

NATIONAL QUALITY FORUM

TO: NQF Members and Public

FR: NQF Staff

RE: Voting draft report for *Patient Outcomes: All-Cause Readmissions Expedited Review 2011: A Consensus Report*

DA: February 17, 2012

BACKGROUND

To achieve quality healthcare across the full continuum, there is a need for more measures that specifically address outcomes of care provided in our nation's healthcare system. Many outcome measures are inherently relevant because they reflect the reason consumers seek healthcare (e.g., to improve function), as well as reflect the treatment objective of healthcare providers. To date, NQF has endorsed more than 100 outcome measures, most recently through the multi-phase Patient Outcomes project. However, many gaps remain, including those related to complications, all-cause readmissions, and mortality. This project seeks to identify and endorse additional cross-cutting (not condition-specific) measures for accountability and quality improvement that specifically address all-cause readmissions to hospitals.

For this project, HHS requested an expedited review of readmission measures to meet its statutory requirements under the Patient Protection and Affordable Care Act (PPACA) Section 10303. Section 10303(f) 'Development of Outcome Measures' mandates the Secretary shall develop 10 acute and chronic-disease, provider-level (specifically including hospitals and physicians) outcome measures by March 2012.

The NQF Board of Directors approved formal policy on the expedited review process in the fall of 2010. Expedited reviews assist the Department of Health and Human Services (HHS) meet deadlines set by legislative mandates. Three criteria must be met prior to consideration by the Consensus Standards Approval Committee (CSAC) for an expedited review:

1. Measures under consideration have been sufficiently tested and/or in widespread use;
2. The scope of the project/measure set is relatively narrow; and
3. There is a time-sensitive legislative/regulatory mandate for measures.

A 21-member Steering Committee representing a range of stakeholder perspectives was appointed to review a total of 3 candidate and endorsed standards. The Steering Committee recommended 2 newly submitted measures for initial endorsement. The National Quality Forum (NQF)-endorsed[®] measure that had been updated as part of the maintenance process was not recommended for continued endorsement.

Comments and Revised Voting Report

NQF received 117 comments from 43 organizations and individuals on measures both recommended and not recommended for endorsement. The distribution of comments follows:

- Consumers: 2 comments, 1 organization
- Health Professionals: 11 comments, 6 organizations
- Purchasers: 7 comments, 4 organizations
- Public Health/Community: 1 comment, 1 organization
- Health Plans: 7 comments, 3 organizations

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- Quality Measurement, Research and Improvement: 6 comments, 3 organizations
- Providers: 54 comments, 11 organizations
- Supplier and Industry: 7 comments, 2 organizations
- Non-NQF Members: 22 comments, 12 organizations

The Steering Committee reviewed and responded to all comments received. A complete table of comments submitted during the comment period, with the responses to each comment and the actions taken by the Steering Committee, is posted to the [Readmissions Expedited Review project page](#) on the NQF website under the Public and Member Comment section.

The revised draft document, *Patient Outcomes: All-Cause Readmissions Expedited Review 2011: A Consensus Report* is posted on the [Readmissions Expedited Review project page](#) on the NQF website along with the following additional information:

- [Measure submission forms](#); and
- [Meeting and call summaries](#) from the Steering Committee's discussions.

Revisions to the draft report and the accompanying measure specifications are identified as redlined changes. (Note: Typographical and grammatical changes have not been redlined to assist in reading.)

COMMENTS AND THEIR DISPOSITION

Comments about specific measure specifications and rationale were forwarded to the measure developers with an invitation to respond. Developer responses were available to the Steering Committee at the time of their review. The Steering Committee reviewed all comments and focused its discussion on measures or topic areas with the most significant and recurring issues. For detail on all comments received during the commenting period with responses, see the comments table on the [Readmissions Expedited Review project page](#).

General Comments: Major Themes/Issues

1. Justification of an expedited review
2. Socioeconomic (SES)/ Race variables in the risk-adjustment model
3. Usability concerns
4. Support for harmonization
5. Inclusion/exclusion criteria

Theme 1- Justification of an expedited review

Description: Comments submitted expressed concern over the expedited nature of this project. Specifically, commenters noted that the complexity of measures submitted and the shortened timeline limited a thorough and complete evaluation by the Steering Committee. Others questioned the legislative requirement for the measures submitted in this project.

NQF Staff Response: Decisions regarding what measures qualify for expedited review are the responsibility of the Consensus Standards Approval Committee (CSAC). The comments were referred to the CSAC for review and discussion on their February 13, 2012 conference call. CSAC members generally agreed that there was no evidence that would lead them to overturn the decision to expedite the readmission project. The Board will consider this issue on February 24, 2012.

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Theme 2- Socioeconomic (SES)/Race variables in the risk-adjustment model

Description: Commenters agreed that SES variables should not be included in process measures; however, they recommended the inclusion of SES/race variables in the CMS/Yale hospital readmission model. Commenters argued that literature supports the relationship between a patient's SES and their likelihood to be at risk for a readmission. However, some believed that measures should be stratified to avoid masking differences related to disparities in care.

Committee Response: Many members of the Committee agreed that the socio-economic status of patients can drive the likelihood of a readmission. This relationship is driven, in part by differences in the hospital quality; but also the availability of community support to patients. Thus, many Committee members agreed that readmissions are not simply a measure of hospital quality but also community health quality. The hospital is dependent on resources available in the community, such as effective transitional care and other community level factors, including distance to the hospital. However, the use of SES at the individual patient level in a risk adjustment model would hide differences in hospital performance. Further, SES is an extremely difficult construct to measure in a reliable and valid way using administrative data. Committee members strongly encouraged measure developers consider testing community-level SES variables (rather than patient-level SES variables) that can be used in risk-adjustment models that are reliable and valid.

After reviewing the comments submitted surrounding SES, the Committee decided to re-vote on whether the CMS/Yale measure (#1789) met the NQF criteria for endorsement. Following the re-vote, Measure #1789 was recommended for NQF endorsement with the following recommendation:

- In order to support fair and appropriate comparisons, hospital performance on this measure should be reported within like comparison groups (e.g., disproportionate share hospitals).

Theme 3- Usability concerns

Description: Commenters expressed concern over the usability of the measures submitted to this project. Specifically, they noted the difficulty with replicating the measure for quality improvement purposes, limited information on the admitting hospital if it is not the index hospital, and the timeliness of measure results to support rapid-cycle improvements.

Committee Response: The Committee discussed concerns related to the usability noting limitations in use for quality improvement. Specifically for the CMS/Yale measure, Committee members agreed that the measure may not be able to support quality improvement within hospitals since it would be difficult to recreate the measure results without data from the readmitting hospital if it is not the same as the index hospital. The Committee also noted the limitation in rapid-cycle improvement due to the turnaround time for measure. These issues were broadly reflected in the low usability ratings for the CMS/Yale measure. While these are not limitations in the measure design, but rather measure implementation; the Committee strongly encourages CMS and other potential users to continue enhancing data platforms, timeliness of reporting and other aspects of measure implementation.

After reviewing the comments submitted surrounding the usability concerns, the Committee decided to re-vote on whether the CMS/Yale measure (#1789) met the NQF criteria for endorsement. Following the re-vote, Measure #1789 was recommended for NQF endorsement with the following recommendation:

- In order to support performance improvement and accountability, feedback to hospitals should be timely and provide information on all readmissions.

Theme 4- Support for harmonization

Description: Commenters strongly supported the Committee's recommendations for harmonization for all-cause hospital readmissions at the facility and health plan levels. Measures at various levels should be

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aligned in terms of their definition of a readmission, inclusion/exclusion criteria, and approach to risk adjustment. When two measures with the same measure focus and population are designed differently, they often send conflicting signals on how to improve care for patients.

Committee Response: The Committee agreed that the two recommended measures are related and not competing because the levels of analysis are different (NCQA-plan level and CMS/Yale-hospital level). As such, Members of the Committee agreed that providers and health plans face significant challenges and frustration when they receive discordant signals from reports based upon differing measurement methodologies. The Committee expressed a strong desire that the NCQA and CMS/Yale measures should be harmonized for both hospital and plan level measurement within a reasonable timeframe.

Theme 5- Inclusion/exclusion criteria

Description: Commenters provided various remarks related to the inclusion/exclusion criteria of the measures. Many agreed that the measures should include all patients, not limited to those with commercial health insurance or Medicare. Others argued that the 30-day time window is not appropriate to measure hospital performance, but rather a 15-day time window is more appropriate. One commenter believed that CMS should allow hospitals to comment on which of their facilities to include and exclude since hospital-level data may include oncology services. Another commenter argued that the exclusion criteria should allow for exclusion of patients who do not have post-discharge follow-up available.

Committee Response: The Committee agreed that the measure should include all patients, not limited by insurance coverage. However, the Committee recognized the data limitations in measuring readmission for patients who are uninsured. For the CMS/Yale measure, PPS-exempt cancer hospitals and patients undergoing medical treatment of cancer are excluded. The Committee agreed that a 30-day time window, rather than a 15-day time window is appropriate for this application. Finally, the Committee also encouraged the development of a proxy for the lack of community-level supports available to hospitals. Both developers agreed that they would consider community-level risk-adjustment variables in future updates.

NQF MEMBER VOTING

Effective July 1, 2011, the voting cycle has changed from 30 days to **15 days** for NQF members to submit their votes. Information for electronic voting has been sent to NQF Member organization primary contacts. Accompanying comments must be submitted via the online voting tool.

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PATIENT OUTCOMES: ALL-CAUSE READMISSIONS EXPEDITED REVIEW, 2011

DRAFT TECHNICAL REPORT FOR VOTING

February 17, 2012

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PATIENT OUTCOMES: ALL-CAUSE READMISSIONS EXPEDITED REVIEW, 2011 Draft Technical Report

INTRODUCTION

Approximately 18 percent of hospital admissions by Medicare beneficiaries result in a readmission within 30 days.¹ These readmissions amount to \$15 billion in spending by the Centers for Medicare and Medicaid Services (CMS), of which \$12 billion is spent on preventable readmissions.²

To achieve quality healthcare across the full continuum, there is a need for measures that specifically address outcomes of care provided in our nation's healthcare system. Many outcome measures are inherently relevant because they reflect the reason consumers seek healthcare (e.g., to improve function ~~-, decrease pain~~), as well as reflect the treatment objective of healthcare providers. To date, NQF has endorsed more than 100 outcome measures, most recently through the multi-phase Patient Outcomes project. However, many gaps remain, including those related to complications, all-cause readmissions, and mortality. A hospital readmission can be considered a proxy for a health outcome, specifically the deterioration in a patient's health status.

This expedited review endorsement maintenance project evaluated measures for public reporting/accountability and quality improvement that specifically address cross-cutting (not condition-specific) all-cause readmissions to hospitals. Additionally, as part of this process, all-cause hospital readmission-related consensus standards that were endorsed by NQF before June 2009 were evaluated under the maintenance process. The endorsement maintenance process provides an opportunity to harmonize measure specifications and ensures that the endorsed measure represents the best in class.

NQF EXPEDITED CONSENSUS DEVELOPMENT PROCESS

As a part of NQF's Consensus Development Process (CDP), this project has involved the active participation of representatives from across the spectrum of healthcare stakeholders and is being guided by a multi-stakeholder Steering Committee.

The NQF Board of Directors approved formal policy on the expedited review process in the fall of 2010. Expedited reviews assist the Department of Health and Human Services (HHS) meet deadlines set by legislative mandates. Three criteria must be met prior to consideration by the Consensus Standards Approval Committee (CSAC) for an expedited review:

1. Measures under consideration have been sufficiently tested and/or in widespread use;
2. The scope of the project/measure set is relatively narrow; and
3. There is a time-sensitive legislative/regulatory mandate for measures.

For this project, HHS requested an expedited review of readmission measures to meet its statutory requirements under the Patient Protection and Affordable Care Act (PPACA) Section 10303. Section 10303(f) 'Development of Outcome Measures' mandates the Secretary shall develop 10 acute and chronic-disease, provider-level (specifically including hospitals and physicians) outcome measures by March 2012. Language from PPACA relevant to this expedited project is included below:³

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(2) **CATEGORIES OF MEASURES.** —The measures developed under this subsection shall include, to the extent determined appropriate by the Secretary—

(A) outcome measurement for acute and chronic diseases, including, to the extent feasible, the 5 most prevalent and resource-intensive acute and chronic medical conditions; and

(B) outcome measurement for primary and preventative care, including, to the extent feasible, measurements that cover provision of such care for distinct patient populations (such as healthy children, chronically ill adults, or infirm elderly individuals).

(3) **GOALS.** —In developing such measures, the Secretary shall seek to—

(A) address issues regarding risk adjustment, accountability, and sample size;

(B) include the full scope of services that comprise a cycle of care; and

(C) include multiple dimensions.

(4) **TIMEFRAME-**

(A) **ACUTE AND CHRONIC DISEASES-** Not later than 24 months after the date of enactment of this Act, the Secretary shall develop not less than 10 measures described in paragraph (2)(A).

CMS requested an expedited review to ensure its decisions regarding the selection of measures to meet the 10 measure requirement would be informed by the NQF evaluation and endorsement decision. CMS also wishes to include the Hospital Wide Readmission Measure in the Hospital Inpatient Quality Reporting (IQR) Program using the 2012 IPPS/LTCH rulemaking cycle for FY 2013, so that public reporting of the measure can occur as early as 2013. CMS specifically included this measure on the pre-rulemaking list for the Hospital IQR, which was made available to the public on December 1, 2011, in order to be able to do so.

MEASURE EVALUATION

TABLE 1: READMISSIONS EXPEDITED REVIEW SUMMARY

	MAINTENANCE	NEW	TOTAL
Measures under consideration	1	2	3
Withdrawn from consideration			N/A
Recommended	0	2	2
Not recommended	1	0	1
Reasons for Not Recommending	Scientific Acceptability - 1		

Steering Committee members were asked to evaluate each of the measures on three occasions. Prior to the in-person meeting, Committee members provided preliminary ratings on the evaluation subcriteria for each submitted measure. Secondly, on day 1 of the December 5 and 6, 2011, in-person meeting, the Readmissions Steering Committee provided preliminary ratings at the criteria level (i.e., Importance, Scientific Acceptability, Usability, Feasibility) on two new measures and one measure undergoing

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maintenance review using NQF's [measure evaluation criteria](#). The preliminary ratings on the individual subcriteria were also referenced as a part of the evaluation on the measures on the first day.

The *Overarching Issues* section outlines the concerns raised by the Committee and the preliminary votes on the four evaluation criteria for each of the three measures under consideration are provided below in Table 2. Steering Committee members requested additional information on the two remaining measures (#1768, Hospital-wide all-cause unplanned readmissions measure (HWR) [CMS/Yale] and #1789, Plan all-cause readmissions [NCQA]) from the developers, for consideration on day 2. Due to the unanimous vote on the scientific acceptability criterion for Measure #0329, Risk-adjusted 30-day all-cause readmission rate (UnitedHealth Group), the discussion on the measure was not continued and the developer was not asked to provide any additional clarifying information on day 2.

TABLE 2: PRELIMINARY VOTING RESULTS (DAY 1)

Measure Number	Importance to Measure and Report (YES-NO)	Scientific Acceptability of Measure Properties (YES-NO)	Usability (HIGH-MODERATE-LOW-INSUFFICIENT)	Feasibility (HIGH-MODERATE-LOW-INSUFFICIENT)	Meet Criteria for Endorsement (YES-NO)
1789	18-1	9-9	0-7-11-0	11-6-1-0	8-10
1768	18-0	8-11	3-6-7-1	6-9-2-0	6-11
0329	16-0	0-18			

Thirdly, the Committee provided updated votes on each criterion and an overall vote on whether the measure met criteria for endorsement on day 2 after receiving additional clarifying information from the developers (Appendix C) on Measures #1789 and #1768. These votes are provided in the Measure Summary Tables at the end of the document and in Table 3 below.

TABLE 3: UPDATED VOTING RESULTS (DAY 2)

Measure Number	Importance to Measure and Report (YES-NO)	Scientific Acceptability of Measure Properties (YES-NO)	Usability (HIGH-MODERATE-LOW-INSUFFICIENT)	Feasibility (HIGH-MODERATE-LOW-INSUFFICIENT)	Meet Criteria for Endorsement (YES-NO)
1789	18-1 (day 1)	13-6	1-8-11-0	14-5-0-0	12-8
1768	18-0 (day 1)	12-7	5-4-9-1	8-6-4-1	10-9

At the conclusion of the second day of the in-person meeting, the developers of Measures #1789 and #1768 (CMS/Yale and NCQA, respectively) were asked to respond to the harmonization issues identified within one week, which were subsequently discussed on a conference call on December 16, 2011. These additional discussions are outlined under the Related and Competing Measures section. The Committee agreed that all of the harmonization issues were sufficiently addressed and the results in Table 3 were considered final after the conference call discussions. Both Measures #1789 and #1768 met NQF criteria for endorsement.

[On January 31 the Steering Committee met via conference call to review and discuss the submitted comments received during the Public and Member Comment period. Due to the number of comments](#)

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surrounding the issues of SES and usability, the Committee agreed to re-vote on whether Measures #1789 (CMS/Yale) and #1768 (NCQA) met the NQF criteria for endorsement.

Following the re-vote, both Measures #1789 and #1768 were recommended by the Committee for NQF endorsement (see Table 4). Measure #1789 was recommended with the following recommendations:

1. In order to support fair and appropriate comparisons, hospital performance on this measure should be reported within like comparison groups (e.g., disproportionate share hospitals); and
2. In order to support performance improvement and accountability, feedback to hospitals should be timely and provide information on all readmissions.

TABLE 4: UPDATED VOTING RESULTS (FOLLOWING THE JANUARY 31 CALL)

<u>Measure Number</u>	<u>Meet Criteria for Endorsement</u> (YES-NO)
<u>1789</u>	<u>14-5</u>
<u>1768</u>	<u>13-6</u>

On January 27, UnitedHealthcare submitted additional information, such as data on calibration and c-statistics (Appendix C). On the January 31 conference call, the Committee agreed to vote on whether the additional materials submitted by UnitedHealthcare warranted further discussion on the measure. As a result of the vote (Y=7, N=12), the Committee will not rediscuss the measure. The Committee's recommendation to not recommend Measure #0329 will remain.

Overarching Issues

During the Steering Committee's discussion of the measures, several overarching issues emerged that were factored into their ratings and recommendations. These issues are discussed in detail in the following sections:

Modeling Approaches

Statistical Modeling

The measures submitted for this project used different approaches to statistical modeling. All three measures used logistic regression modeling for the purpose of controlling for differences in patient case-mix characteristics (e.g., clinical severity, comorbidity, age). The CMS/Yale measure also used a hierarchical model to estimate the hospital risk adjusted readmission rate. A hierarchical model is often used when the data have a hierarchical structure (e.g., patients clustered within hospitals). Some Steering Committee members expressed concern that with hierarchical modeling, the risk adjusted rates for low volume hospitals tend to be no different from the average rate. CMS/Yale explained that the hierarchical model incorporates information for the specific hospital as well as the average hospital. When there is little information about a hospital (i.e., few patients), more weight is placed on the average hospital performance. With small volume, the rates can vary substantially due to random

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chance, and will have large confidence intervals that often overlap the average rate. When rates have large confidence intervals they often cannot be differentiated from the average. Some Committee members expressed a strong preference for using only logistic regression modeling over hierarchical modeling. While the NQF criteria do not prescribe a specific approach to statistical modeling, the criteria do require that measures be tested to demonstrate reliability, validity, and address threats to validity by demonstrating adequacy of risk adjustment/stratification and appropriateness of exclusions. Statistical methods are determined by the type and structure of the data and there may be more than one appropriate statistical approach.

The Committee agreed that the methodological concerns for hospitals with lower volume are significant; however, because this project seeks to evaluate measures of all condition, all-cause hospital readmissions they agreed that there should theoretically be less of a concern of low volume hospitals than for other applications. In response to the Committee's concern about shrinkage estimates for small volume hospitals, the Committee was presented with the distribution statistics for measure scores of large volume hospitals and small volume hospitals (Appendix C). CMS/Yale calculated frequency distributions of the risk adjusted, hospital level, 30-day readmissions rates across their sample (N=4081). Hospitals with at least 25 index admissions were considered 'large volume hospitals' (N=3655) and below 25 index admissions were considered 'small volume hospitals' (N=426). Looking at the Risk Standardized Readmission Rate (RSRR), the distribution for large volume hospitals was as follows: median 16.50, 90th percentile 18.23, and 10th percentile 15.22. Among small volume hospitals the distribution of measure scores are as follows: median 16.43, 90th percentile 17.47, and 10th percentile 15.48. The Committee did not reach consensus about whether the distribution for small volume hospitals was narrower or similar to large volume hospitals.

Selection of Covariates

The Committee was interested in the rationale for the inclusion or exclusion of hospital volume and socioeconomic status as covariates in the readmissions model. Both CMS/Yale and NCQA chose to use covariates that help to create a level playing field across hospitals, adjusting for patient clinical condition at the time of admission. In addition, the CMS/Yale measure uses 5 clinical cohorts (medicine, surgery/gynecology, cardiorespiratory, cardiovascular and neurology) to account for the variation in service mix across hospitals; risk standardized rates are computed for each cohort and combined for the overall performance measure score. The NCQA model includes an indicator of major surgery. The Committee discussed the methodological effects and policy implication of including hospital volume and socio-economic status covariates in the risk adjustment models.

Hospital Volume

The Committee considered the developer's rationale for not including volume as a covariate in the risk adjustment model for the CMS/Yale measure readmissions. Committee members noted that literature supports a relationship between hospital volume and quality; thus, including volume as a covariate may improve the statistical performance of the risk adjustment model. However, the developer argued that there is limited evidence to support any justification that differences in readmission performance between hospitals, on the basis of volume, are acceptable.

