non-excluded) HH stays with that agency as Initial_Provider that are also included in the measure numerator (ED_noHosp = 1). Call the value Agency_Obs_ED_NoHosp

b. Expected Rates:

i. Calculate the agency expected rate of ED use without hospital readmission by taking the average of Pred_ED across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_Pred_ED.

16. For each agency, simulate the distribution of expected rates:

a. For each stay, randomly choose an outcome (i.e. no outcome, re-hospitalization, or ED use without hospital readmission) using the stay-level predicted probability

of hospitalization (Pred_ED). Repeat simulation 20,000 times. Call these values X1 – X20,000.

b. For each simulation, calculate the agency predicted rate of ED use without rehospitalization by taking the average of all stays with that agency. Call these values Agency_sim_ED1 – Agency_sim_ED20000.

17. Classify agencies as "Better than Expected" if fewer than 5% of the Agency_sim_ED values are less than or equal to Agency_Obs_ED_NoHosp. Classify agencies as "Worse than Expected" if fewer than 5% of the Agency_sim_ED values are greater than or equal to Agency_Obs_ED_NoHosp. Classify all other agencies as "Same as Expected." (See Technical Brief about assigning categories for additional technical details -- included as appendix.) No diagram provided

0173 Emergency Department Use without Hospitalization

1. Construct Home Health Stays from HH Claims (see 2a1.7 for details)
2. Identify numerator window (60 days following Stay_Start_Date) for each stay and exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the numerator window or until patient death.
3. Exclude stays that begin with a LUPA or that involve a provider change during the numerator window
4. Link stays to enrollment data by beneficiary.
5. Exclude stays for patients who are not continuously enrolled in fee-for-service Medicare during the 6 months prior to Stay_Start_Date.
6. Calculate demographic risk factors for each stay (age, gender, etc.) using enrollment data.
7. Link to Part A and Part B claims for 6 months prior to Stay_Start_Date for each beneficiary
8. Calculate prior care setting indicators, HCCs, and HCC interactions.
9. Link to Inpatient (IP) claims from Short Stay and Critical Access hospitals(excluding planned hospitalizations) for the numerator window (60 days following Stay_Start_Date) – see specifications for the home health Acute Care Hospitalization (NQF 0171) measure for details.
10. Set Hospital Admission indicator (Hosp_Admit = 1) if any IP claims are linked to the stay in step 9. These stays are not included in the ED Use without Hospitalization measure numerator.
11. Link to Outpatient claims with revenue center codes indicating Emergency Department use for the numerator window (60 days following Stay_Start_Date).
12. Set Outpatient ED Use indicator (OP_ED = 1) if any outpatient claims are linked to the stay in step 11.
13. Flag stays for inclusion in the measure numerator (ED_noHosp = 1) if OP_ED =1 and NOT Hosp_Admit = 1.
14. Using coefficients from the multinomial logit risk model and risk factors calculated in steps 6 and 8, calculate the predicted probability of being included in the measure numerator for each stay (Pred_ED_noHosp). Additionally calculate the average of Pred_ED_noHosp across all stays that are included in the measure denominator (not excluded in steps 3 or 5) and call this value National_pred_ED.
15. Calculate observed and risk adjusted rates for each home health agency (Initial_Provider):

a. Calculate the observed rate of Emergency Department Use without Hospitalization as the fraction all (non-excluded) HH Stays with that agency as Initial_Provider that are also included in the measure numerator (ED_noHosp = 1). Call the value Agency_obs_ED.

b. Calculate the agency predicated rate of Emergency Department use without Hospitalization by taking the average of Pred_ED_noHosp across all (non-excluded) stays with that agency as Initial_Provider. Call this value Agency_pred_ED.

c. Calculate the risk adjusted rate of Emergency Department use without Hospitalization using the following formula: Agency_riskadj_ED = National_pred_ED + (Agency_obs_ED – Agency_pred_ED). If an agency's calculated risk adjusted rate is negative, that agency will have a publicly reported rate of 0% URL

Submission items

2505 Emergency Department Use without Hospital Readmission During the First 30 Days of Home Health

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

0173 : Emergency Department Use without Hospitalization

5a.1 Are specs completely harmonized? No

5a.2 If not completely harmonized, identify difference, rationale, impact: The home health rehospitalization measures (i.e., Rehospitalization During the First 30 Days of Home Health, and ED Use without Hospital Readmission During the First 30 Days of Home Health) are harmonized with other post-acute rehospitalization measures and with CMS' Hospital-Wide All-Cause Unplanned Readmission measure (HWR) in the types of initial hospitalizations included and in the definition of unplanned hospitalizations. They differ from other post-acute hospital readmission measures, however, in the definition of eligible post-acute stays, in the risk adjustment approach, and by measuring ED use as an outcome. The differences arise due to the unique nature of home health care as a post-acute setting. The specifications for the home health rehospitalization measures were developed by restricting the NQF-endorsed claims-based Acute Care Hospitalization (ACH) and ED Use without Hospitalization (ED Use) measures (NQF numbers 171 and 173, respectively) to home health stays that begin within five days of an acute care hospital discharge. HH stays – sequences of home health payment episodes – are defined in the same way as in the ACH and ED Use measures. The initial hospital discharge must meet the criteria for the hospital HWR measure. Home health stays are included in the measure numerator if an unplanned hospital readmission to the inpatient setting or an ED visit occurs during the first 30 days of home care. Certain home health stays, such as those in which multiple home health agencies care for the same patient, are excluded. Finally, the measures are risk adjusted using patient-level predicted probabilities calculated from a multinomial logistic regression. Risk factors that are accounted for include demographics and health status as measured by both CMS' Hierarchical Condition Categories (HCCs) found on claims in the previous six months, the Activities of Daily Living (ADL) fields on the Outcome and Assessment Information Set (OASIS) assessment of the initial home health stay after the index hospitalization, and the Diagnosis-Related Group (DRG) on the initial inpatient claim. The home health rehospitalization measures differ from other post-acute measures in three key ways. First, while other measures exclude patients with a gap between hospital discharge and post-acute admission, the home health