Socioeconomic Status (SES)

NQF measure evaluation criteria indicate that in general, factors associated with disparities in care (i.e., race, ethnicity, SES) should not be included in risk adjustment models because it assumes that

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differences in outcomes based on those factors are acceptable. Some Steering Committee members expressed concern that in the case of hospital readmission, SES influences resources available after hospitalization that can affect readmission. CMS/Yale presented data that demonstrated that hospitals with a high proportion of Medicaid patients have performed well on the measure.

The Committee also discussed potential stratification (i.e., hospital performance by SES category) or using hospital comparison groups based on SES category (i.e., compare hospitals with similar percentages of low SES). Several members of the Committee felt that stratifying results by SES (or a proxy such as Medicaid status) can help to: 1) surface any disparities of care, and 2) provide information which might better inform policy decisions especially with regard to the possible unintended consequences associated with diverting resources away from vulnerable populations based on factors beyond the control of an individual institution.

Both CMS/Yale and NCQA explained that they did not risk adjust for SES because they did not want to assume there are different standards of care based on SES. The developers explained that including an SES variable has the potential to mask differences across groups in the risk adjustment of a measure. In order to address disparities, measures should allow users to highlight differences in performance based on population groups across hospitals.

The Committee considered this rationale against a concern that differences in readmissions performance, across hospitals, have many different factors. While the differences are driven in part by variation in quality within hospitals, differences in readmissions performance are also influenced by the availability of support for patients as they transition from the hospital into the community. Some Committee members explained that readmissions are not uniquely a measure of hospital quality, but rather a measure of health system and community health quality. The hospital is dependent on resources available in the community, such as effective transitional care and other community level factors, including distance to the hospital. Both CMS/Yale and NCQA expressed interest in exploring community level factors.

Socioeconomic status continues to be an extremely complex construct that is difficult to capture in a reliable and valid fashion. The experts agreed that there is no established methodology in the literature that could be used by the developer community, further limiting the ability of developers to include this variable in the measure. The developers explained that the use of SES is further complicated by its interpretability. The differences in SES may be attributed to intrinsic characteristics of the patients, or the hospital's ability to treat various types of patients (i.e. health literacy materials provided by the hospital, or social support/community relationships built by the hospital).

Usability for quality improvement

The Committee expressed concern that measure results for the CMS/Yale measure would not be available in a timely fashion. Some Committee members indicated that measure results from CMS are often received one or two years after the patient is discharged, making it not effective for hospitals to create actionable performance improvement strategies for reducing readmissions, nor for patients in their selection of providers.

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Several members viewed the plan-level NCQA measure as a way to hold plans accountable for readmissions with the understanding that the hospital and physicians are not the only entities responsible for effective care transitions. Members also expressed frustration that measuring performance at the plan level may lead providers to focus on the care of only insured patients; thus, the Committee urged future efforts to consider how to expand to all patients not simply all payers.

Both the CMS/Yale and NCQA measures count readmissions to any hospital, not simply readmissions to the index hospital. Some Committee members expressed frustration that CMS does not provide the index hospitals with the name of the hospital where a patient is readmitted when the readmitting hospital is different from the index hospital. Providing hospitals this information is helpful for analysis and improvement efforts in care coordination.

Related and competing measures

The Committee concluded that the two recommended measures were related and not competing because the levels of analysis were different (NCQA-plan level and CMS/Yale-hospital level). Ideally, NQF prefers measures that would encompass the broadest applicability including both levels of analysis. Members of the Committee emphasized that providers face significant challenges and frustration when they receive discordant signals from reports based upon differing measurement methodologies. The Committee expressed a strong desire that the NCQA and CMS/Yale measures should be harmonized for both hospital and plan level measurement.

The Committee asked CMS/Yale and NCQA to provide responses to the harmonization issues identified during the discussion on day 2 of the in-person meeting. The Committee met via conference call on December 16, 2011, to review and discuss the measure developers' responses. The developers were unable to make modifications to the measures to address the harmonization issues in the time given but did indicate willingness and a plan to achieve this goal. The Committee decided to recommend the measures as presently specified with the expectation that: 1) the developers will have updated their measures and harmonized the short-term issues that do not require significant changes to the measure specifications in one year at the time of the annual update; and 2) additional testing and changes to the risk adjustment models to fully harmonize the measures will likely take three years and should be reviewed at the time of their maintenance review. Because no additional modifications were made to the measures, the votes on the criteria and recommendation on endorsement from day 2 of the in-person meeting remained. The specific harmonization issues, developer responses, and Committee discussion from the conference call are outlined below.

Hierarchical condition category (HCC) versus Condition categories (CCs)

As currently specified, the NCQA measure uses HCC and the CMS/Yale measure uses CCs. The Committee suggested that both developers need to harmonize and use a single approach. In a [memo](#) responding to the Committee's request, both developers indicated that they would assess the effect of the recommendation on each of their measures. The developers are to inform the Committee of their efforts in harmonizing this issue at the annual update and harmonization should be fully completed and submitted at the time of maintenance review.

Logistic or hierarchical modeling

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Each measure used a different modeling approach; NCQA used only logistic modeling as opposed to CMS/Yale, which uses a hierarchical logistic model. The Committee preferred that the developers harmonize their risk models. Some Committee members expressed a preference for using only logistic regression modeling. In the past, however, the NQF has endorsed approaches that are multilevel or clustered to reflect the true underlying structure of the data, and several members of the Committee also favored such an approach. Both developers determined that they will continue to use separate models. CMS/Yale stated that the use of hierarchical modeling accounts for data clustering of patients in hospitals. The Committee still was concerned with having two approaches and asked the developers to further evaluate the possibility of harmonization. The developers are to inform the NQF of their efforts in harmonizing this issue at the annual update and harmonization should be fully completed and submitted at the time of maintenance review.

Inclusion of structured cohorts

Members of the Committee requested that NCQA harmonize their denominator to include the five cohorts/conditions (medicine, surgery/gynecology, cardiorespiratory, cardiovascular and neurology) that are presently in the CMS/Yale measure to account for patient and service mix across hospitals. NCQA has noted that they would evaluate the impact of the proposal on their measure. The developers are to inform the NQF of their efforts in harmonizing this issue at the annual update and harmonization should be fully completed and submitted at the time of maintenance review.

Exclusion of planned readmissions

It was suggested that NCQA exclude planned readmissions from their measure as including planned readmissions is not a signal of poor quality of care. NCQA is willing to work on removing planned readmissions and will assess the effect it has on the measure. Harmonization of this issue should be fully completed and submitted in one year at the annual update.

~~Exclusion of patients with cancer~~ patients with planned readmissions

As currently specified, the NCQA measure includes planned readmissions, which contain the cancer patient population. The Committee suggested that NCQA exclude planned readmissions, but to retain the cancer patients that are not planned readmissions. CMS/Yale excluded patients treated for cancer for the following reasons: 1) post-discharge mortality is higher than the remaining hospital population; 2) a low correlation between the other cohorts (medicine, surgery/gynecology, cardiorespiratory, cardiovascular and neurology) and cancer patients and readmission hospital performance; 3) obtained support from other organizations for excluding the patients; 4) there are cancer patients that are included in the measure, many with a secondary diagnosis of cancer; and 5) CMS is currently in the process of developing measures for cancer specialty hospitals. Harmonization of this issue should be fully completed and submitted in one year at the annual update.

Counting readmissions as index admissions

The NCQA measure as currently specified did not permit a readmission to serve as an index hospitalization for additional readmissions. This raised a concern because all institutions should be held accountable for all hospital readmissions. The Committee requested that NCQA harmonize with the CMS/Yale measure to count readmissions as index admissions. Harmonization of this issue should be fully completed and submitted in one year at the annual update.

~~Inclusion of patients with behavioral health/substance abuse conditions~~

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~~Both measures include behavioral health and substance abuse conditions; however, the conditions included were not identical. The Committee asked the developers to harmonize and include the same behavioral health and substance abuse conditions. Harmonization of this issue should be fully completed and submitted in one year at the annual update.~~

Inclusion of patients with psychiatric conditions

There are patients who receive primary psychiatric treatment at acute care hospitals. CMS/Yale was asked to incorporate these patients into their measure because of possible implications of the readmission rates for patients with comorbid psychiatric disorders. CMS/Yale agreed to evaluate the impact of including patients with psychiatric conditions in the medicine cohort or creating a sixth cohort. Harmonization of this issue should be fully completed and submitted in one year at the annual update.

MEASURES RECOMMENDED

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MEASURE EVALUATION SUMMARY TABLES

MEASURES RECOMMENDED

1789 Hospital-wide call-cause unplanned readmissions measure (HWR)
<p>Measure Submission and Evaluation Form</p> <p>Description: This measure estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmission after admission for any eligible condition within 30 days of hospital discharge (RSRR) for patients aged 18 and older. The measure reports a single summary RSRR, derived from the volume-weighted results of five different models, one for each of the following specialty cohorts (groups of discharge condition categories or procedure categories): surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology, each of which will be described in greater detail below. The measure also indicates the hospital standardized risk ratios (SRR) for each of these five specialty cohorts. We developed the measure for patients 65 years and older using Medicare fee-for-service (FFS) claims and subsequently tested and specified the measure for patients aged 18 years and older using all-payer data. We used the California Patient Discharge Data (CPDD), a large database of patient hospital admissions, for our all-payer data.</p> <p>Numerator Statement: (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 use this field to define the measure outcome.)</p> <p>The outcome for this measure is unplanned all-cause 30-day readmission. We defined a readmission as an inpatient admission to any acute care facility which occurs within 30 days of the discharge date of an eligible index admission. All readmissions are counted as outcomes except those that are considered planned.</p> <p>Denominator Statement: This claims-based measure can be used in either of two patient cohorts: (1) admissions to acute care facilities for patients aged 65 years or older or (2) admissions to acute care facilities for patients aged 18 years or older. We have tested the measure in both age groups.</p> <p>Exclusions: We exclude from the measure all admissions for which full data are not available or for which 30-day readmission by itself cannot reasonably be considered a signal of quality of care.</p> <p>Exclusions:</p> <ol style="list-style-type: none">1. Admissions for patients without 30 days of post-discharge data Rationale: This is necessary in order to identify the outcome (readmission) in the dataset.2. Admissions for patients lacking a complete enrollment history for the 12 months prior to admission Rationale: This is necessary to capture historical data for risk adjustment.3. Admissions for patients discharged against medical advice (AMA) Rationale: Hospital had limited opportunity to implement high quality care.4. Admissions for patients to a PPS-exempt cancer hospital Rationale: These hospitals care for a unique population of patients that is challenging to compare to other hospitals.5. Admissions for patients with medical treatment of cancer (See Table 3 in Section 2a1.9) Rationale: These admissions have a very different mortality and readmission profile than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions. (Patients with cancer who are admitted for other diagnoses or for surgical treatment of their cancer remain in the measure).6. Admissions for primary psychiatric disease (see Table 4 in Section 2a1.9) Rationale: Patients admitted for psychiatric treatment are typically cared for in separate psychiatric or rehabilitation centers which are not comparable to acute care hospitals.7. Admissions for "rehabilitation care; fitting of prostheses and adjustment devices" Rationale: These admissions are not for acute care or to acute care hospitals. <p>Additionally, in the all-payer testing, we excluded obstetric admissions because the measure was developed among patients aged 65 years or older (approximately 500,000).</p> <p>Adjustment/Stratification: Hierarchical logistic regression models are used to model the log-odds of readmission within 30 days of discharge, as a function of patient-level demographic and clinical characteristics and a random hospital-level intercept. This model specification accounts for within-hospital correlation of the observed outcomes and models the assumption that underlying differences in quality among the health care facilities being evaluated lead to systematic differences in outcomes. In brief, the approach simultaneously models two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals [1]. At the patient level, each model adjusts the log-odds of readmission within 30-days of discharge for age and selected clinical covariates. The second level models the hospital-specific intercepts as following a normal distribution. The hospital intercept represents the underlying hospital specific risk of readmission, after accounting for patient risk. If there were no differences</p>

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1789 Hospital-wide all-cause unplanned readmissions measure (HWR)
<p>among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals. We use a fixed, common set of variables in all our models for simplicity and ease of data collection and analysis. However, we estimate a hierarchical logistic regression model for each specialty cohort separately, and the coefficients associated with each variable may vary across specialty cohorts. To group ICD-9-CM codes into comorbid risk variables, we use CMS Condition Category (CMS-CCs) groups, the grouper used in previous CMS risk-standardized outcomes measures [2]. See Table 5 for the final list of comorbid risk variables. The models also include a condition-specific indicator for all condition categories with sufficient volume (defined as those with more than 1,000 admissions nationally each year for Medicare FFS data) as well as a single indicator for conditions with insufficient volume in each model. See Table 5, of the Measure Submission and Evaluation Worksheet for the final list of comorbid risk variables.</p> <p>Stratification: Not Applicable Level of Analysis: Facility Type of Measure: Outcome Data Source: Administrative claims Measure Steward: Centers for Medicare & Medicaid Services (CMS)</p>
1. Importance to Measure and Report: Y-18; N-1
<p>Subcriteria rating prior to in-person meeting: (1a. High Impact: 1b. Performance Gap, 1c. Evidence) 1a. Impact: H-17; M-2; L-0; I-0 1b. Performance Gap: H-15; M-4; L-0; I-0 1c. Evidence: Not applicable; outcome measure</p> <p><u>Rationale:</u> While evaluating the measures' importance to measure and report, the Committee agreed that the subcriteria was met and provided the following rationale:</p> <ul style="list-style-type: none"> • All readmission/care transitions goals have been identified in the National Quality Strategy under Patient Safety and Care Coordination and are further elaborated upon in the Partnership for Patients. • As a stand-alone issue, readmissions is important to measure due to (1) high economic burden and (2) a complex relationship between the different elements of utilization, health status, transitions of care, and care coordination. • An all-cause readmission measure would provide an opportunity to improve hospital accountability and performance. • While discussing the evidence for the measure focus, there were concerns as to whether this measure was a health outcome or if hospital readmissions are an appropriate proxy for health outcomes. • The Committee, particularly consumer representatives, agreed that readmissions are health outcomes because it is a proxy for deterioration in health status.
2. Scientific Acceptability of Measure Properties: Y-13; N-6
<p>Subcriteria rating prior to in-person meeting: (2a. Reliability – precise specifications, testing; 2b. Validity – testing, threats to validity) 2a. Reliability: H-10; M-8; L-1; I-0 2b. Validity: H-7; M-12; L-1; I-1</p> <p><u>Rationale:</u> While evaluating the measures' scientific acceptability, the Committee agreed that the subcriteria was met and identified 3 major issues:</p> <ol style="list-style-type: none"> 1) Use of Hierarchical logistic regression model (HLM) 2) Hospital volume 3) Adjusting for socioeconomic status <p>Use of Hierarchical logistic regression model (HLM)</p> <ul style="list-style-type: none"> • Several Committee members expressed a wide range of concerns about the use of HLM due to its treatment of smaller volume hospitals, heavily relying on the assumption that the model does not make as much of an inference from patients within a small volume hospital, effectively pulling a smaller volume hospital towards more average estimates. • The use of HLM attempts to level the playing field by adjusting for patient comorbidities and differences in services a hospital provides. • The developer also stated that due to the fact that this is an all-cause measure, they did not have a large number of hospitals with small volumes, as may be seen in a condition-specific measure. With an all-cause measure, every hospital will have at least 'several hundred' observations. • Small volume hospital readmission rates are calculated with less precision than larger hospitals. <p>Hospital volume</p>

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- Several Committee members felt that the decision to exclude hospital volume ignores the literature that explains that smaller volume hospitals generally have higher readmission rates.
- The Committee also expressed concern that the measure results may not be a true representation of a hospital readmission. This could pose an issue, when public reporting websites (i.e. Hospital Compare) use the results to educate consumers.
- Using this type of risk-adjustment in this setting may introduce bias for a small volume hospital performing well. Hospitals with low volume may appear as average, effectively removing an incentive to improve quality.
- The developers argued that they could have included volume in the model to improve the predicative power; however, it does not seem appropriate to allow quality expectations to vary based on hospital volume.
- At the request of the Committee, the CMS/Yale team presented additional information to address the question of hospital volume and quality performance. For large and small volume hospitals they demonstrated that there is no pull to the mean, a major concern expressed by the Committee.

Adjusting for socioeconomic status

- The measure was not adjusted for socio-economic status (SES).
- The Committee felt strongly those patient variables such as health literacy, access to care, dual eligibility, homelessness, domestic violence, and access to childcare drive patient's access to follow-up care.
- Committee members also expressed concern that to exclude SES might lead to an increase in cherry picking among hospitals.
- The developer pointed out that the measure was not adjusted for SES for several reasons:
 - In examining the data across hospitals with a different proportion of Medicaid patients, there was a wide range of performance on the measure due to quality of care and resource availability.
 - There is no reliable and acceptable proxy for SES using administrative data.
 - The developers did not want to adjust away differences in SES, but rather highlight the disparities seen across hospitals.
- Supplemental information was provided demonstrating that among hospitals with the highest proportion of Medicaid patients, 25 percent of them performed better than the average hospital with very few Medicaid patients.
- Calibration curves showed the CMS/Yale model was able to predict risk for aggregate groups of patients well (i.e. how well the model is able to predict a low risk patient's low risk).

Additional items

- *The exclusion of patients with a primary diagnosis of a psychiatric condition.* The developer excluded patients readmitted for primary psychiatric conditions for 3 reasons: (1) the number of patients falling into this category was a 'small number' not evenly distributed across hospitals, (2) smaller volume hospitals do not code these readmissions in a consistent manner, and (3) this patient population is usually treated in rehabilitation facilities or specialized psychiatric hospitals. One Committee member argued that many psychiatric patients are treated in single units, within acute care hospitals and should be included in this measure, because exclusion has implications for the readmission rates of patients with comorbid psychiatric disorders. The developer clarified that the exclusion is for Psychiatric patients readmitted with a primary psychiatric diagnosis only, and that patients with comorbid secondary psychiatric diagnosis that are admitted for other medical conditions are still included.
- *The use of the 5 specialty cohorts.* The developers noted that in order to account for variation and service mix across hospitals, the best risk adjustment and model performance came when using the 5 cohorts. Limiting the measure to 5 cohorts also gave the measure better utility for the hospital because the measure is able to provide detailed data on each service line.
- *The surgery/gynecology cluster does not include obstetrics.* Given the limited time during the call for measures, and because the measure was initially built upon a 65+ population the developers did not include obstetrics; however they will work to update the measure.
- The model only accounts for the receiving hospitals' performance, not the transferring hospital performance. This was a particular concern for transfers from a community-based facility to a larger hospital known more for specialty care.
- An additional recommendation to add reporting stratification by SES guidance was voted down (Y-8; N-11).

3. Usability: H-1; M-8; L-11; I-0

Subcriteria rating prior to in-person meeting:

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

3a. Public Reporting: H-6; M-5; L-5; I-3

3b. QI: H-5; M-6; L-6; I-2

Rationale: While evaluating the measures' usability, the Committee found the usability to be low and identified 3 major issues:

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- 1) Measurement issues regarding the model approach
- 2) Consumer use of the measure
- 3) Time lag

Measurement issues regarding the shrinkage model

- The Committee felt that smaller volume hospitals would not receive useful information to improve quality.
- Committee members expressed concerns that smaller volume hospitals would look better than larger hospitals because their means would be pulled to an overall national average. As such, the data generated may not be meaningful for public reporting.

Consumer Use of the Measure

- Addressing the issue of consumer use, the CMS/Yale group pointed out that the rate of readmission at which the public can call something 'good' vs. 'bad' is a policy decision by CMS. CMS currently uses a 95 percent confidence interval and large confidence intervals are a genuine representation of hospital performance. Committee members felt that a wide confidence interval makes the measure less useful for consumers.
- The Committee felt that to make this measure understandable and meaningful would require more education for consumers on readmissions, specifically that reduction of readmission rates is not rationing of care but rather improved quality
- The developer reiterated that their measure was built for two purposes: (1) public reporting in order to adequately compare different types of hospitals; and (2) for quality improvement by allowing hospitals to benchmark themselves against other hospitals to identify areas in which quality improvement is necessary, and catalyze activity.

Time lag

- The Committee was concerned that for the purposes of quality improvement, the lag in data collection and reporting (approximately 12 to 18 months) would be inadequate.
- The time lag would limit the ability to apply rapid cycle improvement events.

4. Feasibility: H-14; M-5 ; L-0 ; I-0

Subcriteria rating prior to in-person meeting:

(4a. Data generated during care; 4b. Electronic sources; 4c. Susceptibility to inaccuracies/ unintended consequences identified; 4d. Data collection can be implemented)

4a. Byproduct of Care Processes: H-14; M-5; L-0; I-0

4b. Electronic data sources: H-13; M-5; L-1; I-3

4c. Susceptibility to inaccuracies, consequences: H-7; M-9; L-1; I-2

4d. Data collection strategy: H-11; M-6; L-0; I-2

Rationale:

- Members discussed ability of hospitals to receive information about readmissions to other hospitals and its effect on the measure implementation.

Steering Committee Vote: Meets Criteria for Endorsement: **Y-142 ; N-58**

Following harmonization discussion, the measure was recommended for endorsement

Rationale:

- This measure addresses a high impact area.
- This measure can be used at the hospital level.

Public and Member Comments

- Inclusion of SES/race variables in the model
- Stratification to avoid differences related to disparities in care
- Difficulty replicating the measure for quality improvement purposes

Socioeconomic (SES)/Race variables in the risk adjustment model

Committee Response: Many members of the Committee agreed that the socio-economic status of patients can drive the likelihood of a readmission. This relationship is driven, in part by differences in the hospital quality; but also the availability of community support to patients. Thus, many Committee members agreed that readmissions are not simply a measure of hospital quality but also community health quality. The hospital is dependent on resources available in the community, such as effective transitional care and other community level factors, including distance to the hospital. However, the use of SES at the individual patient level in a risk adjustment model would

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hide differences in performance. Further, SES is an extremely difficult construct to measure in a reliable and valid way using administrative data. After reviewing the comments submitted surrounding SES, the Committee decided to re-vote on whether the CMS/Yale measure (#1789) met the NOF criteria for endorsement. Following the re-vote, Measure #1789 was recommended for NOF endorsement with the following recommendation: in order to support fair and appropriate comparisons, hospital performance on this measure should be reported within like comparison groups (e.g., disproportionate share hospitals).