measures allow a gap of up to five days. Unlike other post-acute settings, HH is provided in the patient's home, and thus the patient returns to their home after hospital discharge. This results in some gap between hospital discharge and the initial visit from a home health agency. The Medicare Conditions of Participation for home health agencies require home health care to begin within 48 hours of hospital discharge or on the physician-ordered start of care date (which is usually within 1-3 days of hospital discharge). Thus, the measures as specified apply to 91 percent of patients who begin home health within 30 days of hospital discharge. Second, the other measures use different risk factors and a different functional form for risk adjustment. For consistency with the ACH and ED Use measures, which apply to all home health stays, the developer recommends using a similar set of risk factors and the same multinomial logistic form for the home health rehospitalization measures. Third, the risk-adjusted rates for the home health rehospitalization measures would not be publicly reported. Due to a large number of relatively small home health agencies treating previously hospitalized patients, the measure developer determined that reporting home health agencies' risk-adjusted rates could lead to misleading conclusions, since small home health agencies' risk-adjusted rates tend to be unstable. Pursuing a categorical reporting method is consistent with condition-specific hospital readmission measures. While the rehospitalization and emergency department use without hospital readmission measures differ from other post-acute measures in some regards, these differences arise from the unique nature of home care as well as from a desire for harmonization across home health quality measures.

5b.1 If competing, why superior or rationale for additive value: Not applicable; there are no other measures that report emergency department use without hospital readmission for home health patients.

0173 Emergency Department Use without Hospitalization

5.1 Identified measures: 0171 : Acute care hospitalization (risk adjusted)

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact:

5b.1 If competing, why superior or rationale for additive value: The Home Health Acute Care Hospitalization Measure (NQF# 0171)is specified so that it reports all acute care hospitalizations during the 60-day period following the beginning of the home health stay. This measure is specified so that it only reports emergent care use for patients that are not admitted to an acute care setting. No other measures report Emergent Care use among home health patients.

SNF Readmission

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)
2375 PointRight OnPoint-30 SNF Rehospitalizations

Steward

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Centers for Medicare and Medicaid Services

2375 PointRight OnPoint-30 SNF Rehospitalizations

American Health Care Association

Description

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

This measure estimates the risk-standardized rate of all-cause, unplanned, hospital readmissions for patients who have been admitted to a Skilled Nursing Facility (SNF) (Medicare fee-for-service [FFS] beneficiaries) within 30 days of discharge from their prior proximal hospitalization. The prior proximal hospitalization is defined as an admission to an IPPS, CAH, or a psychiatric hospital. The measure is based on data for 12 months of SNF admissions.

A risk-adjusted readmission rate for each facility is calculated as follows:

Step 1: Calculate the standardized risk ratio of the predicted number of readmissions at the facility divided by the expected number of readmissions for the same patients if treated at the average facility. The magnitude of the risk-standardized ratio is the indicator of a facility's effects on readmission rates.

Step 2: The standardized risk ratio is then multiplied by the mean rate of readmission in the population (i.e., all Medicare FFS patients included in the measure) to generate the facility-level standardized readmission rate.

For this measure, readmissions that are usually for planned procedures are excluded. Please refer to the Appendix, Tables 1 - 5 for a list of planned procedures.

The measure specifications are designed to harmonize with CMS' hospital-wide readmission (HWR) measure to the greatest extent possible. The HWR (NQF #1789) estimates the hospital-level, risk-standardize rate of unplanned, all-cause readmissions within 30 days of a hospital discharge and uses the same 30-day risk window as the SNFRM.

2375 PointRight OnPoint-30 SNF Rehospitalizations

PointRight OnPoint-30 is an all-cause, risk adjusted rehospitalization measure. It provides the rate at which all patients (regardless of payer status or diagnosis) who enter skilled nursing facilities (SNFs) from acute hospitals and are subsequently rehospitalized during their SNF stay, within 30 days from their admission to the SNF.

Type

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Outcome

2375 PointRight OnPoint-30 SNF Rehospitalizations

Outcome

Data Source

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Administrative claims, Other This measure is for Medicare beneficiaries and uses the data in the Medicare eligibility files and inpatient claims data. The eligibility files provide information on date of birth, sex, reasons for Medicare eligibility, periods of Part A coverage and periods in the fee-for-service program. The data elements from the Medicare FFS claims are those basic to the operation of the Medicare payment systems and include date of admission, date of discharge, diagnoses, procedures, indicators for use of dialysis services and indicators of whether the Part A benefit is exhausted. The inpatient claims data files contain beneficiary-level SNF and other hospital records. No data beyond the bills submitted in the normal course of business are required from the providers for the calculation of this measure.

The measure uses one year of data to calculate the measure rate for the Skilled Nursing Facility Readmission Measure, which we believe is sufficient to calculate this measure in a statistically reliable manner. This is because the reliability of a SNF's measure rate is related to its sample size.

Following are the specific files and links to the documentation:

- Medicare Inpatient claims - standard analytical files (2007-2012), index SNF claims (2009-2011)

Documentation for the Medicare claims data is provided online by the CMS contractor, Research Data Assistance Center (ResDAC) at the University of Minnesota. The following web page includes data dictionaries for these files: Standard analytical files (Inpatient RIF): http://www.resdac.org/cms-data/files/ip-rif/data-documentation

- Medicare Enrollment Database

Information about the Enrollment Database may be found here:

http://aspe.hhs.gov/datacncl/datadir/cms.htm

- Medicare Denominator files (2009-2011)

Documentation available at:

http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/IdentifiableDataFiles/DenominatorFile.html

- AHRQ CCS groupings of ICD-9 codes

Documentation available at:

http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

- CMS-HCC mappings of ICD-9 codes

Mappings are included in the software at the following website: http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html

No data collection instrument provided Attachment SNFRM.S.2b.Tables6to9_includingmodelresults02.05.2014-635272170634634515.xlsx

2375 PointRight OnPoint-30 SNF Rehospitalizations

Electronic Clinical Data Resident Assessment Instrument Minimum Data Set (MDS) version 3.0

Available in attached appendix at A.1 No data dictionary

Level

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Facility

2375 PointRight OnPoint-30 SNF Rehospitalizations

Facility

Setting

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

2375 PointRight OnPoint-30 SNF Rehospitalizations

Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility

Time Window

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

The time period for the SNF all-cause readmission measure (SNFRM) is one year. The time window for the numerator of the SNF all-cause readmission measure (SNFRM) is 30 days after discharge from the prior proximal hospitalization. To be included in the denominator a patient must have a SNF admission within 1 day after being discharged from the prior proximal hospital stay and that SNF admission must occur within the target 12 month period. The measure denominator is based on SNF admissions so individuals may be included in the measure multiple times within a given year. Patients admitted to SNFs in December are included in the measure and observed for 30 days after their prior proximal hospitalization; all or part of the 30 day risk period may fall into January of the following year.

2375 PointRight OnPoint-30 SNF Rehospitalizations

The numerator time window is 30 days after the date of admission to a SNF from an acute care hospital. If a rehospitalization does not occur during this time window, the admission is not counted as part of the numerator. Rehospitalizations that occur after an individual is discharged to the community but are within the 30 day time window are not counted. The measure only takes into consideration rehospitalizations that occur during a SNF stay.

The data sample time window is the target rolling 12 month time period, updated quarterly. All admissions to SNFs from acute hospitals that have an entry date that falls in the target period and have an MDS 3.0 admission assessment are included in the denominator.

Numerator Statement

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

This measure is designed to capture the outcome of unplanned all-cause hospital readmissions (IPPS or CAH) of SNF patients occurring within 30 days of discharge from the patient's prior proximal acute hospitalization.

The numerator is more specifically defined as the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge from the prior proximal acute hospitalization. The numerator is mathematically related to the number of SNF stays where there was hospitalization readmission, but the measure does not have a simple form for the numerator and

denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. The numerator, as defined, includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix.

Hospital readmissions that occur after discharge from the SNF stay but within 30 days of the proximal hospitalization are also included in the numerator. Readmissions identified using the Planned Readmission algorithm (see Section S.6) are excluded from the numerator. This measure does not include observation stays as a readmission (see Section S.6).

2375 PointRight OnPoint-30 SNF Rehospitalizations

The numerator is the number of patients sent back to any acute care hospital (excluding emergency room only visits) during their SNF stay within 30 days from a SNF admission, as indicated on the MDS 3.0 discharge assessment during the 12 month measurement period.

Numerator Details

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

The numerator is the risk-adjusted estimate of the number of all-cause, unplanned readmissions to an acute care or critical access hospital that occurred within 30 days of discharge from an eligible prior proximal hospitalization. In addition, the patient will be required to have been admitted to a SNF within one day after discharge from an eligible hospitalization. This estimate includes risk adjustment for patient characteristics and a statistical estimate of the facility effect beyond patient mix. The numerator uses a model estimated on full national data; it is applied to the facility's patients and includes the facility effect term for that facility.

The prediction equation is based on a logistic statistical model with a 2-level hierarchical structure. The SNF stays in the model have an indicator as to which SNF they were admitted and the effect of the facility is measured as a positive or negative shift in the intercept term of the equation. The facility effects are modeled as belonging to a normal (Gaussian) distribution centered at 0, and are estimated along with the effects of patient characteristics in the model.

The data are from Medicare inpatient claims and eligibility and enrollment data. See section 2a1.26 for more details on the data sources.

Observation stays: This measure does not include observation stays as a readmission. Rationale: In a recently published analysis, researchers at Brown University evaluated how frequently SNF patients had observation stays with and without formal admission to the hospital (Feng et al., 2012). In 2009, of the approximately 2.5 million SNF stays among FFS Medicare beneficiaries aged 65+ nationwide, there were roughly 18,000 observation stays (0.7%) and few readmissions within 30 days after the observation stay (Feng 2012). The results indicated that the vast majority of hospital observation stays in 2009 (over one million in total) originated from the community (83% from community without home health and 8% from community with home health care). Only a small number and proportion of observation stays were originated from a SNF (i.e. preceded immediately by a SNF stay): N=17,731 or 1.7 percent of all observation stays, nationally. Consistent with the pattern of their origins, the vast majority of hospital observation stays were discharged to the community (80% without home health and 11 percent with home health care). Again, only a small number and proportion of observation stays were discharged to a SNF (regardless of their origin): N=25,884 or 2.6 percent of all observations stays (Feng 2012). These

results suggest that excluding hospital observation stays from the SNF hospital readmission measure will not make a meaningful difference in the SNF facility-level rate of hospital readmissions or in the relative ranking of SNF providers according to this measure.

Second, although the overall prevalence of hospital observation stays has been on the rise, raising legitimate concerns about their causes and consequences, the number of observation stays that originated from and subsequently discharged to SNF settings is very small relative to other settings (mostly communities). A recent report by the Office of Inspector General (OIG) shows that this trend has indeed continued in more recent years. According to this report, Medicare beneficiaries had 1.5 million observations stays in 2012, and an additional 1.4 million long outpatient stays that lasted at least one night but were not coded as observation stays (Office of Inspector General 2013). However, this study did not break down the data by setting, that is, the setting from which observation patients came. Based on our preliminary analysis results above, we want to emphasize again that despite an increasing number of Medicare beneficiaries held for observation in hospitals at the national level, the vast majority of them are from community settings and relatively few come from or are discharged to SNFs. We agree that the rising trend of hospital observation stays is an important issue that warrants continuous monitoring and policy attention.

Third, and perhaps most importantly, mingling outpatient observation stays with inpatient admissions raises serious questions as to whether other types of hospital outpatient stays, such as emergency department (ED) visits or prolonged outpatient stays other than observation care in the hospital, should also be counted as admissions. RTI argues that this could introduce bias into the measure from a technical and conceptual perspective, and send a mixed signal to SNF providers and hospitals with the potential to compromise patient care. For SNFs, their 30-day readmission rate would increase, more or less, depending on how many of their patients were sent back to the hospital via the ED and held for observation there within the 30-day tracking window. Counting observation stays in the SNFRM measure could potentially increase perverse incentives already identified as a general concern with public reporting of any quality measure. Namely, SNFs may have an incentive to NOT send patients to the ED even though the patients truly require hospital care, or may deliberately postpone doing so, until after the 30-day measurement period ends to lower their publically reported readmission rate. Including observation stays in the measure could potentially contribute to these incentives.