CMS/Yale Developer Response: We recognize the concerns of this commentator and others that socioeconomic status confers increased risk for readmissions beyond the control of the hospital. We have considered this problem in depth and have come to the following conclusions:

1) To the extent that SES increases readmission risk by increasing severity of illness, we account for this increased risk in our readmission models. Indeed, our analyses show that the expected readmission risk per patient estimated by the model based on patient comorbidities and an average hospital intercept term is higher on average for patients treated in hospitals that treat a higher proportion of Medicaid patients than for those treated in hospitals that treat a lower proportion of Medicaid patients. Thus, our measure already substantially incorporates increased risk of low SES patients by adjusting for patient comorbidities.

2) Adding additional risk adjustment to the readmission model for low SES status both hides disparities and would potentially eliminate incentives for hospitals to invest time and resources that may be necessary to support all patients, including those of low SES, in the post-discharge period. Including some form of SES as a risk variable in the readmission model implies that it is both expected and acceptable for low SES patients to have higher readmission rates for any given level of illness. Since this measure is intended to reduce the readmission risk for all patients and is fundamentally a patient-centered outcome measure, we have elected to set one standard of care for all patients. All patients should expect to receive the same standard of care regardless of their demographic background.

3) Adjusting for SES also assumes that all of the increased risk of low SES patients is outside the control of the hospital. We do not agree. The increased risk of readmission associated with low SES comprises multiple dimensions and factors, some of which (e.g., reduced literacy) are within the control of the hospital to mitigate. The fact that one quarter of hospitals that treat the highest proportion of Medicaid patients (>30% of all hospital admissions Medicaid) have lower RSRRs than half of the hospitals with fewer than 10% Medicaid admissions is evidence that hospitals caring for low SES patients are not necessarily disadvantaged by our measure. Better quality of care is achievable regardless of the proportion of low SES patients in the hospital.

4) We recognize that many of the interventions that may improve outcomes for low SES patients are located in communities rather than inpatient settings, and we recognize that many commentators believe that these interventions are outside the scope of acute care facilities. However, we believe that this measure can help to incentivize hospitals to work together with community-based organizations to improve care for patients (both low and high SES) post-discharge. We believe that coordination and integration of care is a fundamental component of high quality care that is part of the acute care hospital mission.

5) Finally, CMS notes that there are CMS programs that provide technical and financial support that may assist hospitals in improving performance on readmission measures. In addition, CMS has indicated that it will monitor whether a pending payment program that uses other readmission measures, the Hospital Readmissions Reduction Program, will have a disparate impact on hospitals that care for large numbers of low SES patients.

Usability concerns

Committee Response: The Committee discussed concerns related to the usability noting limitations in use for quality improvement. Specifically for the CMS/Yale measure, Committee members agreed that the measure may not be able to support quality improvement within hospitals since it would be difficult to recreate the measure results without data from the readmitting hospital if it is not the same as the index hospital. The Committee also noted the limitation in rapid-cycle improvement due to the turnaround time for measure. These issues were broadly reflected in the low usability ratings for the CMS/Yale measure. While these are not limitations in the measure design, but rather measure implementation, the Committee strongly encourages CMS and other potential users to continue enhancing data platforms, timeliness of reporting and other aspects of measure implementation. After reviewing the comments submitted surrounding the usability concerns, the Committee decided to re-vote on whether the CMS/Yale measure (#1789) met the NOF criteria for endorsement. Following the re-vote, Measure #1789 was recommended for NOF endorsement with the following recommendation in addition to the recommendation above concerning SES: in order to support performance improvement and accountability, feedback to hospitals should be timely and provide information on all readmissions.

CMS/Yale Developer Response: This measure is designed to enable risk-standardized comparisons of hospital performance against national norms in order to help patients and hospitals identify areas of weakness and benchmark to peers. For this purpose, it is essential to include adequate volume for comparison (at least one year of data) and to compare to contemporary performance of other institutions. By contrast, this measure is not intended for rapid cycle improvement within a hospital, for which risk-standardized rates are neither appropriate nor necessary.

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1768 Plan all-cause readmissions

[Measure Submission and Evaluation Form](#)

Description: For members 18 years of age and older, the number of acute inpatient stays during the measurement year that were followed by an acute readmission for any diagnosis within 30 days and the predicted probability of an acute readmission.

Data are reported in the following categories:

1. Count of Index Hospital Stays (IHS) (denominator)
2. Count of 30-Day Readmissions (numerator)
3. Average Adjusted Probability of Readmission
4. Observed Readmission (Numerator/Denominator)
5. Total Variance

Note: For commercial, only members 18–64 years of age are collected and reported; for Medicare, only members 18 and older are collected, and only members 65 and older are reported.

Numerator Statement: At least one acute readmission for any diagnosis within 30 days of the Index Discharge Date.

Denominator Statement: For commercial health plans, ages 18-64 as of the Index Discharge Date. For Medicare and Special Needs Plans, ages 18 and older as of the Index Discharge Date.

Exclusions: Exclude hospital stays where the Index Admission Date is the same as the Index Discharge Date and any inpatient stay with a discharge date in the 30 days prior to the Index Admission Date.

Adjustment/Stratification:

Indirect standardization, using logistic regression

Uses the CC and HCC models to identify comorbidities and attaches weights to each statistically significant comorbidity by product line and age grouping.

We estimated a stepwise logistic regression. The binary dependent variable was coded 1 for index hospital stays that had a subsequent readmission within 30 days, and 0 otherwise. The independent variables in the models were:

- age-gender cohort:

Commercial: male 18-44, female 18-44, male 45-54, female 45-54, male 55-64 (reference group), female 55-64.

In year 1, the model for Medicare used:

Medicare 18 and older: male 18-44, female 18-44, male 45-54, female 45-54, male 55-64, female 55-64, male 65-74 (reference group), female 65-74, male 75-84, female 75-84, male 85+, female 85+.

In year 2, the model for Medicare will use: male 65-74 (reference group), female 65-74, male 75-84, female 75-84, male 85+, female 85+.

- Major surgery: 1=index hospital stay was for major surgery (see code list in algorithm); 0, otherwise.

- Discharge Clinical Condition (CC) from the HCC classification system: 1=index hospital stay was for the CC; 0, otherwise.

Note: each index hospital stay is coded into exactly one CC and is based only on the primary diagnosis.

- Comorbid Hierarchical Clinical Condition (HCC): 1=index hospital stay had the associated comorbidity (HCC) indicated through any diagnosis on a face to face claim/encounter for the 12 months prior to the index hospital stay discharge date; 0, otherwise.

Stratification by risk category/subgroup. The measure includes a table that stratifies the five reporting data elements by age and gender.

The five elements are:

1. Count of Index Stays
2. Count of 30-Day Readmissions
3. Average Adjusted Probability
4. Observed Readmission (Numerator/Denominator)
5. Total Variance

The age stratifications are:

Commercial: 18-44, 45-54, 55-64, Total

Medicare: 65-74, 75-84, 85+., Total

The measure is also stratified by gender.

Values are reported for each stratification.

Level of Analysis: Health Plan

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1768 Plan all-cause readmissions
<p>Type of Measure: Outcome Data Source: Administrative claims Measure Steward: National Committee of Quality Assurance</p>
STEERING COMMITTEE MEETING 12/5-6/2011
1. Importance to Measure and Report: Y-18; N-0
<p>Subcriteria rating prior to in-person meeting: (1a. High Impact: 1b. Performance Gap, 1c. Evidence) 1a. Impact: H-13; M-5; L-1; I-0 1b. Performance Gap: H-5; M-8; L-2; I-2 1c. Evidence: Not applicable; outcome measure</p> <p><u>Rationale:</u> While evaluating the measures' importance to measure and report, the Committee agreed that the subcriteria was met and provided the following rationale:</p> <ul style="list-style-type: none"> • This particular measure creates a standard metric for quality monitoring and accountability of the health plan, leaving it to the health plan to work with its network of hospitals, providers, medical homes, and other entities to implement quality improvement strategies to improve readmissions. • This health plan based measure can be a complement to a hospital-based measure. • Readmissions are important to measure due to (1) high economic burden and (2) a complex relationship between the different elements of utilization, health status, transitions of care, and care coordination. • This all-cause readmission measure would provide an opportunity to improve hospital and health plan accountability and performance.
2. Scientific Acceptability of Measure Properties: Y-12; N-7
<p>Subcriteria rating prior to in-person meeting: (2a. Reliability – precise specifications, testing; 2b. Validity – testing, threats to validity) 2a. Reliability: H-4; M-9; L3-; I-3 2b. Validity: H-3; M-10; L-5; I-1</p> <p><u>Rationale:</u> While evaluating the measures' scientific acceptability, the Committee agreed that the subcriteria was met, and identified 3 major issues:</p> <ol style="list-style-type: none"> 1) Use of Health Plan level data 2) Risk Adjustment 3) Adjusting for Socioeconomic Status <p>Use of Health Plan level data</p> <ul style="list-style-type: none"> • In this measure, the data collected are at the health plan level. This measure focus shifts from the hospital as the unit of accountability, to a more population based approach. • There are no current plans to develop this measure for use at a hospital level. • The data are collected at the health plan level. The plans take NCOA specifications and implement them either themselves or through their software vendors that perform various calculations on the number of hospitalizations, transfers, etc. • The Committee expressed concern that underperforming hospitals would not be seen in the plan level data. Plans seeking to reduce readmissions can work with hospitals and provide selective contracting or other value based payment arrangements. <p>Risk Adjustment</p> <ul style="list-style-type: none"> • This measure uses indirect standardization through a logistic model. • The data are not nested since patients are extremely cross classified. Data are clustered across multiple hospitals and across multiple health plans. • The measure accounts for a service mix of patients in a given setting by adjusting for patient attributes such as demographic information, age, comorbid conditions, and index condition. • This measure uses CC's from the CMS HCC system. • The Committee expressed concern regarding selection bias between health plans, and hospitals being unfairly penalized due to variability in the patients that they treat. • This measure has modified the risk adjustment model to have separate risk adjusters and weights for the Medicare under 65 and the Medicare 65 and older population. • The developer presented calibration curves demonstrating that the expected versus actual risk deciles plots had adequate discriminate ability. Actual differences between expected and actual risk were less than 1 percent in each decile.

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1768 Plan all-cause readmissions

Adjusting for Socioeconomic Status

- This measure does not adjust for socioeconomic status (SES). The developers feel there is not a suitable proxy for SES within a community, as the health plans do not report that information. NCQA feels that health plan comparisons are done on a local scale, and they have no reason to believe there is an SES difference between health plans. The Committee challenged this assumption.
- NCQA argued that the measure takes SES into account to a certain degree through measurement of each health plan product line; Commercial and Medicare.

Additional Items

- Behavioral health and planned admissions are included in this measure.

3. Usability: H-5; M-4; L-9; I-1

Subcriteria rating prior to in-person meeting:

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

3a. Public Reporting: H-7; M-5; L-6; I-1

3b. QI: H-6; M-6; L-5; I-2

Rationale: While evaluating the measures' usability, the Committee found the usability to be low and identified the following issues: The health plan is in a greater position to deal with the coordination issues between primary care and the care team (i.e. nurse care manager, etc.) and to follow up with the patient (i.e. about making follow up appointment, adhering to medication regimens, or other access issues).

- Coordination of care can be done by the payer within a given market.
- Useful to the health plan in setting up quality improvement methods that would affect individual institutions that are contracted with that plan.
- Consumer representatives on the Committee felt that this measure was extremely useful for purchasers and consumers, especially upon implementation of health insurance exchanges.
- There is added utility to having a health plan perspective in combination with and in complement to a hospital-based measure.

4. Feasibility: H-14; M-5; L-0; I-0

Subcriteria rating prior to in-person meeting:

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c. Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

4a. Byproduct of Care Processes: H-11; M-7; L-1; I-0

4b. Electronic data sources: H-10; M-6; L-2; I-1

4c. Susceptibility to inaccuracies, consequences: H-4; M-9; L-5; I-1

4d. Data collection strategy: H-7; M-9; L-3; I-0

Rationale:

- Initial testing and development of this measure began in 2009, using commercial and Medicare Advantage plan based data from 2008 and 2009. NCQA has also collected first year measurement from Medicare Advantage commercial health plans. Those data are already in use at CMS.
- Data and evidence have been collected for one year
- The measure is already in implementation among several health plans.
- CMS is already in the process of using the measure within the STAR system for use in both health plan choice and incentive processes.

Steering Committee Vote: Meets Criteria for Endorsement : Y-1~~30~~; N-~~69~~

Following harmonization discussion, the measure was recommended for endorsement.

Rationale:

- This measure demonstrated a high impact area.
- This measure can be used at the plan level.
- This measure is useful for consumers.

Public and Member Comment

- Inclusion of SES/race variables in the model

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1768 Plan all-cause readmissions

- Inclusion of a readmission as an index admission

Socioeconomic (SES)/Race variables in the risk adjustment model

Committee Response: Many members of the Committee agreed that the socio-economic status of patients can drive the likelihood of a readmission. This relationship is driven, in part by differences in the hospital quality; but also the availability of community support to patients. However, since this measure is at the health plan level, inclusion of SES variable was not as prominent of a concern.

NCQA Developer Response: When considering the inclusion of SES in the model, NCQA's expert panels cited the following limitations/barriers: a) Health plans do not currently have a reliable way to identify and report information on SES; b) Attributing SES to each health plan is complicated and prone to measurement error; additionally, SES may vary widely across a health plan, undermining the impact of a generic risk adjustment method; and c) Adding SES may risk adjust away important differences in populations and can imply that different levels of performance are acceptable for populations with differing SES.

Readmission as an index admission

Committee Response: The Committee agrees that readmissions should be considered index events. The Committee also agrees that index events for unplanned non-maternity readmissions should not be included because identifying planned maternity readmissions would be difficult using administrative data.

NCQA Developer Response: Over the next year, NCQA will test counting readmissions as index events on the overall model integrity.

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MEASURES NOT RECOMMENDED

0329 Risk-adjusted 30-day all-cause readmission rate
<p>Measure Submission and Evaluation Form</p> <p>Description: The existing NQF-endorsed measure provides a means for determining the risk-adjusted readmission rate for a selected adult target population and can be applied for any desired timeframe. Readmission rate is defined as the percentage of acute inpatient discharges during the measurement period followed by an acute inpatient admission for any diagnosis to any hospital within 30 days. We are proposing to change the measure and offer a risk factor approach. This method allows for calculation of a risk-adjusted readmission rate for use in two different ways: 1) retrospective analysis of hospital (or other study population) performance determination and 2) in a real-time Electronic Health Record (EHR) environment, analysis to determine the readmission risk factor for each inpatient admission.</p> <p>Numerator Statement: Non-behavioral health acute inpatient admissions for patients who were readmitted following a discharge from a non-behavioral health acute inpatient admission (index admission).</p> <p>Denominator Statement: The denominator contains all eligible non-behavioral acute care inpatient discharges for the target population being measured for the desired measurement period. A patient can have multiple eligible discharges during the measurement period.</p> <p>Exclusions: The cases to be excluded from the denominator are those for patients who died during the hospital stay or were hospitalized for mental health disorders or substance abuse treatment.</p> <p>Adjustment/Stratification: The readmission risk model is intended to be used in two ways: 1) to conduct retrospective hospital performance measurement for reporting risk-adjusted readmission rates (so that the impact of changes in case mix can be removed); and 2) within electronic hospital records, to flag current acute hospital cases with a higher chance of readmission or whose readmission is potentially avoidable. Readmission risk is assessed via a direct standardization method. Readmission Risk Categories (RRCs) with higher weights have a higher probability of readmission within 30 days. Risk stratification is based on the combination of diagnosis/procedure groups and two age bands: ages 0 to 64 and ages 65 and over. There are 176 RRCs for ages 0 to 64 and 171 for ages 65 and over. The variables needed to assign the RRC weight to an admission are the age (while hospitalized) or if already discharged, the age at discharge, along with the primary diagnosis and primary procedure.</p> <p>Stratification by risk category/subgroup. Variables needed to calculate the observed readmit rate includes: admit date, discharge date, and member identifiers. If risk adjustment and/or clinical bucketing is desired, then the required additional variables include: age at discharge, primary diagnosis, primary procedure, and the associated Readmission Risk Category (RRC).</p> <p>Level of Analysis: Facility, Health Plan, Population: Community, County or City, National, Regional, State</p> <p>Type of Measure: Outcome</p> <p>Data Source: Administrative claims</p> <p>Measure Steward: UnitedHealth Group</p>
1.Importance to Measure and Report: Y-16; N-0
<p>Subcriteria rating prior to in-person meeting: (1a. High Impact: 1b. Performance Gap, 1c. Evidence) 1a. Impact: H-15; M-3; L-1; I-0 1b. Performance Gap: H-6; M-2; L-7; I-4 1c. Evidence: Not applicable; outcome measure</p> <p><u>Rationale:</u></p> <ul style="list-style-type: none"> • This measure is undergoing maintenance review. • Readmissions are important to measure due to (1) high economic burden and (2) a complex relationship between the different elements of utilization, health status, transitions of care, and care coordination. • An all-cause readmission measure would provide an opportunity to improve hospital accountability and performance
2. Scientific Acceptability of Measure Properties: Y-0; N-18
<p>Subcriteria rating prior to in-person meeting: (2a. Reliability – precise specifications, testing; 2b. Validity – testing, threats to validity) 2a. Reliability: H-15; M-3; L-1; I-0 2b. Validity: H-4; M-3; L-8; I-4</p> <p><u>Rationale:</u> While evaluating the measures' scientific acceptability, the Committee agreed that the subcriteria was not met and identified 2 major issues: 1) Testing 2) Risk Adjustment</p> <p>Testing</p>

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- The measure developer indicated the measure can be used for claims based and electronic health records, however, the developer only presented testing information for claims based data.
- The measure is a maintenance measure, thus the Committee requested information on how the measure was being used to demonstrate performance variation. The developer was not able to provide this information.

Risk Adjustment

- Case mix adjustment is based on age and discharge diagnosis. Each discharge diagnosis and readmission is sorted into 220 Readmission Risk Categories (RRC). A rate for each RRC is calculated and the appropriate rate is adjusted based on case mix at each institution.
- The measure was developed for a population that is very broad, ages 0-64. Committee members wanted to know the effect of this broad range on case mix.
- Specifically comparing children's hospitals and general hospitals on all-cause readmission seems problematic since readmissions may be very different in a pediatric population.
- The developer suggested to the committee that they might be able to stratify, by age, in to 3 groups ages 0-17, 18-64, and over 65.
- The developers do not consider a transfer a readmission; in this measure the developers attempted to remove, or group all transfers together.
- The measure does not adjust for co-morbid conditions. The developer asserted that claims-based data has a high risk of being inaccurate, and to ensure accuracy the hospital would have to examine each patient claim and identify any comorbidity in order to be fair in doing adjustments.
- The measure does not distinguish planned vs. unplanned readmission because the developers wanted to include all-cause, all readmissions. The developer felt there is no reliable way to determine what a planned readmit is using claims data.

Additional Items

- The developers explained that for this measure, there must be a specific time gap between index admit and discharge (i.e. discharge from acute care to rehab facility done on the same day is not a readmission).

Steering Committee Recommendation for Endorsement: Not recommended because measure did not pass Scientific Acceptability of Measure Properties criteria

Rationale:

- The measure had a very broad age range, 0 to 65.
- The measure did not have an appropriate risk adjustment or stratification approach.
- The developers did not include sufficient validity testing.
- This measure does not adjust for any comorbidity.

On January 27, UnitedHealthcare submitted additional information, such as data on calibration and c-statistics. Following the discussion of the additional information on the January 31 conference call, the Committee voted (Y=7, N=12) and determined that further discussion of the measure was not warranted.

Public and Member Comment

- Support in Committee's decision to not recommend the measure

Committee Response: Measure 0329 was not recommended because it did not meet the must pass criteria of 'Scientific Acceptability' due to its very broad age range, lack of appropriate risk adjustment or stratification, and lack of adjustment for comorbid conditions. In addition, the developer was unable to provide results for performance variation, despite 0329 being a maintenance measure.

NOTES

1. Medicare Payment Advisory Commission (MEDPAC). Report to the Congress: Reforming the Delivery System. Washington, DC: MedPAC; 2008. Available at http://medpac.gov/documents/Jun08_EntireReport.pdf. Accessed October 2011.
2. *ibid*
3. The Patient Protection and Affordable Care Act (PPACA) (2010) Section 10303(f). Development of Outcome Measures.