The increased use of hospital observation stays as outpatient care is an important issue which may have significant adverse impact on Medicare beneficiaries in terms of reducing eligibility for SNF services due to lack of a qualifying prior acute admission and therefore increase out-of-pocket spending. However, when looking at SNF readmissions, the absolute number and percentage share of observation stays involving Medicare beneficiaries in the SNF setting are small relative to other settings. Most importantly, there remain significant conceptual and practical challenges in the consideration of counting observation stays in the SNFRM measure. A decision to do so would require a better understanding of possible negative consequences, including postponing transfer of SNF patients to the ED.

Planned readmissions: The SNFRM used a modified version of CMS' Hospital-Wide Readmission (HWR) planned readmissions algorithm to identify readmissions that are classified as planned, and should therefore not be included in the numerator. Planned readmissions should not be counted against facilities, because, as stated in the documentation for the HWR measure, "…planned readmissions are not a signal of quality of care." The algorithm is based on two main principles:

1. Planned readmissions are those in which one of a pre-specified list of procedures took place or those for transplants (bone marrow, kidney, other); Cesarean section; forceps, vacuum, and breech delivery. Also planned diagnosis categories include maintenance chemotherapy, forceps delivery, normal pregnancy and/or delivery, and rehabilitation. Readmissions to psychiatric hospitals or units are also classified as planned readmissions.

2. Admissions for acute illness or for complications of care are not 'planned.' Even a typically planned procedure performed during an admission for an acute illness would not likely have been planned. We used the principal diagnosis and all of the procedure codes from the readmission to identify planned readmissions.

The algorithm developed to identify planned readmissions uses procedure codes and discharge diagnosis categories for each readmission coded using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classification System (CCS) software. According to CMS' HWR planned readmission algorithm, a planned readmission is defined as any non-acute readmission in which one of a set of typically planned sets of procedures or diagnoses occurred (see Appendix, Tables 1 through 3). A subset of these procedures and diagnoses shown in Appendix Tables 1 and 2 are always considered planned. However, if any of the procedures denoted as "planned" in Table 3 occur in conjunction with a diagnosis that disqualifies a readmission from being considered planned (see Appendix, Table 4), the readmission will be considered unplanned.

Additional procedures were added to the final HWR planned readmission algorithm special to post-acute care settings based on feedback from a convened by CMS contractor RTI International. These additional procedures were codified by a certified nosologist prior to use (see Appendix, Table 5). These procedures and diagnoses are currently defined by ICD-9 procedure and diagnosis codes grouped by the Clinical Classification Software (CCS), developed by the AHRQ, where large clusters were appropriate and by individual codes, if necessary. The provisional mapping of these ICD-9s to ICD-10s is provided in Section Sb.2, Table 9. We are awaiting the ICD-10 versions of the HWR planned readmissions codes. Readmissions to psychiatric hospitals or units are also classified as planned readmissions.

Unless a readmission was considered planned, it was considered unplanned and counted as a readmission in the measure.

In 2011, there were 2,215,398 SNF stays, of which 467,107included an unplanned hospital readmission (21.1%). An additional 1.3 percent of SNF stays (or 27,956 stays) ended with readmissions that were classified as planned and not included in the numerator of the measure. These planned readmissions represented only 5.6 percent of all readmissions.

References

Feng Z, Wright B, Mor V. Sharp Rise in Medicare Enrollees Being Held in Hospitals for Observation Raises Concerns about Causes and Consequences. Health Affairs (2012). 31:6, 1251-1259.

Feng Z. Hospital Observation Stays: Analysis Update. Memo prepared for the Centers for Medicare and Medicaid Services, 22 September 2012.

Wright S. (2013). Memorandum Report: Hospitals' Use of Observation Stays and Short Inpatient Stays for Medicare Beneficiaries, OEI-02-12-00040. Department of Health and Human Services Office of the Inspector General, Washington, DC.

2375 PointRight OnPoint-30 SNF Rehospitalizations

The numerator is the number of patients that are discharged from a SNF to an acute hospital within 30 days of entry from an acute hospital as indicated by MDS item A2100=03 (indicating 'discharge to acute hospitals') and MDS item A0310F=10/11 (indicating discharge status). The length of stay before rehospitalization is calculated by subtracting MDS item A1600 (entry date) from MDS item A2000 (discharge date).

Denominator Statement

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

The denominator is computed with the same model used for the numerator. It is the model developed using all non-excluded SNF stays in the national data. For a particular facility the model is applied to the patient population, but the facility effect term is 0. In effect, it is the number of SNF admissions within 1 day of a prior proximal hospital discharge during a target year, taking denominator exclusions into account. Prior proximal hospitalizations are defined as admissions to an IPPS acute-care hospital, CAH, or psychiatric hospital.

2375 PointRight OnPoint-30 SNF Rehospitalizations

The denominator is the number of all admissions,regardless of payer status and diagnosis, with an MDS 3.0 admission assessment to a SNF from an acute hospital during the target rolling 12 month period.

Denominator Details

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

The denominator includes all patients who have been admitted to a SNF within 1 day of discharge from a prior proximal hospitalization, taking denominator exclusions into account. Patients with SNF stays in swing bed facilities are included in the measure. The prior proximal hospitalization must include admissions to an IPPS acute-care hospital, CAH, or a psychiatric hospital.

2375 PointRight OnPoint-30 SNF Rehospitalizations

The total number of admissions to the facility, from an acute hospital, during the 12 month measure period are determined using the MDS item A1800=03, indicating 'entered from hospital'.The entry date is determined using 2 MDS variables: A1600 (entry date) and A0310F=01 (indicating 'entry tracking records').

Exclusions

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

The following are excluded from the denominator:

1. SNF stays where the patient had one or more intervening post-acute care (PAC) admissions (inpatient rehabilitation facility [IRF] or long-term care hospital [LTCH]) which occurred either between the prior proximal hospital discharge and SNF admission or after the SNF discharge, within the 30-day risk window. Also excluded are SNF admissions where the patient had multiple SNF admissions after the prior proximal hospitalization, within the 30-day risk window.

   Rationale: For patients who have IRF or LTCH admissions prior to their first SNF admission, these patients are starting their SNF admission later in the 30-day risk window and receiving other additional types of services as compared to patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF

admissions. Additionally, when patients have multiple PAC admissions, evaluating quality of care coordination is confounded and even controversial in terms of attributing responsibility for a readmission among multiple PAC providers. Similarly, assigning responsibility for a readmission for patients who have multiple SNF admissions subsequent to their prior proximal hospitalization is also controversial.

2. SNF stays with a gap of greater than 1 day between discharge from the prior proximal hospitalization and the SNF admission.

Rationale: These patients are starting their SNF admissions later in the 30-day risk window than patients admitted directly to the SNF from the prior proximal hospitalization. They are clinically different and their risk for readmission is different than the rest of SNF admissions.

3. SNF stays where the patient did not have at least 12 months of FFS Medicare enrollment prior to the proximal hospital discharge (measured as enrollment during the month of proximal hospital discharge and the for 11 months prior to that discharge).

Rationale: FFS Medicare claims are used to identify comorbidities during the 12-month period prior to the proximal hospital discharge for risk adjustment. Multiple studies have shown that using lookback scans of a year or more of claims data provide superior predictive power for outcomes including rehospitalization as compared to using data from a single hospitalization (e.g., Klabunde et al., 2000; Preen et al, 2006; Zhang et al., 1999).

4. SNF stays in which the patient did not have FFS Medicare enrollment for the entire risk period (measured as enrollment during the month of proximal hospital discharge and the month following the month of discharge).

Rationale: Readmissions occurring within the 30-day risk window when the patient does not have FFS Medicare coverage cannot be detected using claims.

5. SNF stays in which the principal diagnosis for the prior proximal hospitalization was for the medical treatment of cancer. Patients with cancer whose principal diagnosis from the prior proximal hospitalization was for other diagnoses or for surgical treatment of their cancer remain in the measure.

Rationale: These admissions have a very different mortality and readmission risk than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions.

6. SNF stays where the patient was discharged from the SNF against medical advice.

Rationale: The SNF was not able to complete care as needed.

7. SNF stays in which the principal primary diagnosis for the prior proximal hospitalization was for “rehabilitation care; fitting of prostheses and for the adjustment of devices”.

Rationale: Hospital admissions for these conditions are not for acute care.

2375 PointRight OnPoint-30 SNF Rehospitalizations

The denominator has 2 different exclusions: individual level and provider level. At the individual level the exclusion is related to incomplete assessments. At the provider level the exclusion is related to the amount of data necessary to calculate the measure that is missing. Payer status and clinical conditions are not used for any exclusions.

Exclusion Details

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Denominator exclusions are based on data from the MedPAR and the Medicare Denominator files, specifically:

1. SNF stays where the patient had one or more intervening PAC admissions (IRF or LTCH), which occurred either between the prior proximal hospital discharge and SNF admission or after the SNF discharge, within the 30-day risk window or where the patient had multiple SNF admissions after the prior proximal hospitalization were identified using the MedPAR files.
2. SNF stays with a gap of greater than 1 day between discharge from the prior proximal hospitalization and the SNF admission were identified using the MedPAR files.
3. Lack of 12 months of FFS Medicare enrollment prior to the proximal hospital discharge was identified by patient enrollment status in Part A FFS using the Medicare Denominator file. Enrollment must be indicated during the month of prior proximal hospital discharge and the 11 months preceding the prior proximal hospital discharge.
4. Lack of FFS Medicare enrollment during the 30 days after discharge from the prior proximal hospitalization was identified by patient enrollment status in Part A FFS using the Medicare Denominator file. Enrollment must be indicated for the month(s) falling within 30 days of discharge from the prior proximal hospitalization.
5. Appendix Table 10 indicates all cancer discharge condition categories excluded from the measure. Cases are identified using claims in the MedPAR files for prior proximal hospitalization.
6. Discharges from the SNF against medical advice were identified using the discharge disposition indicator on the corresponding SNF claim from the MedPAR files.
7. "Rehabilitation care: fitting of prostheses and for the adjustment of devices" are identified by principal diagnosis codes (ICD-9 codes) included in CCS 254, using claims from the MedPAR files for prior proximal hospitalization.

2375 PointRight OnPoint-30 SNF Rehospitalizations

Individual level exclusions are made for admissions that do not have either a discharge assessment or a quarterly (annual or change of status) assessments within 120 days of admissions, as they are considered incomplete.

Risk Adjustment

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Statistical risk model

Due to the natural clustering of observations within SNFs, we used hierarchical logistic regression to model the log-odds of readmission for each index SNF stay. Readmission within 30 days was modeled as a function of patient-level demographic and clinical characteristics and a random SNF-level intercept. This model specification accounts for within-SNF correlation of the observed outcomes and assumes that underlying differences in quality among the SNF facilities being evaluated lead to systematic differences in outcomes.

Specifically, we estimated a hierarchical logistic regression model, which is described in more detail including an equation in the Appendix, Section S.14.