NQF VOTING DRAFT—DO NOT CITE OR QUOTE
NQF MEMBER votes are due March 1, 2012, by 6:00 PM ET

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APPENDIX A: MEASURE SPECIFICATIONS

MEASURES

1789 Hospital-wide all-cause unplanned readmission measure (HWR)	A-1
1768 Plan all-cause readmissions	A-7

1789 Hospital-wide all-cause unplanned readmission measure (HWR)	
Steward	Centers for Medicare & Medicaid Services 500 Security Blvd., Mail Stop S3-02-01 Baltimore Maryland, 21244
Description	This measure estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmission after admission for any eligible condition within 30 days of hospital discharge (RSRR) for patients aged 18 and older. The measure reports a single summary RSRR, derived from the volume-weighted results of five different models, one for each of the following specialty cohorts (groups of discharge condition categories or procedure categories): surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology, each of which will be described in greater detail below. The measure also indicates the hospital standardized risk ratios (SRR) for each of these five specialty cohorts. We developed the measure for patients 65 years and older using Medicare fee-for-service (FFS) claims and subsequently tested and specified the measure for patients aged 18 years and older using all-payer data. We used the California Patient Discharge Data (CPDD), a large database of patient hospital admissions, for our all-payer data.
Type	Outcome
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility
Numerator Statement	(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 use this field to define the measure outcome.) The outcome for this measure is unplanned all-cause 30-day readmission. We defined a readmission as an inpatient admission to any acute care facility which occurs within 30 days of the discharge date of an eligible index admission. All readmissions are counted as outcomes except those that are considered planned.
Numerator Details	Time Window: The time window for readmission is within 30 days from the date of discharge of the index admission. The outcome for this measure is unplanned all-cause readmission within 30 days of discharge date of an eligible index admission. Because planned readmissions are not a signal of quality of care, the measure does not count planned readmissions in the outcome. The measure uses an algorithm to identify “planned readmissions” in claims data that will not count as readmissions in the measure. 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 (which will be described in detail below), or those for maintenance chemotherapy, organ transplant, or rehabilitation. 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 can identify readmissions as acute or non-acute by considering the principal discharge condition. The algorithm developed to identify planned readmissions uses procedure codes and discharge diagnosis categories for each readmission. The HWR measure defines planned readmissions as any readmission that was either: A non-acute readmission in which one of 35 typically planned procedures occurs;

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1789 Hospital-wide all-cause unplanned readmission measure (HWR)

or

A readmission for maintenance chemotherapy, organ transplant, or rehabilitation

All other readmissions are considered unplanned and are counted as readmissions in the measure. The following examples illustrate this approach:

Example 1:

A readmission with a discharge condition category of biliary tract disease that included a cholecystectomy would be considered planned.

A readmission with a discharge condition category of septicemia that included a cholecystectomy would be considered unplanned.

A readmission with a discharge condition category of “complications of surgical procedures or medical care” would be considered unplanned.

List of planned procedures (Table 1)

Planned procedures are identified using AHRQ Clinical Classification System (CCS) procedure category list (Table 1). Readmissions in which any of these procedures are performed are considered planned if the discharge condition category is not acute or a complication of care (i.e., not listed in Table 2).

Table 1: Procedure categories considered planned

AHRQ Procedure CCS//Description//Readmissions with no excluding diagnosis (“planned” readmissions): Number, Percent of total planned readmissions in the 2008 Medicare Provider Analysis and Review (MedPAR) dataset used for measure development

45//Percutaneous transluminal coronary angioplasty (PTCA)//12,038, 13.83%
//Rehabilitation (Condition CCS 254)//9,973, 11.46%
84//Cholecystectomy and common duct exploration//7,191, 8.26%
157//Amputation of lower extremity//6,649, 7.64%
44//Coronary artery bypass graft (CABG)//6,290, 7.23%
78//Colorectal resection//4,719, 5.42%
51//Endarterectomy; vessel of head and neck//4,558, 5.24%
113//Transurethral resection of prostate (TURP)//3,752, 4.31%
99//Other OR gastrointestinal therapeutic procedures//3,475, 3.99%
48//Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator//2,541, 2.92%
//Maintenance chemotherapy (condition CCS 45)//2,312, 2.66%
211//Therapeutic radiology for cancer treatment//2,183, 2.51%
3//Laminectomy; excision intervertebral disc//2,065, 2.37%
43//Heart valve procedures//2,061, 2.37%
152//Arthroplasty knee//1,989, 2.28%
158//Spinal fusion//1,963, 2.25%
55//Peripheral vascular bypass//1,902, 2.18%
52//Aortic resection; replacement or anastomosis//1,529, 1.76%
36//Lobectomy or pneumonectomy//1,492, 1.71%
153//Hip replacement; total and partial//1,333, 1.53%
60//Embolectomy and endarterectomy of lower limbs//1,263, 1.45%
85//Inguinal and femoral hernia repair//981, 1.13%
104//Nephrectomy; partial or complete//921, 1.06%
1//Incision and excision of CNS//804, 0.92%
124//Hysterectomy; abdominal and vaginal//524, 0.60%

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<p>167//Mastectomy//474, 0.54% 10//Thyroidectomy; partial or complete//353, 0.41% 114//Open prostatectomy//338, 0.39% 74//Gastrectomy; partial and total//278, 0.32% 119//Oophorectomy; unilateral and bilateral//273, 0.31% 154//Arthroplasty other than hip or knee//229, 0.26% //Radical laryngectomy, revision of tracheostomy, scarification of pleura (ICD-9 codes 30.4, 31.74, 34.6)//216, 0.25% 166//Lumpectomy; quadrantectomy of breast//117, 0.13% 64//Bone marrow transplant//100, 0.11% 105//Kidney transplant//70, 0.08% 176//Other organ transplantation//69, 0.08% //Electroshock therapy (ICD-9 codes 94.26, 94.27)//30, 0.03%</p> <p>List of discharge condition categories that are acute or complications of care (Table 2) Admissions in which a planned procedure was performed are only considered “planned” if the patient was not admitted for an acute illness or complication of care. Table 2 contains the list of 27 discharge condition categories considered either acute or complications of care.</p> <p>Table 2: Discharge condition categories considered acute or complications of care</p> <p>AHRQ CCS//Description //Number of 30-day readmissions with this condition and one of the planned procedures in the 2008 MedPAR dataset used for measure development.</p> <p>237//Complication of device; implant or graft//11,689 106//Cardiac dysrhythmias//10,267 //Fracture (CC 207, 225, 226, 227, 229, 230, 231, 232)//6,307 100//Acute myocardial infarction//5,643 238//Complications of surgical procedures or medical care//5,438 108//Congestive heart failure; nonhypertensive//5,119 2//Septicemia (except in labor)//3,372 146//Diverticulosis and diverticulitis//2,434 105//Conduction disorders//2,130 109//Acute cerebrovascular disease//1,886 145//Intestinal obstruction without hernia//1,341 233//Intracranial injury//1,271 116//Aortic and peripheral arterial embolism or thrombosis//1,115 122//Pneumonia (except that caused by TB or sexually transmitted disease)//710 131//Respiratory failure; insufficiency; arrest (adult)//678 157//Acute and unspecified renal failure//645 201//Infective arthritis and osteomyelitis (except that caused by TB or sexually transmitted disease)//608 153//Gastrointestinal hemorrhage//566 130//Pleurisy; pneumothorax; pulmonary collapse//510 97//Peri-; endo-; and myocarditis; cardiomyopathy//484 127//Chronic obstructive pulmonary disease and bronchiectasis//462 55//Fluid and electrolyte disorders//424 159//Urinary tract infections//410 245//Syncope//353 139//Gastroduodenal ulcer (except hemorrhage)//133 160//Calculus of urinary tract//98 112//Transient cerebral ischemia//88 //All condition categories//64,181</p>

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1789 Hospital-wide all-cause unplanned readmission measure (HWR)	
Denominator Statement	This claims-based measure can be used in either of two patient cohorts: (1) admissions to acute care facilities for patients aged 65 years or older or (2) admissions to acute care facilities for patients aged 18 years or older. We have tested the measure in both age groups.
Denominator Details	<p>Time Window: One year.</p> <p>The ICD-9 diagnosis and procedure codes of the index admission are aggregated into clinically coherent groups of conditions/procedures (condition categories or procedure categories) by using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classifications System (CCS).</p> <p>Next, these discharge condition/procedure categories are organized into five mutually exclusive specialty cohorts defined by care team: surgery/gynecology, cardiorespiratory, cardiovascular neurology, and medicine.</p> <p>Rationale: Conditions typically cared for by the same team of clinicians are expected to experience similar added (or reduced) levels of readmission risk.</p> <p>The surgery/gynecology cohort includes admissions likely cared for by surgical or gynecological teams. These admissions are identified using AHRQ procedure categories.</p> <p>The cardiorespiratory cohort includes several condition categories with very high readmission rates such as pneumonia, chronic obstructive pulmonary disease, and heart failure. These admissions are combined into a single cohort because they are often clinically indistinguishable and patients are often simultaneously treated for several of these diagnoses.</p> <p>The cardiovascular cohort includes condition categories such as acute myocardial infarction that in large hospitals might be cared for by a separate cardiac or cardiovascular team.</p> <p>The neurology cohort includes neurologic condition categories such as stroke that in large hospitals might be cared for by a separate neurology team.</p> <p>The medicine cohort includes all non-surgical patients who were not assigned to any of the other cohorts.</p> <p>See attachments (Technical Report, Section 2.4.5, Table 8, and All-Payer memo, Tables 2-6).</p> <p>In order to define the eligible admissions, we first aggregated the ICD-9 codes of the index admission into clinically coherent conditions by using the Agency for Healthcare Research and Quality’s Clinical Classifications Software (CCS). There are a total of 285 mutually exclusive AHRQ condition categories, most of which are single, homogenous diseases such as pneumonia or acute myocardial infarction. Some are aggregates of conditions, such as “other bacterial infections.” Mental health and substance abuse categories are included. In addition, AHRQ provides 231 mutually exclusive procedure categories to group procedures a patient might have had during hospitalization.</p> <p>Admissions are eligible for inclusion in the measure if:</p> <p>a. Patient is aged 18 years or older Rationale: Pediatric patients have substantially different illnesses, comorbidities and outcomes compared to an adult population.</p> <p>b. Patient is alive upon discharge Rationale: Patients who die during the initial hospitalization cannot be readmitted.</p> <p>c. Patient is not transferred to another acute care hospital upon discharge Rationale: In an episode of care in which patient is transferred among hospitals, responsibility for the readmission is assigned to the final discharging hospital. Therefore these intermediate admissions within a single episode of care are not eligible for inclusion.</p>

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1789 Hospital-wide all-cause unplanned readmission measure (HWR)	
	Note that a readmission within 30 days will also be eligible as an index admission, if it meets all other eligibility criteria. This allows our measure to capture repeated readmissions for the same patient, whether at the same hospital or another.
Exclusions	We exclude from the measure all admissions for which full data are not available or for which 30-day readmission by itself cannot reasonably be considered a signal of quality of care. Exclusions: 1. Admissions for patients without 30 days of post-discharge enrollment in FFS Medicare Rationale: This is necessary in order to identify the outcome (readmission) in the dataset. 2. Admissions for patients not continuously enrolled in FFS Medicare for the 12 months prior to the index admission Rationale: This is necessary to capture historical data for risk adjustment. 3. Admissions for patients discharged against medical advice (AMA) Rationale: Hospital had limited opportunity to implement high quality care. 4. Admissions for patients to a PPS-exempt cancer hospital Rationale: These hospitals care for a unique population of patients that is challenging to compare to other hospitals. 5. Admissions for patients with medical treatment of cancer (See Table 3 in Section 2a1.9) Rationale: These admissions have a very different mortality and readmission profile than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions. (Patients with cancer who are admitted for other diagnoses or for surgical treatment of their cancer remain in the measure). 6. Admissions for primary psychiatric disease (see Table 4 in Section 2a1.9) Rationale: Patients admitted for psychiatric treatment are typically cared for in separate psychiatric or rehabilitation centers which are not comparable to acute care hospitals. 7. Admissions for “rehabilitation care; fitting of prostheses and adjustment devices” Rationale: These admissions are not for acute care or to acute care hospitals.
Exclusion Details	<p>We exclude from the measure all admissions for which full data are not available or for which 30-day readmission by itself cannot reasonably be considered a signal of quality of care.</p> <p>Exclusions:</p> <ol style="list-style-type: none"> 1. Admissions for patients without 30 days of post-discharge data Rationale: This is necessary in order to identify the outcome (readmission) in the dataset. 2. Admissions for patients lacking a complete enrollment history for the 12 months prior to admission Rationale: This is necessary to capture historical data for risk adjustment. 3. Admissions for patients discharged against medical advice (AMA) Rationale: Hospital had limited opportunity to implement high quality care. 4. Admissions for patients to a PPS-exempt cancer hospital Rationale: These hospitals care for a unique population of patients that is challenging to compare to other hospitals. 5. Admissions for patients with medical treatment of cancer (See Table 3 in Section 2a1.9) Rationale: These admissions have a very different mortality and readmission profile than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions. (Patients with cancer who are admitted for other diagnoses or for surgical treatment of their cancer remain in the measure). 6. Admissions for primary psychiatric disease (see Table 4 in Section 2a1.9) Rationale: Patients admitted for psychiatric treatment are typically cared for in separate psychiatric or rehabilitation centers which are not comparable to acute care hospitals. 7. Admissions for “rehabilitation care; fitting of prostheses and adjustment devices” Rationale: These admissions are not for acute care or to acute care hospitals. <p>Additionally, in the all-payer testing, we excluded obstetric admissions because the measure was developed among patients aged 65 years or older (approximately 500,000). 23//Other non-epithelial cancer of skin//593 26//Cancer of cervix//586</p>

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1789 Hospital-wide all-cause unplanned readmission measure (HWR)	
	<p>28//Cancer of other female genital organs//326 34//Cancer of other urinary organs//301 37//Hodgkin`s disease//236 22//Melanomas of skin//212 31//Cancer of other male genital organs//34 30//Cancer of testis//4 //Total//182,213</p> <p>Table 4: Psychiatric discharge condition categories excluded from the measure</p> <p>AHRQ CCS//Description//Number of Admissions</p> <p>657//Mood disorders//7,874 659//Schizophrenia and other psychotic disorders//7,849 651//Anxiety disorders//3,153 670//Miscellaneous disorders//1,315 654//Developmental disorders//594 650//Adjustment disorders//399 658//Personality disorders//127 652//Attention-deficit, conduct, and disruptive behavior disorders//119 656//Impulse control disorders, NEC//27 655//Disorders usually diagnosed in infancy, childhood, or adolescence//16 662//Suicide and intentional self-inflicted injury//10 //Total//21,483</p>
Risk Adjustment	<p>Hierarchical logistic regression models are used to model the log-odds of readmission within 30 days of discharge, as a function of patient-level demographic and clinical characteristics and a random hospital-level intercept. This model specification accounts for within-hospital correlation of the observed outcomes and models the assumption that underlying differences in quality among the health care facilities being evaluated lead to systematic differences in outcomes.</p> <p>In brief, the approach simultaneously models two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals [1]. At the patient level, each model adjusts the log-odds of readmission within 30-days of discharge for age and selected clinical covariates. The second level models the hospital-specific intercepts as following a normal distribution. The hospital intercept represents the underlying hospital specific risk of readmission, after accounting for patient risk. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals. We use a fixed, common set of variables in all our models for simplicity and ease of data collection and analysis. However, we estimate a hierarchical logistic regression model for each specialty cohort separately, and the coefficients associated with each variable may vary across specialty cohorts. To group ICD-9-CM codes into comorbid risk variables, we use CMS Condition Category (CMS-CCs) groups, the grouper used in previous CMS risk-standardized outcomes measures [2]. See Table 5 for the final list of comorbid risk variables. The models also include a condition-specific indicator for all condition categories with sufficient volume (defined as those with more than 1,000 admissions nationally each year for Medicare FFS data) as well as a single indicator for conditions with insufficient volume in each model. See Table 5, of the Measure Submission and Evaluation Worksheet for the final list of comorbid risk variables.</p>
Stratification	N/A
Type Score	Other A standardized risk ratio (SRR) for each hospital and each cohort is estimated using a separate hierarchical logistic regression model for that cohort. The five SRRs, weighted by volume, are then combined into a single score which is the risk-standardized hospital-wide readmission ratio. To improve interpretation, this ratio is then multiplied by the overall national raw readmission rate for all index admissions in all cohorts to produce the risk-standardized hospital-wide readmission rate (RSSR).
Algorithm	Models for each specialty cohort are specified and estimated, using a separate hierarchical logistic regression model for that cohort. Each model is then used to calculate a standardized risk ratio (SRR) for each hospital which contributes index admissions to that model. These SRRs, weighted by volume, are then pooled for each hospital to create a composite hospital-wide SRR.

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<p>For each specialty cohort within a hospital, the numerator of the SRR (“predicted”) is the number of readmissions for patients within the specialty cohort within 30 days predicted on the basis of the hospital’s performance with its observed case mix, and the denominator (“expected”) is the number of readmissions expected for patients within the specialty cohort on the basis of the nation’s performance with that hospital’s case mix. This approach is analogous to a ratio of “observed” to “expected” used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital’s performance given its case-mix to an average hospital’s performance with the same case-mix. Thus, an SRR less than 1 indicates lower-than-expected readmission or better quality and an SRR greater than 1 indicates higher-than-expected readmission or worse quality.</p> <p>These SRRs are then pooled for each hospital to create a composite hospital-wide SRR. This pooled SRR is the geometric mean of the specialty cohort SRRs, weighted by the number of admissions in the specialty cohort, and the pooled SRR is then multiplied by the overall crude readmission rate to produce the risk standardized readmission rate (RSRR) for reporting.</p> <p>Please see attachment (Technical Report, Section 2.6) for more details on the calculation algorithm.</p>

1768 Plan all-cause readmissions	
Steward	National Committee for Quality Assurance
Description	<p>For members 18 years of age and older, the number of acute inpatient stays during the measurement year that were followed by an acute readmission for any diagnosis within 30 days and the predicted probability of an acute readmission.</p> <p>Data are reported in the following categories:</p> <ol style="list-style-type: none"> 1. Count of Index Hospital Stays (IHS) (denominator) 2. Count of 30-Day Readmissions (numerator) 3. Average Adjusted Probability of Readmission 4. Observed Readmission (Numerator/Denominator) 5. Total Variance <p>Note: For commercial, only members 18–64 years of age are collected and reported; for Medicare, only members 18 and older are collected, and only members 65 and older are reported.</p>
Type	Outcome
Data Source	Administrative claims
Level	Health Plan
Setting	Behavioral Health/Psychiatric : Inpatient, Hospital/Acute Care Facility
Numerator Statement	At least one acute readmission for any diagnosis within 30 days of the Index Discharge Date.
Numerator Details	<p>Time Window: All acute inpatient stays with an admission date on or between January 2 and December 31 of the measurement year.</p> <p>Acute-to-acute transfers: Keep the original admission date as the Index Admission Date, but use the transfer’s discharge date as the Index Discharge Date.</p> <p>Exclude acute inpatient hospital discharges with a principal diagnosis for codes that identify maternity related inpatient discharges for the following ICD-9CM codes:</p> <ul style="list-style-type: none"> - Pregnancy: 630-679, V22, V23, V28 - Conditions originating in the perinatal period: 760-779, V21, V29-V39 <p>For each IHS, determine if any of the acute inpatient stays have an admission date within 30 days after the Index Discharge Date.</p>
Denominator Statement	For commercial health plans, ages 18-64 as of the Index Discharge Date. For Medicare and Special Needs Plans, ages 18 and older as of the Index Discharge Date.
Denominator Details	Time Window: Identify all acute inpatient stays with a discharge date on or between January 1 and December 1 of the measurement year.