The risk adjustment model for the SNFRM accounts for variation across SNFs in case-mix and patient characteristics predictive of readmission using a hierarchical logistic regression model. The goal of risk adjustment is to account for differences across SNFs in patient demographic and clinical characteristics that might be related to the outcome but are unrelated to quality of care. For this reason, we have to take patient frailty (case mix) into account by including primary diagnosis and comorbidities in our models. In addition, we included demographic variables (age and sex), and other health service factors such as length of stay during the patient's prior proximal hospitalization, whether the patients were in the intensive care unit (ICU), and number of previous hospitalizations in the previous 365 days (see Section S2.b, Table 8). NQF guidelines regarding disparities in care quality state that socioeconomic status, sex, race, or ethnicity should not be included as adjustment variables in models because the standards of care should not vary by these patient demographics. However, for some outcomes, an argument can be made that some potential markers of vulnerability for disparities (sex and age) are also associated with demonstrated clinical/physiologic differences at the time the patient enters the SNF that can determine risk, independent of the quality of care being provided. Analyses indicate that readmission risk does vary by sex, with higher readmission rates associated with males ages 70 and older (see Figure 2 in the "Measure Exclusions" portion of the MJF). Additionally, these findings are consistent with evidence from prior published research that readmissions among SNF patients do vary by sex (O'Malley, Caudry, Grabowski 2011), so we included sex in our models.

To capture patients' primary reason for their prior proximal hospitalization, we aggregated the principal discharge diagnosis and all the procedures from the prior proximal hospitalization using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classification System (CCS) single-level codes. The CCS collapses more than 15,000 diagnosis codes and 4,000 procedure codes from the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) into a clinically meaningful, mutually exclusive set of 280 condition categories and 231 procedure categories. AHRQ has posted a beta version of the mapping between ICD-10 procedure codes and the CCS codes on their website (http://www.hcup-us.ahrq.gov/toolssoftware/beta/icd_10_beta.jsp). We plan to use the same CCS groupings in our models after the transition to ICD-10. The grouper is expected in October 2014. We will continue to monitor and review these mappings of CCS codes to ICD-10 in order to identify any potential changes that may impact this measure.

Our model controls for 198 primary conditions using the AHRQ CCS grouper and two additional groupings—one that summed over 29 CCS categories with few patients in each that increased readmission risk and another that summed over 5 CCS categories with few patients that decreased readmission risk. See Tables 6 and 7 uploaded in excel in Section S.2b.Data Dictionary, Code Table, or Value Sets. We also included 72 comorbidities grouped using CMS' hierarchical condition categories (HCCs) in our models. The CMS contractor for the HCCs is currently finalizing the ICD-10 mapping into the HCCs. We plan to use the same set of HCCs, and will review the mapping to ensure that there are no changes that impact this measure.

Covariates used in models:

- Age
- Sex
- Length of stay during prior proximal hospitalization

- Any time spent in the intensive care unit (ICU) during the prior proximal hospitalization
- Disabled as a reason for Medicare coverage
- End-stage renal disease (ESRD)
- Number of acute care hospitalizations in the 365 days prior to the prior proximal hospitalization
- Principal diagnosis as categorized using AHRQ's single-level CCS
- System-specific surgical indicators
- Individual comorbidities as grouped by CMS' hierarchical condition categories (HCCs) or other comorbidity indices
- Presence of multiple comorbidities, modeled using two variables: (a) the count of HCCs if count is >2 and (b) the square of this count of HCCs

References

1. O'Malley AJ, Caudry DJ, and Grabowski DC: Predictors of Nursing Home Residents' Time to Hospitalization. Health Serv. Res., 46(1p1), 82-104, 2011.

Available in attached Excel or csv file at S.2b

2375 PointRight OnPoint-30 SNF Rehospitalizations

Statistical risk model

Risk adjustment for PointRight OnPoint-30 was completed by means of logistic regression using independent variables drawn from the first MDS 3.0 assessment performed after admission to the SNF. In some cases, this was a combined admission/discharge assessment.

The following lists the variables used in the logistic regression risk adjustment model. The MDS 3.0 codes used to determine whether or not each variable contributes to the calculation are provided below in S.18.

Demographic

-Age less than 65

-Male

-Medicare

Functional Status

-Total Bowel Incontinence

-Eating Dependence

-Two-person Assist

-Cognition Not Intact or Complete

Prognosis

-End-stage Prognosis

-Re-entry

-Respiratory Failure

-Hospice Care

Clinical Condition

-Daily Pain

-Stage Two Pressure Ulcer

-Stage Three Pressure Ulcer

-Stage Four Pressure Ulcer

-Unstageable Pressure Ulcer

-Venous Arterial Ulcer
-Diabetic Foot Ulcer
Diagnosis
-Anemia
-Asthma
-Diabetes Mellitus
-Heart Failure
-Septicemia
-Viral Hepatitis
-Internal Bleeding
Services and Treatment
-Dialysis
-Insulin
-Ostomy Care
-Cancer Chemotherapy
-Radiation Therapy
-Continue IV Medication
-Continue Oxygen
-Continue Tracheostomy
Provided in response box S.15a

Stratification

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Not applicable

2375 PointRight OnPoint-30 SNF Rehospitalizations

N/A

Type Score

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Rate/proportion better quality = lower score

2375 PointRight OnPoint-30 SNF Rehospitalizations

Rate/proportion better quality = lower score

Algorithm

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Using a diagram (Figure 1 attached in the Appendix), we depict the SNF readmission measure 30-day risk window starting from the prior proximal hospitalization discharge date. If the readmission occurred during the SNF stay within the 30-day risk window or after the SNF stay but still within the 30-day risk window, it is counted in the numerator.

Step one: Identify patients meeting the denominator criteria.

Step two: Identify patients meeting the numerator criteria taking into account the planned readmission algorithm.

Step three: Identify presence or absence of risk adjustment variables for each patient.

Step four: Calculate the predicted and expected number of readmissions for each SNF using the hierarchical logistic regression model, and the SNF standardized risk ratio. These calculations are specified in more detail with equations in the Appendix, Section S.18.

Step five: Calculate the risk-standardized SNF 30-day readmission rate

To aid interpretation, the SNF standardized risk ratio, or SRR, which is calculated in Step four, is then multiplied by the overall national raw readmission rate for all SNF stays to produce the SNF risk-standardized readmission rate (RSRR). See the Appendix, Section S.18 for the corresponding equation for this step.