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	<p>1768 Plan all-cause readmissions</p> <p>The denominator for this measure is based on acute discharges, not members.</p> <ul style="list-style-type: none"> - Identify all acute inpatient stays with a discharge date on or between January 1 and December 1 of the measurement year. - Acute-to-acute transfers: Keep the original admission date as the Index Admission Date, but use the Transfer's discharge date as the index Discharge Date. - Calculate continuous enrollment. - Assign each acute inpatient stay to one age and gender category.
Exclusions	Exclude hospital stays where the Index Admission Date is the same as the Index Discharge Date and any inpatient stay with a discharge date in the 30 days prior to the Index Admission Date.
Exclusion Details	<p>Exclude the hospital and inpatient stays for the following reasons.</p> <ul style="list-style-type: none"> - Inpatient stays with discharges for death - Acute inpatient discharge with a principal diagnosis for pregnancy or for any other condition originating in the perinatal period in for the following ICD-9CM codes <p>Pregnancy: 630-679, V22, V23, V28 Conditions originating in the perinatal period: 760-779, V21, V29-V39</p>
Risk Adjustment	<p>Indirect standardization, using logistic regression Uses the CC and HCC models to identify comorbidities and attaches weights to each statistically significant comorbidity by product line and age grouping. We estimated a stepwise logistic regression. The binary dependent variable was coded 1 for index hospital stays that had a subsequent readmission within 30 days, and 0 otherwise. The independent variables in the models were: - age-gender cohort: Commercial: male 18-44, female 18-44, male 45-54, female 45-54, male 55-64 (reference group), female 55-64. In year 1, the model for Medicare used: Medicare 18 and older: male 18-44, female 18-44, male 45-54, female 45-54, male 55-64, female 55-64. male 65-74 (reference group), female 65-74, male 75-84, female 75-84, male 85+, female 85+. In year 2, the model for Medicare will use: male 65-74 (reference group), female 65-74, male 75-84, female 75-84, male 85+, female 85+. - Major surgery: 1=index hospital stay was for major surgery (see code list in algorithm); 0, otherwise. - Discharge Clinical Condition (CC) from the HCC classification system: 1=index hospital stay was for the CC; 0, otherwise. Note: each index hospital stay is coded into exactly one CC and is based only on the primary diagnosis. - Comorbid Hierarchical Clinical Condition (HCC): 1=index hospital stay had the associated comorbidity (HCC) indicated through any diagnosis on a face to face claim/encounter for the 12 months prior to the index hospital stay discharge date; 0, otherwise.</p> <p>Attachments for detailed risk model: NQF_1768_Regression Model.pdf and NQF_1768_Year1-PlanSubmissions-ObsExp.pdf</p>
Stratification	<p>Stratification by risk category/subgroup.</p> <p>The measure includes a table that stratifies the five reporting data elements by age and gender. The five elements are:</p> <ol style="list-style-type: none"> 1. Count of Index Stays 2. Count of 30-Day Readmissions 3. Average Adjusted Probability 4. Observed Readmission (Numerator/Denominator) 5. Total Variance <p>The age stratifications are: Commercial: 18-44, 45-54, 55-64, Total Medicare: 65-74, 75-84, 85+., Total</p> <p>The measure is also stratified by gender. Values are reported for each stratification.</p>
Type Score	Other Rate/Proportion and Count: The Counts are the number of index hospital stays (denominator) and stays with a subsequent 30-day readmission (numerator). The Rate/Proportions are the average adjusted probability of readmission (expected rate) and the observed rate of readmission (numerator / denominator).
Algorithm	<p>The calculation for continuous enrollment is as follows:</p> <p>Step 1: Determine the eligible population. For commercial health plans, ages 18-64 as of the Index Discharge</p>

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<p>Date. For Medicare and Special Needs Plans, ages 18 and older as of the Index Discharge Date.</p> <p>Step 2: Determine number discharges meeting the denominator criteria as specified in Section 2a1.7 above.</p> <p>Step 3: Determine the number of patients who meet the numerator criteria as specified in section 2a1.3 above. The numerator includes all patients in the denominator population who had acute inpatient stays with an admission date on or between January 1 and December 31 of the measurement year.</p> <p>Step 4: Determine the number of exclusions Step 3 as specified in section 2a1.8. Patients with hospital stays where the Index Admission Date is the same as the Index Discharge Date and any inpatient stay with a discharge date in the 30 days prior to the Index Admission Date are exclusions.</p> <p>Step 5: Calculate the rate</p> <p>The risk adjustment calculation is: Surgeries: Determine if the member underwent surgery during the inpatient stay. Download the list of codes from the NCQA Web site for the surgery codes for risk adjustment and use it to identify surgeries. Consider an IHS to include a surgery if at least one procedure code is present from any provider between the admission and discharge dates.</p> <p>Discharge Condition: Assign a discharge Clinical Condition (CC) category code to IHS based on its primary discharge diagnosis. For acute-to-acute transfers, use the transfer's primary Discharge diagnosis. Exclude diagnoses that cannot be mapped.</p> <p>Comorbidities: This is determined by performing the following steps:</p> <p>Step 1: Identify all diagnoses for face-to-face encounters during the classification period. Exclude the primary discharge diagnosis on the IHS.</p> <p>Description // CPT // UB Revenue Outpatient // 92002,92004, 92012, 92014, 98925-98929, 98940-98942, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456 // 051x, 0520-0523, 0526-0529, 057x-059x, 082x-085x, 088x, 0982, 0983</p> <p>Nonacute Inpatient // 99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337 // 0118, 0128, 0138, 0148, 0158, 019x, 0524, 0525, 055x, 066x, 1001, 1002</p> <p>Acute Inpatient // 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291 // 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x, 021x, 072x, 080x, 0987</p> <p>ED // 99281-99285 // 045x, 0981</p> <p>Step 2: Assign each diagnosis to one comorbid Clinical Condition (CC) category using Table CC—Comorbid. Exclude all diagnoses that cannot be assigned to a comorbid CC category. For members with no qualifying diagnoses from face-to-face encounters, skip to the Risk Adjustment Weighting section. All digits must match exactly when mapping diagnosis codes to the comorbid CCs.</p> <p>Step 3: Determine HCCs for each comorbid CC identified. Refer to Table HCC—Rank. For each stay's comorbid CC list, match the comorbid CC code to the comorbid CC code in the table, and assign:</p> <ul style="list-style-type: none"> - The ranking group - The rank - The HCC <p>For comorbid CCs that do not match to Table HCC—Rank, use the comorbid CC as the HCC and assign a rank of 1.</p>

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<p>Note: One comorbid CC can map to multiple HCCs; each HCC can have one or more comorbid CCs.</p> <p>Step 4: Select only the highest ranked HCC in each ranking group using the Rank column (1 is the highest rank possible).</p> <p>Drop all other HCCs in each ranking group, and de-duplicate the HCC list if necessary.</p> <p>Example: Assume a stay with the following comorbid CCs: CC-15, CC-19 and CC-80 (assume no other CCs).</p> <ul style="list-style-type: none"> • CC-80 does not have a map to the ranking table and becomes HCC-80 • HCC-15 is part of Ranking Group 1 and HCC-19 is part of Ranking Groups Diabetes 1–Diabetes 4. Because CC-15 is ranked higher than CC-19 in Ranking Group Diabetes 1, the comorbidity is assigned as HCC-15 for Ranking Group 1. Because CC-19 is ranked higher in Ranking Groups Diabetes 2-4, the comorbidity is assigned as HCC-19 for these ranking groups. <p>The final comorbidities for this discharge include HCC-15, HCC-19 and HCC-80.</p> <p>Example:</p> <table border="0"> <thead> <tr> <th style="text-align: left;">Ranking Group</th> <th style="text-align: left;">// CC</th> <th style="text-align: left;">// Description</th> <th style="text-align: left;">// Rank</th> <th style="text-align: left;">// HCC</th> </tr> </thead> <tbody> <tr> <td>NA</td> <td>// CC-80</td> <td>// Congestive Heart Failure</td> <td>// NA</td> <td>// HCC-80</td> </tr> <tr> <td>Diabetes 1</td> <td>// CC-15</td> <td>// Diabetes With Renal or Peripheral Circulatory Manifestation</td> <td>// 1</td> <td>// HCC-15</td> </tr> <tr> <td>Diabetes 1</td> <td>// CC-16</td> <td>// Diabetes With Neurologic or Other Specified Manifestation</td> <td>// 2</td> <td>// HCC-16</td> </tr> <tr> <td>Diabetes 1</td> <td>// CC-17</td> <td>// Diabetes With Acute Complications</td> <td>// 3</td> <td>// HCC-17</td> </tr> <tr> <td>Diabetes 1</td> <td>// CC-18</td> <td>// Diabetes With Ophthalmologic or Unspecified Manifestation</td> <td>// 4</td> <td>// HC-18</td> </tr> <tr> <td>Diabetes 1</td> <td>// CC-19</td> <td>// Diabetes without Complications</td> <td>// 5</td> <td>// HCC-19</td> </tr> <tr> <td>Diabetes 2</td> <td>// CC-16</td> <td>// Diabetes With Neurologic or Other Specified Manifestation</td> <td>// 1</td> <td>// HCC-16</td> </tr> <tr> <td>Diabetes 2</td> <td>// CC-17</td> <td>// Diabetes with Acute Complications</td> <td>// 2</td> <td>// HCC-17</td> </tr> <tr> <td>Diabetes 2</td> <td>// CC-18</td> <td>// Diabetes With Ophthalmologic or Unspecified Manifestation</td> <td>// 3</td> <td>// HCC-18</td> </tr> <tr> <td>Diabetes 2</td> <td>// CC-19</td> <td>// Diabetes Without Complication</td> <td>// 4</td> <td>// HCC-19</td> </tr> <tr> <td>Diabetes 3</td> <td>// CC-17</td> <td>// Diabetes With Acute Complications</td> <td>// 1</td> <td>// HCC-17</td> </tr> <tr> <td>Diabetes 3</td> <td>// CC-18</td> <td>// Diabetes With Ophthalmologic or Unspecified Manifestation</td> <td>// 2</td> <td>// HCC-18</td> </tr> <tr> <td>Diabetes 3</td> <td>// CC-19</td> <td>// Diabetes Without Complication</td> <td>// 3</td> <td>// HCC-19</td> </tr> <tr> <td>Diabetes 4</td> <td>// CC-18</td> <td>// Diabetes With Ophthalmologic or Unspecified Manifestation</td> <td>// 1</td> <td>//HCC-18</td> </tr> <tr> <td>Diabetes 4</td> <td>// CC-18</td> <td>// Diabetes Without Complication</td> <td>// 2</td> <td>// HCC-19</td> </tr> </tbody> </table> <p>Step 5: Identify combination HCCs.</p> <p>Some combinations suggest a greater amount of risk when observed together. For example, when diabetes and CHF are present, an increased amount of risk is evident. Additional HCCs are selected to account for these relationships.</p> <p>Compare each stay’s list of unique HCCs to those listed as combinations and assign any additional HCC conditions.</p> <p>For fully nested combinations (e.g., the diabetes/CHF combinations is nested in the diabetes/CHF/renal combination), use only the more comprehensive pattern. In this example, only the diabetes/CHF/renal combination is counted.</p> <p>For overlapping combinations (e.g., the CHF, COPD combination overlaps with the CHR/ renal/diabetes combination), use both sets of combinations. In this example, both CHF/COPD and CHF/renal/diabetes combinations are counted.</p> <p>Based on the combinations, a member can have none, one or more of these added HCCs.</p> <p>Example: For a stay with comorbidities HCC-15, HCC-19 and HCC-80 (assume no other HCCs), assign HCC-</p>	Ranking Group	// CC	// Description	// Rank	// HCC	NA	// CC-80	// Congestive Heart Failure	// NA	// HCC-80	Diabetes 1	// CC-15	// Diabetes With Renal or Peripheral Circulatory Manifestation	// 1	// HCC-15	Diabetes 1	// CC-16	// Diabetes With Neurologic or Other Specified Manifestation	// 2	// HCC-16	Diabetes 1	// CC-17	// Diabetes With Acute Complications	// 3	// HCC-17	Diabetes 1	// CC-18	// Diabetes With Ophthalmologic or Unspecified Manifestation	// 4	// HC-18	Diabetes 1	// CC-19	// Diabetes without Complications	// 5	// HCC-19	Diabetes 2	// CC-16	// Diabetes With Neurologic or Other Specified Manifestation	// 1	// HCC-16	Diabetes 2	// CC-17	// Diabetes with Acute Complications	// 2	// HCC-17	Diabetes 2	// CC-18	// Diabetes With Ophthalmologic or Unspecified Manifestation	// 3	// HCC-18	Diabetes 2	// CC-19	// Diabetes Without Complication	// 4	// HCC-19	Diabetes 3	// CC-17	// Diabetes With Acute Complications	// 1	// HCC-17	Diabetes 3	// CC-18	// Diabetes With Ophthalmologic or Unspecified Manifestation	// 2	// HCC-18	Diabetes 3	// CC-19	// Diabetes Without Complication	// 3	// HCC-19	Diabetes 4	// CC-18	// Diabetes With Ophthalmologic or Unspecified Manifestation	// 1	//HCC-18	Diabetes 4	// CC-18	// Diabetes Without Complication	// 2	// HCC-19
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<p>901 in addition to HCC-15, HCC-19 and HCC-80. This does not replace HCC-15, HCC19 or HCC-80.</p> <p>Example: Combination: Diabetes and CHF Comorbid HCC // Comorbid HCC // Comorbid HCC // Combination HCC HCC-15 // HCC-80 // NA // HCC-901 HCC-16 // HCC-80 // NA // HCC-901 HCC-17 // HCC-80 // NA // HCC-901 HCC-18 // HCC-80 // NA // HCC-901 HCC-19 // HCC-80 // NA // HCC-901</p> <p>For each IHS, use the following steps to identify risk adjustment weights based on presence of surgeries, discharge condition, comorbidity, age and gender.</p> <p>Note: The final weights table will be released on November 15, 2011.</p> <p>Step 1: For each IHS with a surgery, link the surgery weight. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 2: For each IHS with a discharge CC Category, link the primary discharge weights. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 3: For each IHS with a comorbidity HCC Category, link the weights. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 4: Link the age and gender weights for each IHS. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 5: Identify the base risk weight. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 6: Sum all weights associated with the IHS (i.e., presence of surgery, primary discharge diagnosis, comorbidities, age, gender and base risk weight).</p> <p>Step 7: Use the formula below to calculate the adjusted probability of a readmission based on the sum of the weights for each IHS. Adjusted probability of readmission = $(e^{(?Weights\ for\ IHS)})$ Divided by $(1+e^{(?Weights\ for\ IHS)})$ OR Adjusted probability of readmission = $[\exp(\text{sum of weights for IHS})] / [1 + \exp(\text{sum of weights for IHS})]$ Note: “xp” refers to the exponential or antilog function.</p> <p>Step 8: Use the formula below and the adjusted probability of readmission calculated in Step 7 to calculate the variance for each IHS.</p>

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	Variance = Adjusted probability of readmission x (1—Adjusted probability of readmission) Example: If the adjusted probability of readmission is 0.1518450741, then the variance is 0.1518450741 x 0.8481549259 = 0.1287881476.

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APPENDIX B: STEERING COMMITTEE and NQF STAFF

STEERING COMMITTEE

Sherrie H. Kaplan, PhD, MPH (Co-Chair)

University of California Irvine School of Medicine
Irvine, CA

Eliot Lazar, MD, MBA (Co-Chair)