NOTE: Because the statistic described in Step five is a complex function of parameter estimates, re-sampling and simulation techniques (e.g., bootstrapping) are necessary to derive a confidence interval estimate for the final risk-standardized rate, to characterize the uncertainty of the estimate. The results of bootstrapping

are reported in the Identification of Statistically Significant & Meaningful Differences in Performance (Section 2b5.) of the Measure

Testing form. Available in attached appendix at A.1

2375 PointRight OnPoint-30 SNF Rehospitalizations

The formula for a facility's adjusted rehospitalization rate is as follows:

(Observed Rate of Rehospitalization within 30 days) / (Expected Rate of Rehospitalization within 30 days) * (National rate).Note- the national rate and the expected rate need to be calculated for the same measure period.

1. Observed Rate Calculation

•The formula for a facility's observed Rehospitalization rate is as follows:

(Observed count of discharges to hospitals within 30 days of admission) / (Observed count of admissions from hospitals)

•The denominator is the number of any admissions from a hospital during a rolling 12 month time period. (This is a count of events, not of residents.)

•The numerator is the number of all admissions to the SNF during a rolling 12 month time period who then went back to the hospital within 30 days of their admission date. (This is a count of events, not of residents.)

2. Expected Rate Calculation

2.1 First the expected rate for every single resident admission is calculated using the formula below.

The calculation must be performed at least 45 days after the end of the target rolling 12-month period. This is to allow 30 days to elapse to capture rehospitalizations that occur from admission to the SNF on the last day of the target period and another 14 days to allow facilities to submit data to CMS. We recommend waiting an additional 2 to 3 weeks to ensure maximum data availability for MDS assessments not submitted during the 14 day period.

VARIABLE CALCULATION

Intercept: -2.8252

Age Under 65: if age<65 then Variable=1; else Variable=0; (If Date of Birth is missing, then Variable=0)

End Stage Prognosis:if J1400=1 then Variable=1; else Variable=0;

Hospice Care: if O0100K2=1 then Variable=1; else Variable=0;

Male: if A0800=1 then Variable=1; else Variable=0;

Medicare: if A0310B = 01 or 06, then Variable=1;else Variable=0;

SNF Admission is Return to Same SNF Following Hospitalization: if A0310B=06 AND A1600 minus A2000 (on a previous MDS where A2100=3) < 30 then Variable=1; else if A1700=2 then Variable=1; else Variable=0;

Diagnoses

Anemia: if I0200=1 then Variable=1; else Variable=0;

Asthma: if I6200=1 then Variable=1; else Variable=0;

Diabetes Mellitus: if I2900=1 then Variable=1; else Variable=0;

Diabetic Foot Ulcer: if M1040B=1 then Variable=1; else Variable=0;

Pressure Ulcer Stage 2: if M0300B2>0 then Variable=1; else Variable=0;

Pressure Ulcer Stage 3: if M0300C2>0 then Variable=1; else Variable=0;

Pressure Ulcer Stage 4: if M0300D2>0 then Variable=1; else Variable=0;

Pressure Ulcer Unstageable: if M0300E2>0 or M0300F2>0 or M0300G2>0 then Variable=1; else Variable=0;

Respiratory Failure: if I6300=1 then Variable=1; else Variable=0;

Septicemia: if I2100=1 then Variable=1; else Variable=0;

Vascular Ulcer: if M1030>0 then Variable=1; else Variable=0;

Viral Hepatitis: if I2400=1 then Variable=1; else Variable=0;

Heart Failure: if I0600=1 then Variable=1; else Variable=0;

Internal Bleeding:if J1550D=1 then Variable=1; else Variable=0;

Functional Status

Daily Pain: if J0400=1 or J0850=3 then Variable=1; else Variable=0;

Eating Dependence- Total: if G0110H1 = 4,7, or 8, then Variable=1; else Variable=0;

Two Person assist Needed with One or More ADLs: if G0110A2=3 or G0110B2=3 or G0110C2=3 or G0110D2=3 or G0110E2=3 or G0110F2=3 or G0110G2=3 or G0110H2=3 or G0110I2=3 or G0110J2=3 then Variable=1; else Variable=0;

Cognition not Completely Intact: if C0100=1 AND if C0500=15 then Variable=0;

if C0100=1 AND if C0500 <>15 then Variable=1;if C0100=0 AND if C0700=0 AND C0800=0 AND C1000=0 AND C0900A=1 AND C0900B=1 AND C0900C=1 AND C0900D=1 then Variable=0; else Variable=1;

Total Bowel Incontinence: if H0400>0 then Variable=1; else Variable=0;

Treatment

Cancer Chemotherapy: if O0100A1=1 then Variable=1; else Variable=0;

Dialysis: if O0100J1=1 then Variable=1; else Variable=0;

Insulin: if N0350A>0 or N0350B>0 then Variable=1; else Variable=0;

IV Medications Continuing from Hospital: if O0100H1=1 and O0100H2=1 then Variable=1; else Variable=0;

Ostomy Care: if H0100C=1 then Variable=1; else Variable=0;

Oxygen Continuing from Hospital: if O0100C1=1 and O0100C2=1 then Variable=1; else Variable=0;

Radiation Therapy: if O0100B1=1 then Variable=1; else Variable=0;

Tracheostomy Continuing from Hospital: if O0100E1=1 and O0100E2=1 then Variable=1; else Variable=0;

FORMULA

LogOdds	=	-	2.8252	
	-	0.7846	*	End Stage Prognosis
	-	1.5085	*	Hospice_care
	+	0.0923	*	Anemia
	+	0.1033	*	Asthma
	+	0.0611	*	Daily Pain
	+	0.0462	*	Diabetes_Mellitus
	+	0.1459	*	Diabetic Foot Ulcer
	+	0.6038	*	Dialysis
	+	0.1777	*	Insulin
	+	0.3263	*	Ostomy Care
	+	0.167	*	Pressure Ulcer Stage 2
	+	0.1334	*	Pressure Ulcer Stage 3
	+	0.1569	*	Pressure Ulcer Stage 4
	+	0.181	*	Pressure Ulcer Unstageable
	+	0.0891	*	Septicemia
	+	0.1848	*	Total Bowel Incontinence
	+	0.1862	*	Venous Arterial Ulcer
	+	0.4017	*	Viral Hepatitis
	+	0.177	*	Age Under 65
	+	0.6001	*	Cancer Chemotherapy
	+	0.188	*	IV Medication Continued from Hospital
	+	0.3395	*	Oxygen Continuing from Hospital
	+	0.1336	*	Tracheostomy Continuing from Hospital
	+	0.4718	*	Eating Dependency
	+	0.2004	*	Heart Failure
	+	0.892	*	Internal Bleeding
	+	0.1622	*	Male
	+	0.14	*	Return to Same SNF Following Hospitalizations
	+	0.5543	*	Medicare
	+	0.2389	*	Two Person Assist Required for One or More ADLs
	+	0.6111	*	Radiation Therapy
	+	0.1159	*	Respiratory Failure
	+	0.3327	*	Cognition Not Completely Intact

30day_Rehosp_Risk_Probability= 1/(1+exp(-LogOdds))

2.2 Once the above calculation is performed for all admissions within the sample time-frame, the results should be averaged to obtain the facility's expected rate for the measure.Hence, the expected rate for a facility is the average of the expected rehospitalization probabilities for each admission during the target time period.

Procedure for Calculating the Measure

1. Establish the 12 month rolling time period and collect all assessments with entry dates that fall within the time period. The count of these entries is the observed denominator.
2. For each entry date, determine whether the resident was discharged back to an acute hospital within 30 days of the entry date. The count of these discharges is the observed numerator.
3. Divide the numerator by the denominator to obtain the observed rate for the SNF.
4. Calculate the expected rate for the facility using the expected probability model for admissions during the sample period, then averaging them for the 12-month period.
5. Divide the observed rate by the expected rate and multiply by the national rate to obtain the adjusted all cause rate for the facility. No diagram provided

Submission items

2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

5.1 Identified measures: 1551 : Hospital-level 30-day, all-cause risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

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

0506 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization

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

0695 : Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI)

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

0001 : Asthma assessment

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

1768 : Plan All-Cause Readmissions (PCR)

5a.1 Are specs completely harmonized? No

5a.2 If not completely harmonized, identify difference, rationale, impact: The SNFRM is harmonized to the greatest extent possible with CMS' 30-day All-Cause Hospital-Wide Unplanned Readmission Measure (HWR), developed by Yale University. The SNFRM is harmonized to some extent with the several other measures (listed below) developed using the same modeling techniques and applied to disease specific patient populations. However, the HWR measure is the primary focus for harmonization, as it has the same general population approach (as opposed to a disease specific approach) as the SNFRM. As the HWR population is different from the SNFRM population, this necessitates different approaches to stratification, risk adjustment, and the exclusion of planned readmissions; however, the overall analytic approach is harmonized as much as possible. The risk adjustment method is similar in that hierarchical logistic regression is applied to account for SNFs as clusters, but the exact covariates used to adjust the model are different to account for the differences in patient population. The HWR measure has created different stratifications (i.e., cohorts), based on the principal diagnosis, which correspond to hospital care teams. The SNFRM tested the use of SNF

cohorts and found that they did not improve the risk adjustment model, so SNF cohorts were not applied in the final model. Patient frailty over the previous 12 months was taken into account by including a count of the number of HCCs for each patient as well as a quadratic term to account for nonlinearity of the effect of additional comorbidities (i.e., that a patient's readmission risk increases exponentially as the number of HCCs increases.) Also, the list of planned readmissions excluded from the HWR measure was expanded for the SNFRM measure, to include procedures commonly seen in the SNF population that may not be seen in the general Medicare population (See Appendix A). The other measure specifications, with regard to other exclusions, numerator/denominator specifications, time windows, and others, are harmonized. Additionally, the American Health Care Association (AHCA) is developing a Re-Hospitalization Metric, AHCA's PointRight's OnPoint30 Re-Hospitalization Metric, which was examined for potential alignment and harmonization. The SNFRM and PointRight's OnPoint30 Re-Hospitalization Metric each provide different insights into the issue of hospital readmissions from Skilled Nursing Facilities (SNFs). Although both are all-cause hospital readmission measures, these two measures provide SNFs with two different perspectives on their hospital readmission rates. The SNFRM is designed more for quality reporting purposes by focusing on the readmissions most likely to be attributable to the facility, by reporting the rate of unplanned readmissions on a more selected set of patients. The SNFRM excludes certain types of hospitalizations, including planned readmissions, observation stays, and readmissions for medical cancer treatment, whereas PointRight's measure does not contain any such exclusions. The broader population captured by the PointRight metric, provides a more comprehensive general rate useful for quality improvement efforts. SNFs may even find it useful to compare the readmission rates, to determine what factors are driving their individual results. Additionally, the two measures rely on different data sources - the SNFRM uses Medicare fee-for-service claims (FFS), whereas PointRight uses the MDS. There are distinct advantages and disadvantages to each. The SNFRM was designed based on FFS claims, in order to be harmonized with CMS' current Hospital-Wide Readmission measure as well as other readmission measures being developed for other settings (i.e., inpatient rehabilitation facilities (IRFs), long-term care hospitals (LTCHs), home health agencies (HHAs), and end-stage renal (ESRD) facilities), and to promote shared accountability for improving care transitions across all settings. One disadvantage to claims data however, is that there is a six month lag in the availability of claims, meaning that it is more difficult for SNFs to use claims to monitor the results of quality improvement efforts, whereas MDS data is available sooner. Therefore, the PointRight measure can provide facilities with information about their readmission rates on a faster and more frequent time scale. Facilities may find it useful to supplement their annual readmission rates as determine from the claims data with more real-time information from the MDS in order to evaluate rapid-cycle quality improvement activities, allowing for both measures to add value to the process.

5b.1 If competing, why superior or rationale for additive value: There are no measures with the same SNF target population and same measure focus.

2375 PointRight OnPoint-30 SNF Rehospitalizations

5.1 Identified measures:

5a.1 Are specs completely harmonized?

5a.2 If not completely harmonized, identify difference, rationale, impact: N/A

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

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