New York Presbyterian Hospital & Healthcare System
New York, NY

Tanya Alteras, MPP

National Partnership for Women & Families
Washington, DC

Brent Asplin, MD, MPH

Fairview Medical Group
Minneapolis, MN

Richard Bankowitz, MD, MBA, FACP

Premier Inc.
Charlotte, NC

Jim Bellows, PhD

Kaiser Permanente
Oakland, CA

Jo Ann Brooks, PhD, RN, FAAN, FCCP

Indiana University Health System
Indianapolis, IN

Frank Ghinassi, PhD

Western Psychiatric Institute and Clinic
Pittsburgh, PA

Laurent Glance, MD

University of Rochester Medical Center
Rochester, NY

Jeffrey Greenwald, MD, SFHM

Harvard Medical School
Boston, MA

Bruce L. Hall, MD, PhD, MBA, FACS

American College of Surgeons
Chicago, IL

Leslie Kelly Hall

Healthwise
Boise, ID

Ashish Jha, MD, MPH

Department of Veteran Affairs
Boston, MA

Michael L. Langberg, MD

Cedars-Sinai Medical Center
Los Angeles, CA

Patricia McDermott, RN

Aetna, Inc.
Chicago, IL

Paula Minton-Foltz, RN, MSN

Harborview Medical Center
Seattle, WA

David Polakoff, MD, MSc

MassHealth
Boston, MA

Bruce Pomeranz, MD

Kessler Institute for Rehabilitation
Chester, NJ

Mark Schuster, MD, PhD

Children's Hospital Boston
Boston, MA

Christie Travis, MSHHA

Memphis Business Group on Health
Memphis, TN

Mark V. Williams, MD, FACP, FHM

Northwestern University Feinberg School of Medicine
Chicago, IL

NATIONAL QUALITY FORUM STAFF

Helen Burstin, MD, MPH

Senior Vice President, Performance Measures

Taroon Amin, MA, MPH

Senior Director, Performance Measures

Heidi Bossley, MSN, MBA

Vice President, Performance Measures

Alexis Forman Morgan, MPH

Senior Project Manager, Performance Measures

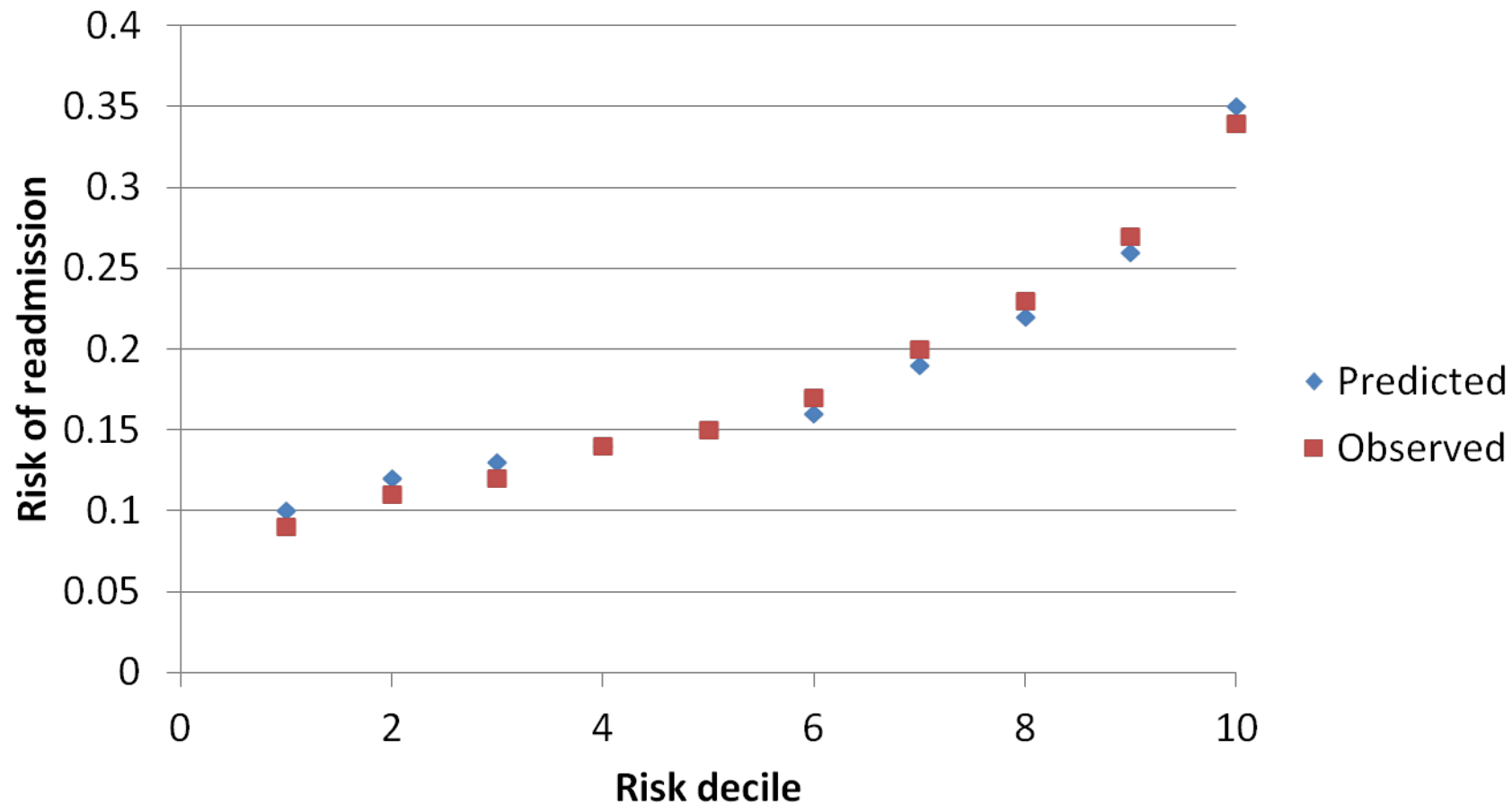
Adeela Khan, MPH

Project Analyst, Performance Measures

Calibration

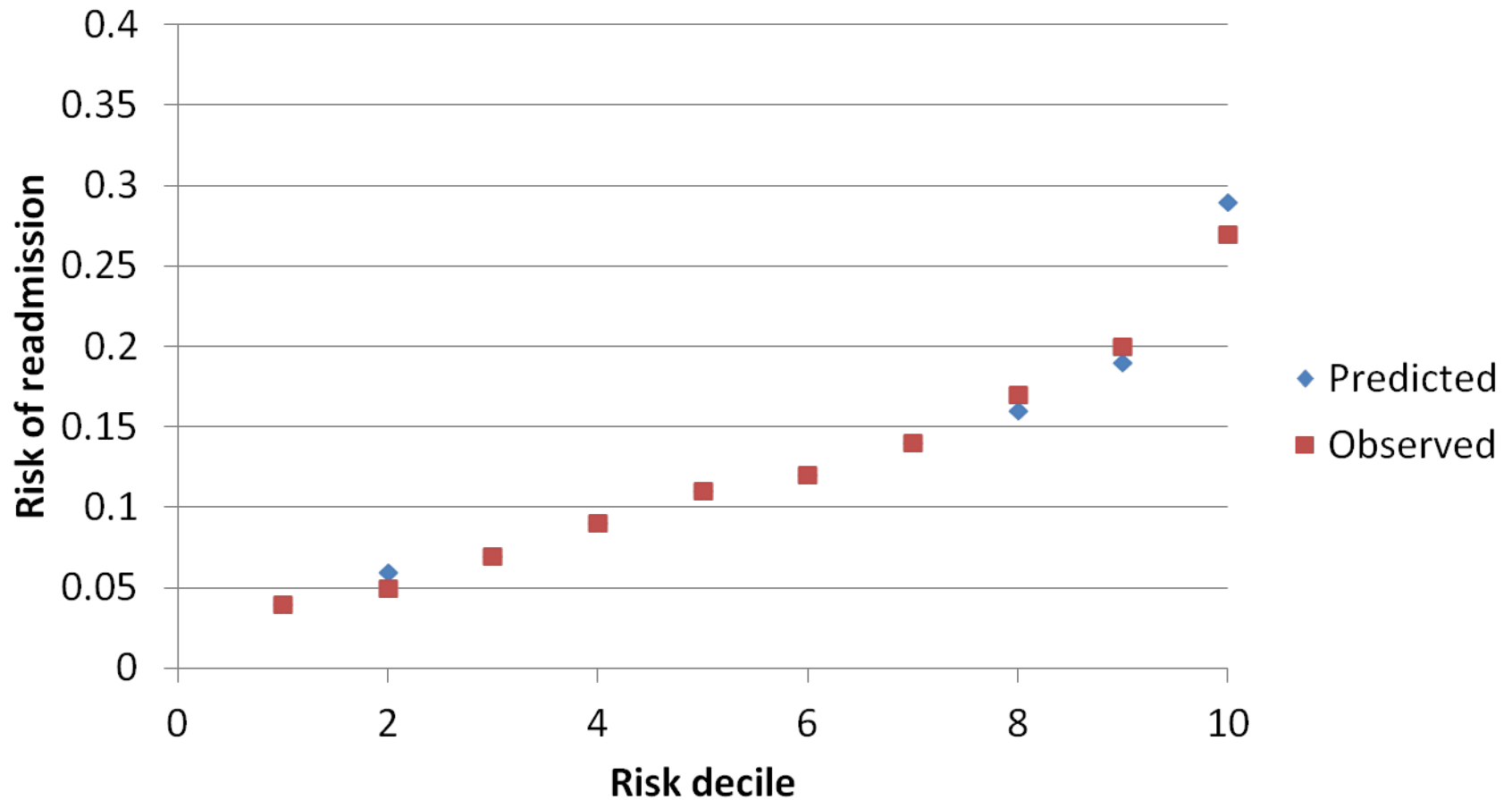
Medicine cohort

Calibration



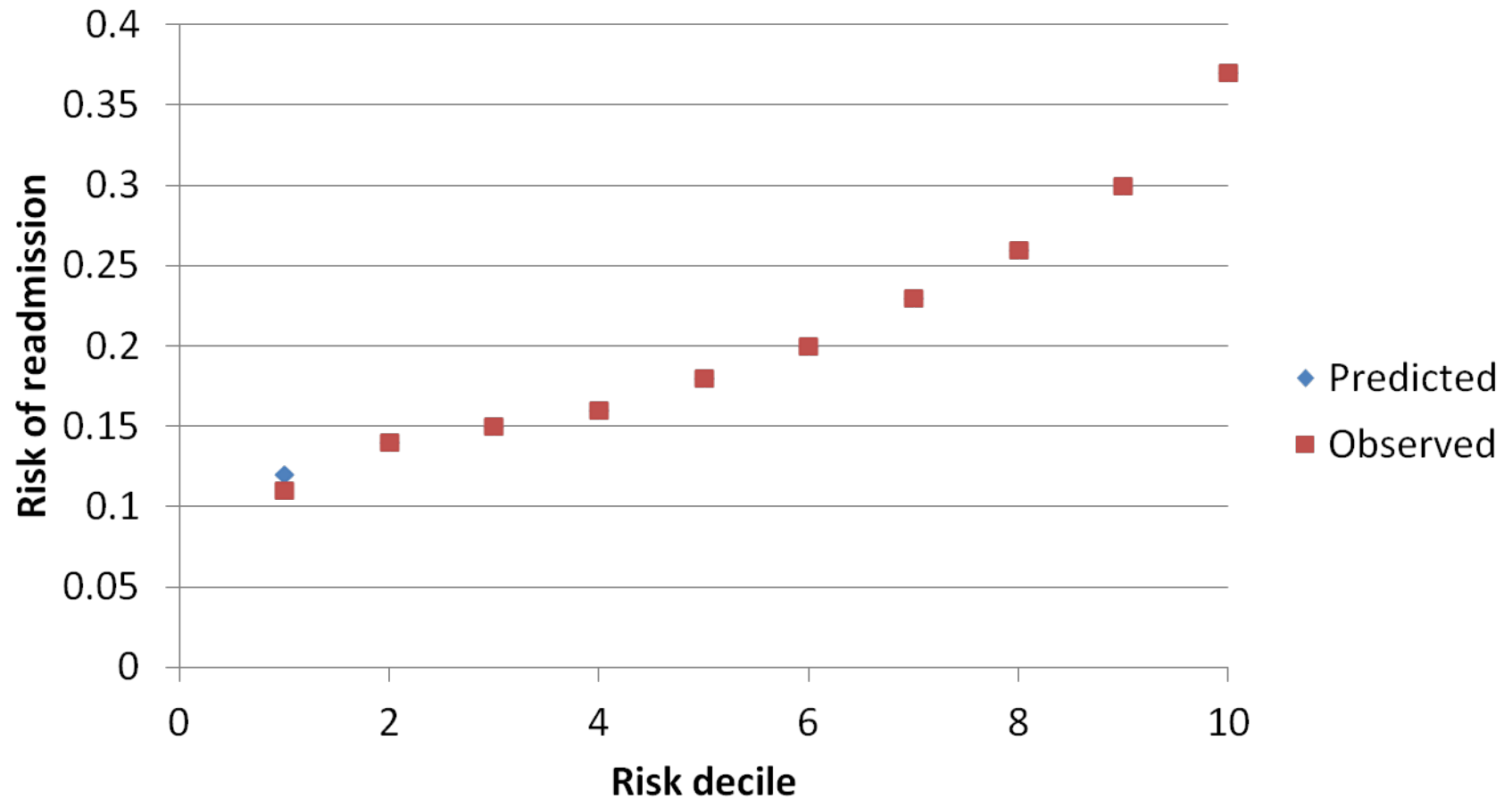
Surgery/gynecology cohort

Calibration



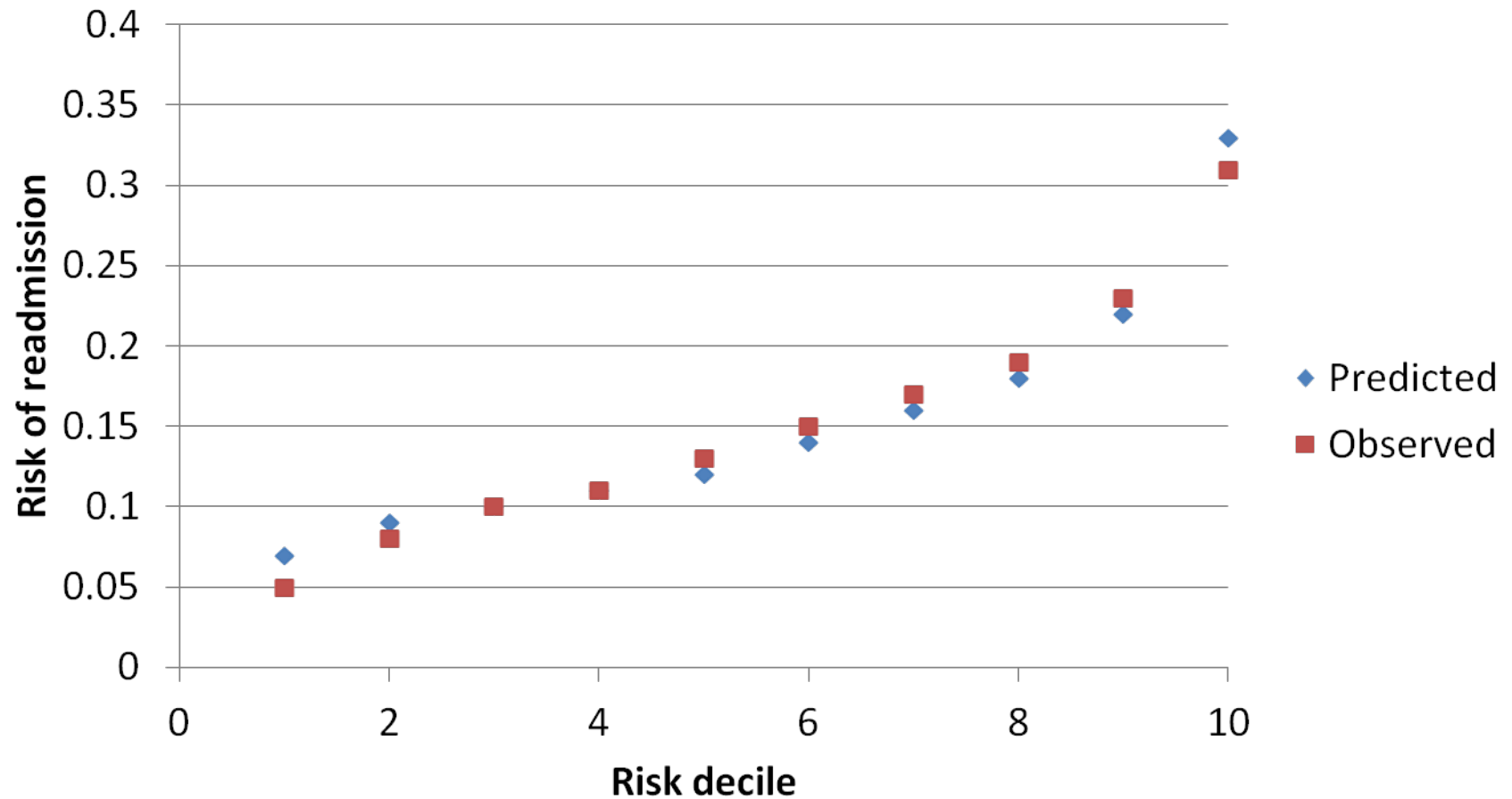
Cardiorespiratory cohort

Calibration



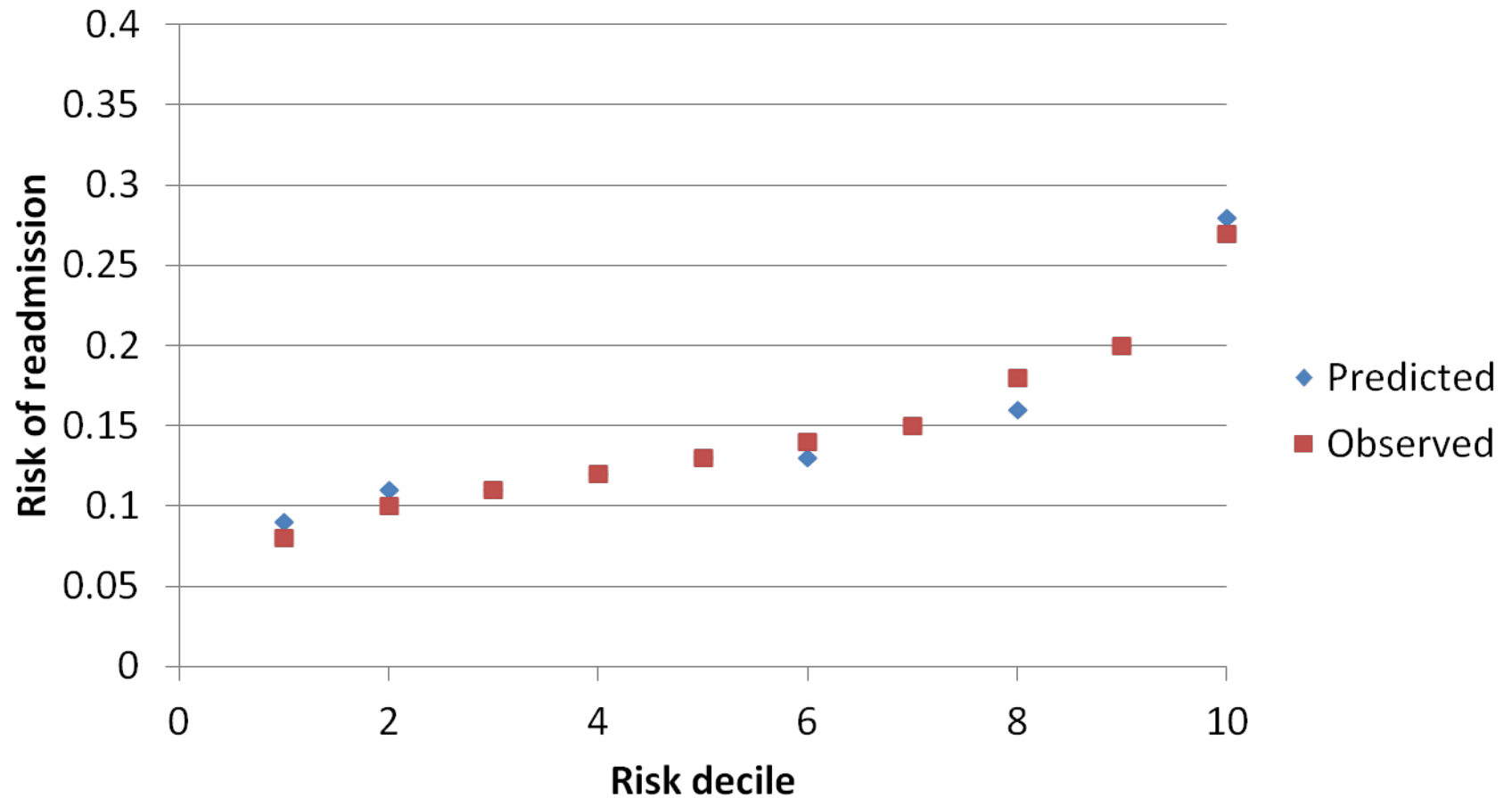
Cardiovascular cohort

Calibration



Neurology cohort

Calibration



Small hospitals and HGLM

Distribution of hospital volume

N=4,995

Quantile	Estimate
100% Max	25,098
99%	9,165
95%	5,792
90%	4,216
75% Q3	2,258
50% Median	750
25% Q1	252
10%	88
5%	35
1%	4
0% Min	1

Distribution of bed size (N=4,714)

Quantile	Estimate
100% Max	2,204
99%	862
95%	524
90%	390
75% Q3	225
50% Median	100
25% Q1	36
10%	25
5%	17
1%	10
0% Min	6

RSRR and small hospitals*

Analysis Variable : RSRR								
volume			10th	Lower		Upper	90th	
10th	N Obs	Min	Pctl	Quartile	Median	Quartile	Pctl	Max
<=88	292	15.07	15.9	16.16	16.48	16.76	17.03	18.19
>88	4495	12.51	15.27	15.85	16.49	17.27	18.16	22.69

Analysis Variable : RSRR								
bedsize			10th	Lower		Upper	90th	
10th	N Obs	Min	Pctl	Quartile	Median	Quartile	Pctl	Max
< 25	426	12.67	15.48	15.96	16.43	16.9	17.47	21.65
>=25	3655	12.51	15.22	15.82	16.5	17.28	18.23	22.69

*excluding hospitals with <25 admissions/year, consistent with current public reporting methods

Socioeconomic status

Hospital RSRRs by Dual Eligible

	Hospital Proportion of Medicaid Patients			
	<10 (N=1216)	10-20 (N=2158)	20-30 (N=897)	>30 (N= 334)
Min	12.58	12.79	13.7	13.84
25 th percentile	15.96	15.9	16.01	16.25
50 th percentile	16.50	16.52	16.74	16.90
75 th percentile	17.08	17.27	17.56	17.90
Max	19.84	21.73	21.35	22.76

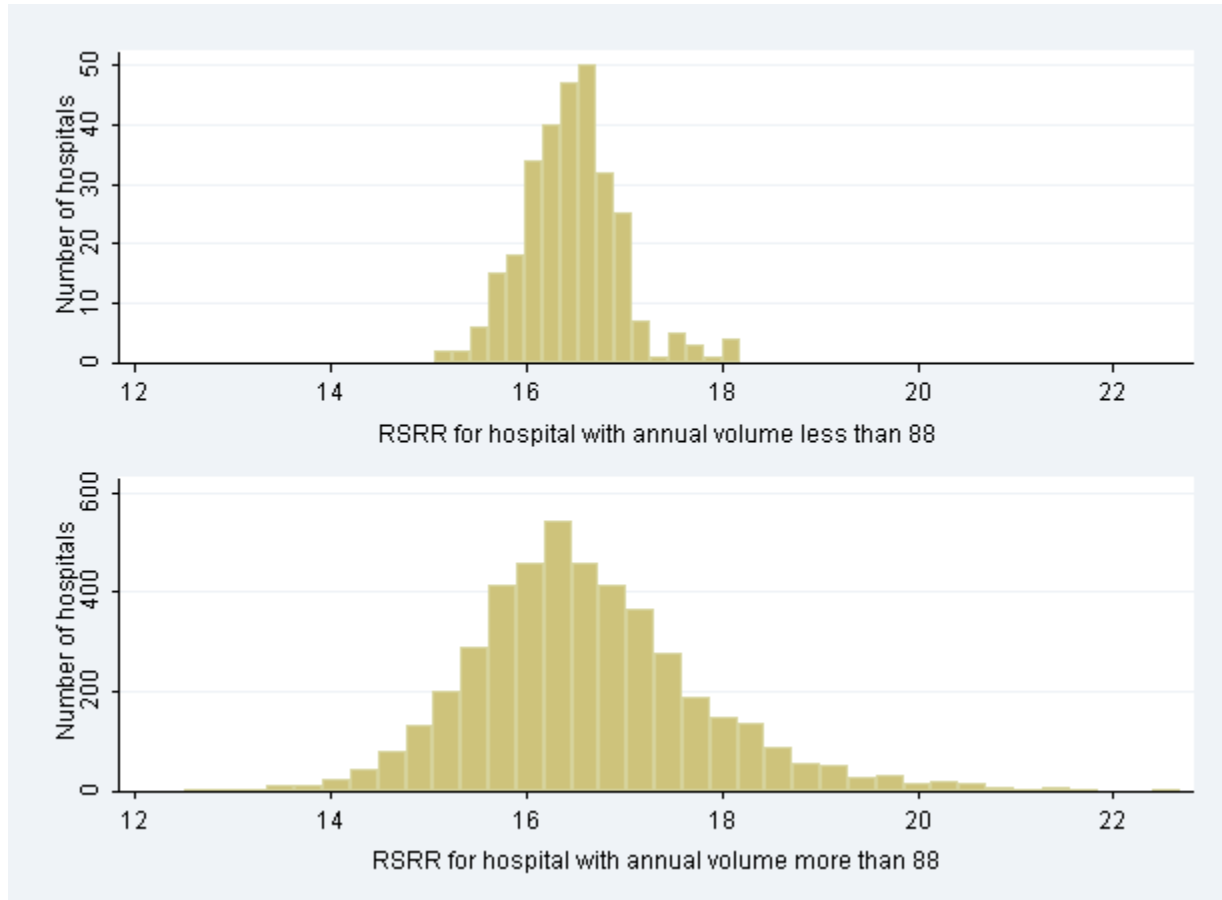
RSRR and small hospitals*

Analysis Variable : RSRR								
volume			10th	Lower		Upper	90th	
10th	N Obs	Min	Pctl	Quartile	Median	Quartile	Pctl	Max
<=88	500	15.07	16.02	16.29	16.52	16.71	16.96	18.19
>88	4495	12.51	15.27	15.85	16.49	17.27	18.16	22.69

Analysis Variable : RSRR								
bedsize			10th	Lower		Upper	90th	
10th	N Obs	Min	Pctl	Quartile	Median	Quartile	Pctl	Max
< 25	467	12.67	15.56	16	16.46	16.86	17.45	21.65
>=25	3718	12.51	15.23	15.84	16.5	17.27	18.21	22.69

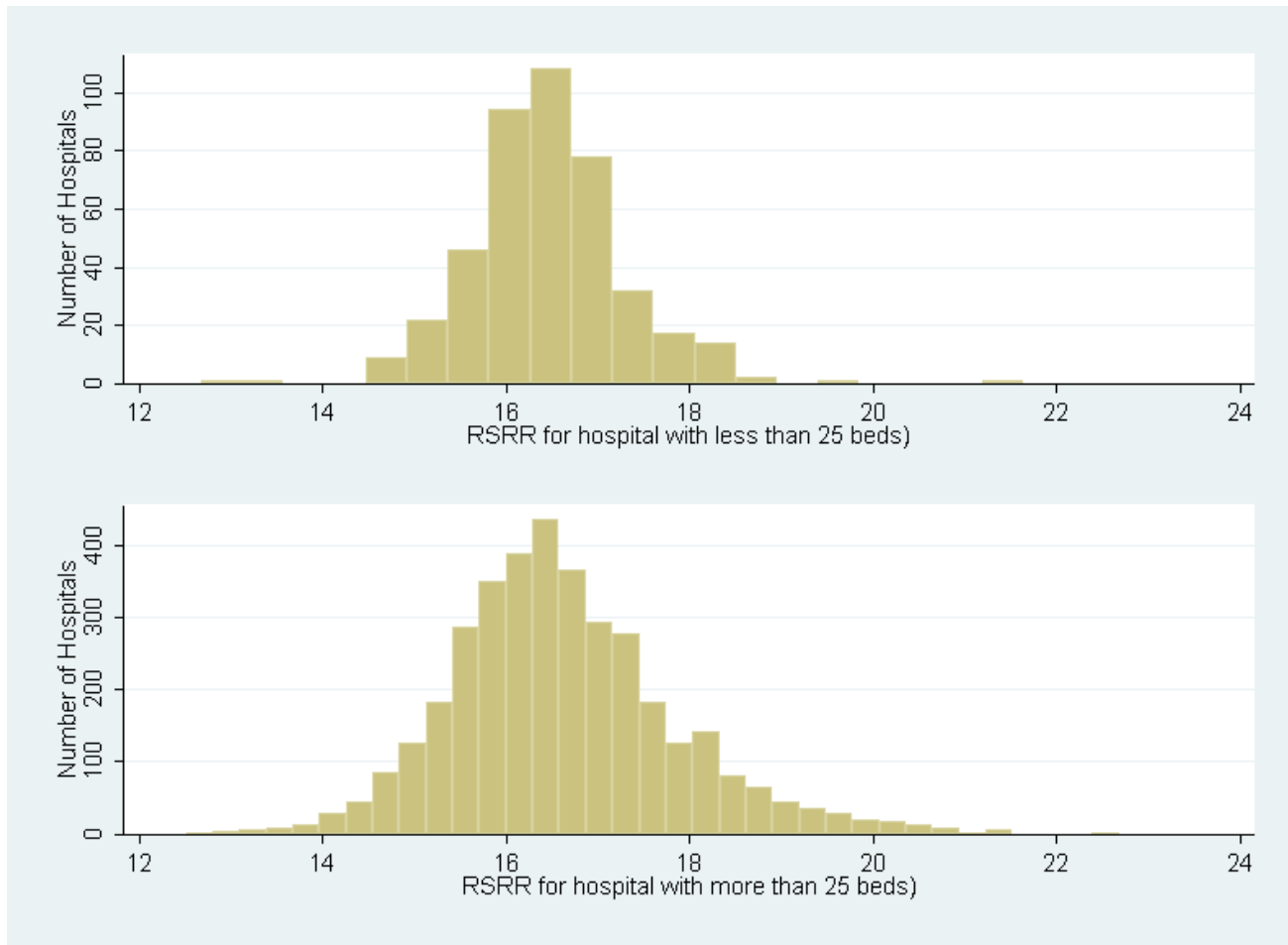
*no volume restriction

Distribution: Small volume*



*excluding hospitals with <25 admissions/year, consistent with current public reporting methods

Distribution: Bed size*



*excluding hospitals with <25 admissions/year, consistent with current public reporting methods

Commercial 18-64										
Probability	Correct		Incorrect		Percentages					
	Event	Non-Event	Event	Non-Event	Correct	Sensitivity	Specificity	False Pos.	False Neg.	
0.02	104000	0	898000	0	10.4	100	0	89.6		
0.04	99846	139000	759000	4084	23.8	96.1	15.5	88.4	2.9	
0.06	89823	345000	553000	14107	43.4	86.4	38.4	86	3.9	
0.08	75654	540000	358000	28276	61.5	72.8	60.1	82.6	5	
0.10	64934	646000	252000	38996	70.9	62.5	71.9	79.5	5.7	
0.12	57097	703000	195000	46833	75.9	54.9	78.3	77.4	6.2	
0.14	49687	748000	150000	54243	79.6	47.8	83.3	75.1	6.8	
0.16	42938	786000	113000	60992	82.7	41.3	87.5	72.4	7.2	
0.18	37423	810000	88139	66507	84.6	36	90.2	70.2	7.6	
0.20	33255	827000	70934	70675	85.9	32	92.1	68.1	7.9	
0.22	30015	839000	59677	73915	86.7	28.9	93.4	66.5	8.1	
0.24	27450	847000	51678	76480	87.2	26.4	94.2	65.3	8.3	
0.26	25283	853000	45528	78647	87.6	24.3	94.9	64.3	8.4	
0.28	23397	857000	40790	80533	87.9	22.5	95.5	63.5	8.6	
0.30	20783	863000	35635	83147	88.1	20	96	63.2	8.8	
0.32	16852	869000	28853	87078	88.4	16.2	96.8	63.1	9.1	
0.34	15352	873000	25390	88578	88.6	14.8	97.2	62.3	9.2	
0.36	12308	879000	19648	91622	88.9	11.8	97.8	61.5	9.4	
0.38	8671	885000	13540	95259	89.1	8.3	98.5	61	9.7	
0.40	6577	889000	9451	97353	89.3	6.3	98.9	59	9.9	
0.42	5421	891000	7087	98509	89.5	5.2	99.2	56.7	10	
0.44	4649	893000	5583	99281	89.5	4.5	99.4	54.6	10	
0.46	4139	894000	4608	99791	89.6	4	99.5	52.7	10	
0.48	3727	894000	3839	100000	89.6	3.6	99.6	50.7	10.1	
0.50	3323	895000	3252	101000	89.6	3.2	99.6	49.5	10.1	
0.52	2848	896000	2742	101000	89.6	2.7	99.7	49.1	10.1	
0.54	2568	896000	2310	101000	89.7	2.5	99.7	47.4	10.2	
0.56	2331	896000	2012	102000	89.7	2.2	99.8	46.3	10.2	
0.58	1915	897000	1676	102000	89.7	1.8	99.8	46.7	10.2	
0.60	1586	897000	1342	102000	89.7	1.5	99.9	45.8	10.2	
0.62	1340	897000	1099	103000	89.7	1.3	99.9	45.1	10.3	
0.64	1111	897000	885	103000	89.7	1.1	99.9	44.3	10.3	
0.66	881	898000	710	103000	89.6	0.8	99.9	44.6	10.3	
0.68	664	898000	548	103000	89.6	0.6	99.9	45.2	10.3	
0.70	516	898000	427	103000	89.6	0.5	100	45.3	10.3	
0.72	390	898000	321	104000	89.6	0.4	100	45.1	10.3	
0.74	288	898000	230	104000	89.6	0.3	100	44.4	10.3	
0.76	207	898000	156	104000	89.6	0.2	100	43	10.4	
0.78	149	898000	115	104000	89.6	0.1	100	43.6	10.4	
0.80	110	898000	73	104000	89.6	0.1	100	39.9	10.4	
0.82	73	898000	49	104000	89.6	0.1	100	40.2	10.4	
0.84	44	898000	30	104000	89.6	0	100	40.5	10.4	
0.86	20	898000	22	104000	89.6	0	100	52.4	10.4	
0.88	10	898000	9	104000	89.6	0	100	47.4	10.4	
0.90	5	898000	3	104000	89.6	0	100	37.5	10.4	
0.92	4	898000	1	104000	89.6	0	100	20	10.4	
0.94	2	898000	0	104000	89.6	0	100	0	10.4	
0.96	0	898000	0	104000	89.6	0	100		10.4	

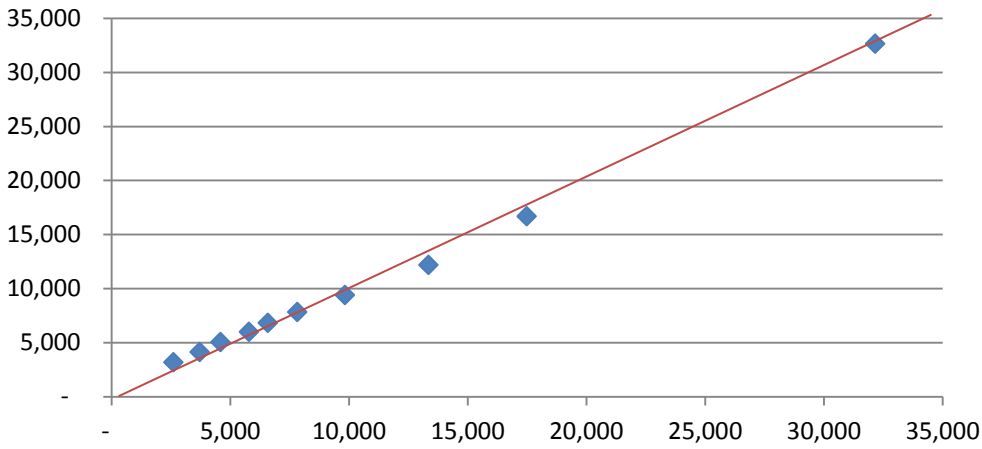
Medicare 65+									
Probability Level	Correct		Incorrect		Percentages				
	Event	Non-Event	Event	Non-Event	Correct	Sensitivity	Specificity	False Pos.	False Neg.
0.02	199000	0	1250000	0	13.7	100	0	86.3	0
0.04	199000	20	1250000	0	13.7	100	0	86.3	0
0.06	196000	66412	1180000	2580	18.2	98.7	5.3	85.8	3.7
0.08	187000	200000	1050000	11627	26.8	94.1	16	84.8	5.5
0.10	165000	432000	814000	33796	41.3	83	34.7	83.2	7.3
0.12	138000	641000	605000	60137	54	69.7	51.5	81.4	8.6
0.14	113000	805000	442000	85829	63.5	56.8	64.6	79.7	9.6
0.16	89384	930000	317000	109000	70.5	45	74.6	78	10.5
0.18	68928	1020000	224000	130000	75.5	34.7	82	76.5	11.3
0.20	52159	1090000	157000	146000	79	26.3	87.4	75	11.8
0.22	38960	1140000	109000	160000	81.4	19.6	91.2	73.7	12.3
0.24	28770	1170000	76284	170000	83	14.5	93.9	72.6	12.7
0.26	21381	1190000	53428	177000	84	10.8	95.7	71.4	12.9
0.28	15843	1210000	37442	183000	84.8	8	97	70.3	13.1
0.30	11714	1220000	26291	187000	85.2	5.9	97.9	69.2	13.3
0.32	8733	1230000	18569	190000	85.6	4.4	98.5	68	13.4
0.34	6511	1230000	13287	192000	85.8	3.3	98.9	67.1	13.5
0.36	4887	1240000	9555	194000	85.9	2.5	99.2	66.2	13.5
0.38	3753	1240000	6819	195000	86	1.9	99.5	64.5	13.6
0.40	2828	1240000	4862	196000	86.1	1.4	99.6	63.2	13.6
0.42	2147	1240000	3538	196000	86.2	1.1	99.7	62.2	13.6
0.44	1648	1240000	2479	197000	86.2	0.8	99.8	60.1	13.7
0.46	1223	1240000	1775	197000	86.2	0.6	99.9	59.2	13.7
0.48	925	1250000	1255	198000	86.2	0.5	99.9	57.6	13.7
0.50	702	1250000	897	198000	86.2	0.4	99.9	56.1	13.7
0.52	525	1250000	659	198000	86.2	0.3	99.9	55.7	13.7
0.54	413	1250000	474	198000	86.3	0.2	100	53.4	13.7
0.56	300	1250000	323	198000	86.3	0.2	100	51.8	13.7
0.58	232	1250000	220	198000	86.3	0.1	100	48.7	13.7
0.60	165	1250000	154	198000	86.3	0.1	100	48.3	13.7
0.62	123	1250000	111	198000	86.3	0.1	100	47.4	13.7
0.64	93	1250000	73	199000	86.3	0	100	44	13.7
0.66	72	1250000	60	199000	86.3	0	100	45.5	13.7
0.68	52	1250000	38	199000	86.3	0	100	42.2	13.7
0.70	35	1250000	21	199000	86.3	0	100	37.5	13.7
0.72	21	1250000	12	199000	86.3	0	100	36.4	13.7
0.74	13	1250000	10	199000	86.3	0	100	43.5	13.7
0.76	9	1250000	4	199000	86.3	0	100	30.8	13.7
0.78	5	1250000	4	199000	86.3	0	100	44.4	13.7
0.80	4	1250000	1	199000	86.3	0	100	20	13.7
0.82	3	1250000	0	199000	86.3	0	100	0	13.7
0.84	3	1250000	0	199000	86.3	0	100	0	13.7
0.86	0	1250000	0	199000	86.3	0	100	0	13.7

Medicare 18-64										
Probability	Correct		Incorrect		Percentages					
	Event	Non-Event	Event	Non-Event	Correct	Sensitivity	Specificity	False Pos.	False Neg.	
0.02	30581	0	170000	0	15.2	100	0	84.8		
0.04	30574	210	170000	7	15.3	100	0.1	84.8	3.2	
0.06	30376	4616	166000	205	17.4	99.3	2.7	84.5	4.3	
0.08	29168	22809	147000	1413	25.9	95.4	13.4	83.5	5.8	
0.10	26676	49620	121000	3905	38	87.2	29.1	81.9	7.3	
0.12	23525	75027	95248	7056	49.1	76.9	44.1	80.2	8.6	
0.14	20015	97734	72541	10566	58.6	65.4	57.4	78.4	9.8	
0.16	16446	117000	53278	14135	66.4	53.8	68.7	76.4	10.8	
0.18	13432	131000	39254	17149	71.9	43.9	76.9	74.5	11.6	
0.20	10748	142000	28676	19833	75.8	35.1	83.2	72.7	12.3	
0.22	8706	149000	21398	21875	78.5	28.5	87.4	71.1	12.8	
0.24	7045	154000	16003	23536	80.3	23	90.6	69.4	13.2	
0.26	5691	158000	12086	24890	81.6	18.6	92.9	68	13.6	
0.28	4577	161000	9163	26004	82.5	15	94.6	66.7	13.9	
0.30	3711	163000	7033	26870	83.1	12.1	95.9	65.5	14.1	
0.32	2976	165000	5382	27605	83.6	9.7	96.8	64.4	14.3	
0.34	2396	166000	4090	28185	83.9	7.8	97.6	63.1	14.5	
0.36	1978	167000	3157	28603	84.2	6.5	98.1	61.5	14.6	
0.38	1568	168000	2427	29013	84.3	5.1	98.6	60.8	14.7	
0.40	1266	168000	1851	29315	84.5	4.1	98.9	59.4	14.8	
0.42	1026	169000	1436	29555	84.6	3.4	99.2	58.3	14.9	
0.44	819	169000	1110	29762	84.6	2.7	99.3	57.5	15	
0.46	648	169000	852	29933	84.7	2.1	99.5	56.8	15	
0.48	487	170000	646	30094	84.7	1.6	99.6	57	15.1	
0.50	373	170000	479	30208	84.7	1.2	99.7	56.2	15.1	
0.52	289	170000	372	30292	84.7	0.9	99.8	56.3	15.1	
0.54	215	170000	261	30366	84.8	0.7	99.8	54.8	15.2	
0.56	154	170000	185	30427	84.8	0.5	99.9	54.6	15.2	
0.58	127	170000	136	30454	84.8	0.4	99.9	51.7	15.2	
0.60	89	170000	97	30492	84.8	0.3	99.9	52.2	15.2	
0.62	66	170000	67	30515	84.8	0.2	100	50.4	15.2	
0.64	50	170000	50	30531	84.8	0.2	100	50	15.2	
0.66	39	170000	33	30542	84.8	0.1	100	45.8	15.2	
0.68	26	170000	25	30555	84.8	0.1	100	49	15.2	
0.70	17	170000	18	30564	84.8	0.1	100	51.4	15.2	
0.72	10	170000	11	30571	84.8	0	100	52.4	15.2	
0.74	8	170000	6	30573	84.8	0	100	42.9	15.2	
0.76	6	170000	2	30575	84.8	0	100	25	15.2	
0.78	4	170000	2	30577	84.8	0	100	33.3	15.2	
0.80	2	170000	1	30579	84.8	0	100	33.3	15.2	
0.82	2	170000	1	30579	84.8	0	100	33.3	15.2	
0.84	2	170000	1	30579	84.8	0	100	33.3	15.2	
0.86	2	170000	1	30579	84.8	0	100	33.3	15.2	
0.88	1	170000	1	30580	84.8	0	100	50	15.2	
0.90	0	170000	0	30581	84.8	0	100		15.2	

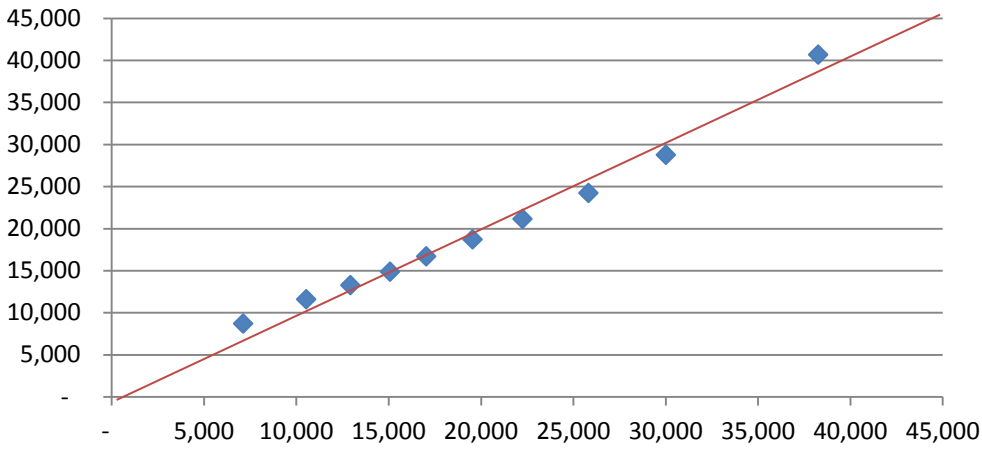
Hosmer-Lemeshow Tests

Group	Commercial 18-64				Medicare 65+				Medicare 18-64			
	Readmit				Readmit				Readmit			
	Total	Observed	Expected	Difference	Total	Observed	Expected	Difference	Total	Observed	Expected	Difference
1	100,483	2,606	3,177	(0.01)	144,491	7,126	8,695	(0.01)	20,176	1,138	1,332	(0.01)
2	100,499	3,708	4,126	(0.00)	144,513	10,531	11,582	(0.01)	20,087	1,514	1,692	(0.01)
3	100,215	4,591	5,050	(0.00)	144,516	12,923	13,281	(0.00)	20,086	1,929	1,969	(0.00)
4	101,004	5,791	5,998	(0.00)	144,307	15,087	14,887	0.00	20,087	2,207	2,246	(0.00)
5	100,184	6,582	6,815	(0.00)	144,512	17,031	16,685	0.00	20,086	2,639	2,537	0.01
6	100,221	7,825	7,840	(0.00)	144,511	19,547	18,702	0.01	20,086	2,945	2,848	0.00
7	100,221	9,829	9,410	0.00	144,511	22,257	21,131	0.01	20,086	3,367	3,218	0.01
8	100,219	13,351	12,192	0.01	144,516	25,825	24,229	0.01	20,083	3,856	3,694	0.01
9	100,222	17,488	16,680	0.01	144,513	30,012	28,741	0.01	20,085	4,674	4,451	0.01
10	98,925	32,159	32,642	(0.00)	144,739	38,259	40,668	(0.02)	19,994	6,312	6,594	(0.01)
Total	1,002,193	103,930	103,930	0.00	1,445,129	198,598	198,601	(0.00)	200,856	30,581	30,581	(0.00)
	Pr > ChiSq				Pr > ChiSq				Pr > ChiSq			
	$\chi^2_{(8)}$	413.5 <.0001			$\chi^2_{(8)}$	935.9 <.0001			$\chi^2_{(8)}$	110.0 <.0001		

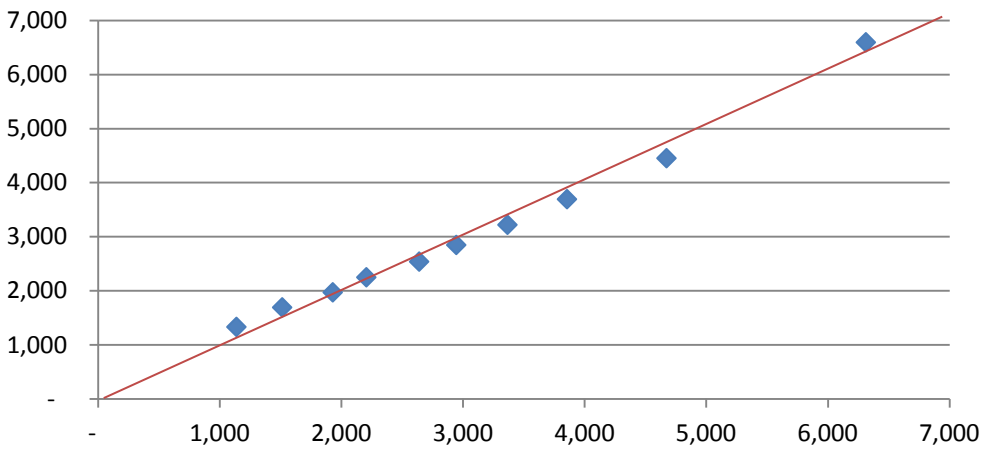
Commercial, 18-64



Medicare, 65+



Medicare, 18-64





Sam Ho, M.D.,
Chief Medical Officer
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January 27, 2012

Janet M. Corrigan, PhD, MBA
President and CEO
National Quality Forum
601 Thirteenth Street, NW
Suite 500 North
Washington DC 20005

RE: UnitedHealthcare Comments on NQF All-Cause Readmissions Expedited Review

Dear Janet,

Thank you for prioritizing the need and urgency to expedite the review of credible measures of hospital readmissions. I am writing to provide further context intended to supplement our responses on the National Quality Forum link http://www.qualityforum.org/Comments_By_Project.aspx?projectID=98&ActivityID=312, as well as provide a response to the discussion and questions raised at the December 5, 2011 Steering Committee meeting of the Patient Outcomes: All-Cause Readmissions Expedited Review Project co-chaired by Drs. Kaplan and Lazar. Specifically, I would like to address steering committee concerns about demonstrated scientific testing and risk-stratification of the proposed UHC measure as well as amplify our concerns about the recommended measures put forth by Yale/CMS and NCQA. I appreciate your thoughtful consideration of the items outlined below and would welcome further discussion.

The UHC proposal for all-cause, all-condition readmission rate utilizes the diagnosis and procedure information from the index admission to predict the likelihood of a resulting readmission. This is done by creating factors for over 170 index admission diagnosis and procedure category groups. The CMS proposal only discriminates on 5 clinical categories of index admission; they rely much more heavily on the prior 12 month clinical history of the member to generate their predictor. Our findings demonstrate that both methods produce approximately the same predictive results as shown by the comparable C-statistic in the attached documentation. However, the UHC method can be implemented at any level of aggregation (hospital, group practice, health plan, geography, etc...) and because it uses only information readily available on the index admission any provider can calculate their results for any time period. Therefore, this maximizes the transparency and utility of the UHC readmission measure. Conversely the CMS indicator can only be implemented by an entity with access to inpatient admissions, outpatient, and professional claims history for all members, such as CMS, a health plan, and potentially an ACO.

The all-cause, all-condition readmission rate accounts for 100% of all readmissions, which is best for patients as well as for physicians and hospitals to help them measure and manage their performance. There is no systematic method for determining that a readmission was planned. The UHC method adjusts for this explicitly by finely categorizing based on the index admission diagnosis and procedure. For example, the index admission category "Maintenance Chemotherapy" has an expected readmission rate of approximately 65%, more than 7 times higher than average. Using our model even cancer hospitals can compare their performance against their peers. However, if you explicitly exclude categories like "Maintenance Chemotherapy" which have high readmission rates you are withholding a quality improvement opportunity from those facilities providing these types of services, which may have results that deviate substantially from the norm. If the decision is made that because there is too much variability in any single diagnosis/procedure category when performing a specific measurement

those index admissions can be excluded at that time. In order to maximize opportunities for quality improvement and the management of population health, the measure selected should minimize the index admission explicit exclusions.

Over the past 17 years, this measure and its direct methodological precursor, NQF #0329, have been intentionally coupled with the risk-adjusted Average Length of Stay measure by UHC, since they counter-balance under and over-utilization, so that, together, they comprise an effective pair of measures that indicate appropriate inpatient utilization. For example, a hospital could lower readmit rates by simply keeping patients unnecessarily longer in the hospital during the index admission. UHC is the only measure developer that pairs the two important outcome measures together to ensure appropriate inpatient care utilization, and it supports NQF's policy that paired measures need to be developed and submitted by the same measure developer.

From a clinical management perspective, UHC has been using the original measure 0329 for many years as one of our foundational measures to improve the rate of appropriate inpatient utilization and have demonstrated a readmission reduction of approximately 7% in the Medicare Advantage population and of 3% in the commercial population. It is simply one of the most important measures we have of both quality and cost-effectiveness because it highlights quality defects in hospital discharges, post-hospital care coordination and subsequent readmissions. By improving discharge planning, patient education, transitional case management, coordination of care, and early access to ambulatory care follow-up, we have been able to improve the quality and appropriateness of care for thousands of patients. The other proposed measures with their extensive categorical exclusions, would substantially limit health plans and care providers from identifying at-risk members and, therefore, from delivering these benefits to as many of our members as possible.

We have incorporated the all-cause, all-condition readmission rate and the risk-adjusted average length of stay measure as cornerstone metrics in our value-based contracting framework to determine compensation for hospitals, large physician organizations/medical groups, and integrated delivery systems. This links our clinical management programs with provider incentive programs to align improved quality and cost outcomes on behalf of our membership. Furthermore, this integrated approach is also included in our value-based insurance design as well, since all-cause, all-condition readmission rates are a foundational metric to assess quality and cost-effectiveness of our provider network. Therefore, consumer incentives and benefit design are also based, in part, on the readmission rates of the providers selected in their benefit plan design.

I hope this has been helpful in clarifying the rationale for our submission and I am prepared to answer any further questions your staff or the committee may have in its review of this critical topic. Thank you for your consideration and I look forward to your reply.

Sincerely,



Sam Ho, M.D.

Chief Medical Officer

Attachment

Cc:

Sherrie Kaplan, PhD, MPH, Steering Committee Co-Chair, Readmissions Project

Eliot Lazar, MD, MBA, Steering Committee Co-Chair, Readmissions Project

Helen Burstin, MD, MPH, SVP Performance Measures, NQF

NQF Readmission Measure – Summary as of 1/18/2012

Overview of Three Methods:

UHC:

The UHC method creates approximately 175 categories based on the condition of the stay and any procedures that are performed during the stay. For each of the age 0-64 and age 65+ populations the average readmission rate is calculated using UHC claims data. The readmission rate within each category for an age group is then divided by the overall readmission rate for the age group to come up with a readmission factor. A readmission factor of >1 means that that particular category has a higher than average readmission rate while a factor of <1 means that the particular category has a lower than average readmission rate. Using these scores an adjustment score can be created to normalize results when comparing across facilities, geographic regions, time or other measurement elements. To do so the average factor is calculated for the population in question and then the readmission rate for the population is divided by this factor to come up with the adjusted rate. By doing this for each population the condition mix of the two populations are controlled for and will not influence the comparison. This model does not incorporate any historical member specific information so it may be calculated using nothing more than the claims information for the admits being included in the measure and the reference table of factors published by UHC. As a result these measures can be calculated with a minimal delay after the end of the measurement period.

The only condition based exclusion used in the UHC model is the exclusion of members hospitalized for mental health disorders or substance abuse treatment.

Yale/CMS:

The Yale/CMS model was built using Medicare FFS claims and has not been tested on a commercial population. The model is actually five different logistic regression models combined, one model for each of five different condition categories based on the condition of the discharge: surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology. For each of these five categories a logistic regression is run which ultimately results in an expected readmission rate based on patient level demographics and characteristics which include past inpatient claims history. The variables used in each of these five models are the same but the coefficients for each of the variables will vary between models. To create a hospital level result the results from each of the five models are combined in an average weighted by the number of admits the hospital has within each clinical category.

The following types of cases are excluded from the Yale/CMS model (reason for exclusion):

- Admissions for patients without 30 days of post-discharge data

- Admissions for patients lacking a complete enrollment history for the 12 months prior to admission (This is necessary to capture historical data for risk adjustment.)
- Admissions for patients discharged against medical advice (Hospital had limited opportunity to implement high quality care.)
- Admissions for patients to a PPS-exempt cancer hospital (These hospitals care for a unique population of patients that is challenging to compare to other hospitals.)
- Admissions for patients with medical treatment of cancer (These admissions have a very different mortality and readmission profile than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions. Patients with cancer who are admitted for other diagnoses or for surgical treatment of their cancer remain in the measure.)
- Admissions for primary psychiatric disease (Patients admitted for psychiatric treatment are typically cared for in separate psychiatric or rehabilitation centers which are not comparable to acute care hospitals.)
- Admissions for “rehabilitation care; fitting of prostheses and adjustment devices” (These admissions are not for acute care or to acute care hospitals.)

Because of the complexity of the analysis required to create and generate results from the models the scores would not be available until 12-18 months after the end of the measurement period.

NCQA:

NCQA built its model using commercial data for members 18-64 years old and Medicare data for members 65 or more years old. The model does not attempt to measure readmission at the facility level, but rather at the health plan level. The model is based on a logistic regression which includes the following elements: an age-gender cohort; an indicator of the presence of major surgery during the stay; the clinical condition of the discharge; the presence of various comorbid conditions in the member’s past 12 months of claim history. The NCQA does not exclude members who do not have 12 months of history, those members simply do not have a comorbid component to their risk score. The NCQA model does not attempt to exclude planned readmissions (though they are going to test the impact of excluding planned readmissions, using the Yale/CMS criteria, on the outcome of the model as part of the harmonization phase). The only condition based exclusions from the NCQA model are for pregnancy and perinatal based admissions. This model is currently in use as an element in the 2012 HEDIS measures.

Approach to Comorbidities:

Yale/CMS and NCQA methods both include approaches to adjust for comorbidities. The UHC method does not. Is the added cost and complexity of having to gather data on historical claims for the members who were admitted worth the added predictive value created by including those historical claims to the model? It is UHC’s contention that the Yale/CMS model and the NCQA model do not add enough in accuracy to overcome the

added cost and complexity inherent in adding historical member level information to those models.

Approach to planned readmission exclusions:

Yale/CMS (see 2a1.3):

The measure uses an algorithm to identify “planned readmissions” in claims data that will not count as readmissions in the measure. 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 (which will be described in detail below), or those for maintenance chemotherapy, organ transplant, or rehabilitation.
- 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 can identify readmissions as acute or non-acute by considering the principal discharge condition.

The algorithm developed to identify planned readmissions uses procedure codes and discharge diagnosis categories for each readmission. The HWR measure defines planned readmissions as any readmission that was either:

A non-acute readmission in which one of 35 typically planned procedures occurs; or a readmission for maintenance chemotherapy, organ transplant, or rehabilitation.

NCQA: Planned readmissions are included

UHC: Planned readmissions are included

Comment:

Yale/CMS’s definition of a “planned readmission” boils down to a combination of diagnosis and procedure – the same method of categorization used in the UHC methodology. In the UHC methodology, these planned readmissions are not excluded, but rather segmented in their own category where those results can be compared between hospitals such that a facility that does a good job of avoiding readmits in a category with a high likelihood of having a planned readmission is rewarded.

Comparative Accuracy of the 3 Methods:

C-Statistic of the various models:

Yale/CMS:

Commercial: none provided

Medicare FFS Validation sample: 0.613-0.675

CPDD Sample : 0.661-0.725

NCQA:

Commercial (18-64 only): 0.730

Medicare and SNP (65+ only): 0.666

UHC:

Age 0-64 (commercial & Medicare): 0.753

Age 65+ (commercial & Medicare): 0.609

Comments:

All are roughly comparable with the UHC measure being better on the younger population (though Yale/CMS does not report a commercial measure) and the Yale/CMS and NCQA measured being better on an older population. Therefore the question becomes whether the added accuracy of the Yale/CMS and NCQA is worth the added complexity of their measures.

Concerns with Yale/CMS and NCQA Recommended Method:

CMS/Yale:

- Which data were used to test the commercial population? Was it representative of the nation?
- Requirement for 12 months of continuous enrollment to check for comorbidities – could there be something different about the readmit pattern of those who don't have continuous enrollment?
- Untimely data (1-2 years old at time of reporting) – by the time outcomes are measured, the real-time issues faced by the facility may be different.
- Method excludes planned readmissions - does this mean planned readmits are not in dataset to be used as index events for readmissions?
- Is this method overly complex such that a facility could not calculate it for themselves?
- Admits for behavioral health diagnoses are excluded – also a limitation of the UHC method.

NCQA:

- Outcome measure is reported at a health plan level, not hospital level.
- Pregnancy/Maternity cases are excluded - does this mean planned readmits are not in dataset to be used as index events for readmissions?

Overall concerns:

Without harmonization, the two recommended measures are sufficiently different from each other to cause confusion. From the meeting notes, it would appear that they have been offered a year to harmonize.

Benefits of UHC Method:

- Easy to understand and implement
- Requires no statistical software
- Timely - Allows for real time comparison
- Reporting at any level of aggregation

Responses to the committee's rationale for non endorsement of UHC's measure:

- *The measure had a very broad age range, 0 to 65.*

UHC would be happy to resubmit a revised version of its model (as Yale/CMS and NCQA were allowed to do) that includes more age granularity.

- *The measure did not have an appropriate risk adjustment or stratification approach.*

In their submission the authors of the Yale/CMS model note that “In theory, estimating a single model for each of the 285 condition categories would provide the best discrimination of readmission risk at the patient level. However, if we did so, many hospitals would not be included in most such models; for all but the most common discharge condition categories, many hospitals would not have an index admission in that category during a given year. In addition, most other hospitals would have only very small numbers of index admissions in each discharge condition category, meaning that the model would contribute very little to their overall measurement “ [2b4.2] What UHC has done is to create individual “models” for each of 175 condition & procedure categories, but these models do not include any variables other than the age group (0-64 and 65+). We feel that the added accuracy of having finely detailed condition & procedure categories outweighs the benefit in Yale’s model of looking at historical utilization for a member in a smaller number of categories. We have not seen any evidence that adding elements to adjust for risk beyond condition and procedure level actually add any predictive power to the model.

- *The developers did not include sufficient validity testing.*

UHC would be happy to resubmit further validity testing its model (as Yale/CMS and NCQA were allowed to do).

- *This measure does not adjust for any comorbidity.*

Adjusting for comorbidity is not a requirement of the model and no one has presented any evidence that adjusting for comorbidity adds sufficient predictive

power to a non-comorbidity adjusted model to account for the added cost in terms of ease of use and timeliness of results.

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APPENDIX D: RELATED MEASURE COMPARISON TABLE

	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
Status	Currently undergoing review	Currently undergoing review
Steward	National Committee for Quality Assurance (NCQA)	Centers for Medicare & Medicaid Services (CMS)
Description	<p>For members 18 years of age and older, the number of acute inpatient stays during the measurement year that were followed by an acute readmission for any diagnosis within 30 days and the predicted probability of an acute readmission. Data are reported in the following categories:</p> <ol style="list-style-type: none"> 1. Count of Index Hospital Stays (IHS) (denominator) 2. Count of 30-Day Readmissions (numerator) 3. Average Adjusted Probability of Readmission 4. Observed Readmission (Numerator/Denominator) 5. Total Variance <p>Note: For commercial, only members 18–64 years of age are collected and reported; for Medicare, only members 18 and older are collected, and only members 65 and older are reported.</p>	<p>This measure estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmission after admission for any eligible condition within 30 days of hospital discharge (RSRR) for patients aged 18 and older. The measure reports a single summary RSRR, derived from the volume-weighted results of five different models, one for each of the following specialty cohorts (groups of discharge condition categories or procedure categories): surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology, each of which will be described in greater detail below. The measure also indicates the hospital standardized risk ratios (SRR) for each of these five specialty cohorts. We developed the measure for patients 65 years and older using Medicare fee-for-service (FFS) claims and subsequently tested and specified the measure for patients aged 18 years and older using all-payer data. We used the California Patient Discharge Data (CPDD), a large database of patient hospital admissions, for our all-payer data.</p>
Type of Measure	Outcome	Outcome
Numerator	At least one acute readmission for any diagnosis within 30 days of the Index Discharge Date.	<p>(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 use this field to define the measure outcome.)</p> <p>The outcome for this measure is unplanned all-cause 30-day readmission. We defined a readmission as an inpatient</p>

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		admission to any acute care facility which occurs within 30 days of the discharge date of an eligible index admission. All readmissions are counted as outcomes except those that are considered planned.
Numerator Details	<p>Acute-to-acute transfers: Keep the original admission date as the Index Admission Date, but use the transfer's discharge date as the Index Discharge Date.</p> <p>Exclude acute inpatient hospital discharges with a principal diagnosis for codes that identify maternity related inpatient discharges for the following ICD-9CM codes:</p> <ul style="list-style-type: none"> - Pregnancy: 630-679, V22, V23, V28 - Conditions originating in the perinatal period: 760-779, V21, V29-V39 <p>For each IHS, determine if any of the acute inpatient stays have an admission date within 30 days after the Index Discharge Date.</p>	<p>The outcome for this measure is unplanned all-cause readmission within 30 days of discharge date of an eligible index admission. Because planned readmissions are not a signal of quality of care, the measure does not count planned readmissions in the outcome. The measure uses an algorithm to identify "planned readmissions" in claims data that will not count as readmissions in the measure. The algorithm is based on two main principles:</p> <p>1- "Planned" readmissions are those in which one of a pre-specified list of procedures took place (which will be described in detail below), or those for maintenance chemotherapy, organ transplant, or rehabilitation.</p> <p>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 can identify readmissions as acute or non-acute by considering the principal discharge condition.</p> <p>The algorithm developed to identify planned readmissions uses procedure codes and discharge diagnosis categories for each readmission. The HWR measure defines planned readmissions as any readmission that was either:</p> <p>A non-acute readmission in which one of 35 typically planned procedures occurs;</p> <p>or</p> <p>A readmission for maintenance chemotherapy, organ</p>

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		<p>transplant, or rehabilitation</p> <p>All other readmissions are considered unplanned and are counted as readmissions in the measure. The following examples illustrate this approach:</p> <p>Example 1: A readmission with a discharge condition category of biliary tract disease that included a cholecystectomy would be considered planned.</p> <p style="padding-left: 40px;">A readmission with a discharge condition category of septicemia that included a cholecystectomy would be considered unplanned.</p> <p style="padding-left: 40px;">A readmission with a discharge condition category of “complications of surgical procedures or medical care” would be considered unplanned.</p> <p>List of planned procedures (Table 1) Planned procedures are identified using AHRQ Clinical Classification System (CCS) procedure category list (Table 1). Readmissions in which any of these procedures are performed are considered planned if the discharge condition category is not acute or a complication of care (i.e., not listed in Table 2).</p> <p>Table 1: Procedure categories considered planned</p> <p>AHRQ Procedure CCS//Description//Readmissions with no excluding diagnosis (“planned” readmissions): Number, Percent of total planned readmissions in the 2008 Medicare Provider Analysis and Review (MedPAR) dataset used for measure development</p> <p>45//Percutaneous transluminal coronary angioplasty</p>

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		(PTCA)//12,038, 13.83% //Rehabilitation (Condition CCS 254)//9,973, 11.46% 84//Cholecystectomy and common duct exploration//7,191, 8.26% 157// Amputation of lower extremity//6,649, 7.64% 44//Coronary artery bypass graft (CABG)//6,290, 7.23% 78//Colorectal resection//4,719, 5.42% 51//Endarterectomy; vessel of head and neck//4,558, 5.24% 113//Transurethral resection of prostate (TURP)//3,752, 4.31% 99//Other OR gastrointestinal therapeutic procedures//3,475, 3.99% 48//Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator//2,541, 2.92% //Maintenance chemotherapy (condition CCS 45)//2,312, 2.66% 211//Therapeutic radiology for cancer treatment//2,183, 2.51% 3//Laminectomy; excision intervertebral disc//2,065, 2.37% 43//Heart valve procedures//2,061, 2.37% 152// Arthroplasty knee//1,989, 2.28% 158//Spinal fusion//1,963, 2.25% 55//Peripheral vascular bypass//1,902, 2.18% 52//Aortic resection; replacement or anastomosis//1,529, 1.76% 36//Lobectomy or pneumonectomy//1,492, 1.71% 153//Hip replacement; total and partial//1,333, 1.53% 60//Embolectomy and endarterectomy of lower limbs//1,263, 1.45% 85//Inguinal and femoral hernia repair//981, 1.13% 104//Nephrectomy; partial or complete//921, 1.06% 1//Incision and excision of CNS//804, 0.92% 124//Hysterectomy; abdominal and vaginal//524, 0.60% 167//Mastectomy//474, 0.54% 10//Thyroidectomy; partial or complete//353, 0.41%

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		114//Open prostatectomy//338, 0.39% 74//Gastrectomy; partial and total//278, 0.32% 119//Oophorectomy; unilateral and bilateral//273, 0.31% 154//Arthroplasty other than hip or knee//229, 0.26% //Radical laryngectomy, revision of tracheostomy, scarification of pleura (ICD-9 codes 30.4, 31.74, 34.6)//216, 0.25% 166//Lumpectomy; quadrantectomy of breast//117, 0.13% 64//Bone marrow transplant//100, 0.11% 105//Kidney transplant//70, 0.08% 176//Other organ transplantation//69, 0.08% //Electroshock therapy (ICD-9 codes 94.26, 94.27)//30, 0.03% List of discharge condition categories that are acute or complications of care (Table 2) Admissions in which a planned procedure was performed are only considered “planned” if the patient was not admitted for an acute illness or complication of care. Table 2 contains the list of 27 discharge condition categories considered either acute or complications of care. Table 2: Discharge condition categories considered acute or complications of care AHRQ CCS//Description //Number of 30-day readmissions with this condition and one of the planned procedures in the 2008 MedPAR dataset used for measure development. 237//Complication of device; implant or graft//11,689 106//Cardiac dysrhythmias//10,267 //Fracture (CC 207, 225, 226, 227, 229, 230, 231, 232)//6,307 100//Acute myocardial infarction//5,643 238//Complications of surgical procedures or medical care//5,438 108//Congestive heart failure; nonhypertensive//5,119 2//Septicemia (except in labor)//3,372 146//Diverticulosis and diverticulitis//2,434 105//Conduction disorders//2,130 109//Acute cerebrovascular disease//1,886

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		145//Intestinal obstruction without hernia//1,341 233//Intracranial injury//1,271 116//Aortic and peripheral arterial embolism or thrombosis//1,115 122//Pneumonia (except that caused by TB or sexually transmitted disease)//710 131//Respiratory failure; insufficiency; arrest (adult)//678 157//Acute and unspecified renal failure//645 201//Infective arthritis and osteomyelitis (except that caused by TB or sexually transmitted disease)//608 153//Gastrointestinal hemorrhage//566 130//Pleurisy; pneumothorax; pulmonary collapse//510 97//Peri-; endo-; and myocarditis; cardiomyopathy//484 127//Chronic obstructive pulmonary disease and bronchiectasis//462 55//Fluid and electrolyte disorders//424 159//Urinary tract infections//410 245//Syncope//353 139//Gastroduodenal ulcer (except hemorrhage)//133 160//Calculus of urinary tract//98 112//Transient cerebral ischemia//88 //All condition categories//64,181
Denominator	For commercial health plans, ages 18-64 as of the Index Discharge Date. For Medicare and Special Needs Plans, ages 18 and older as of the Index Discharge Date.	This claims-based measure can be used in either of two patient cohorts: (1) admissions to acute care facilities for patients aged 65 years or older or (2) admissions to acute care facilities for patients aged 18 years or older. We have tested the measure in both age groups.
Denominator Categories	Adult/Elderly Care	Adult/Elderly Care
Denominator Details	The denominator for this measure is based on acute discharges, not members. - Identify all acute inpatient stays with a discharge date on or between January 1 and December 1 of the measurement year. - Acute-to-acute transfers: Keep the original admission	The ICD-9 diagnosis and procedure codes of the index admission are aggregated into clinically coherent groups of conditions/procedures (condition categories or procedure categories) by using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classifications System (CCS). Next, these discharge condition/procedure categories are

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
	<p>date as the Index Admission Date, but use the Transfer’s discharge date as the index Discharge Date.</p> <ul style="list-style-type: none"> - Calculate continuous enrollment. - Assign each acute inpatient stay to one age and gender category. 	<p>organized into five mutually exclusive specialty cohorts defined by care team: surgery/gynecology, cardiorespiratory, cardiovascular neurology, and medicine.</p> <p>Rationale: Conditions typically cared for by the same team of clinicians are expected to experience similar added (or reduced) levels of readmission risk.</p> <p>The surgery/gynecology cohort includes admissions likely cared for by surgical or gynecological teams. These admissions are identified using AHRQ procedure categories.</p> <p>The cardiorespiratory cohort includes several condition categories with very high readmission rates such as pneumonia, chronic obstructive pulmonary disease, and heart failure. These admissions are combined into a single cohort because they are often clinically indistinguishable and patients are often simultaneously treated for several of these diagnoses.</p> <p>The cardiovascular cohort includes condition categories such as acute myocardial infarction that in large hospitals might be cared for by a separate cardiac or cardiovascular team.</p> <p>The neurology cohort includes neurologic condition categories such as stroke that in large hospitals might be cared for by a separate neurology team.</p> <p>The medicine cohort includes all non-surgical patients who were not assigned to any of the other cohorts.</p> <p>See attachments (Technical Report, Section 2.4.5, Table 8, and All-Payer memo, Tables 2-6).</p> <p>In order to define the eligible admissions, we first aggregated the ICD-9 codes of the index admission into clinically coherent conditions by using the Agency for Healthcare Research and Quality’s Clinical Classifications Software (CCS). There are a total of 285 mutually exclusive AHRQ condition categories, most of which are single, homogenous diseases such as pneumonia or acute myocardial infarction. Some are aggregates of conditions, such as “other bacterial infections.” Mental health and substance abuse categories are included. In addition, AHRQ provides 231 mutually exclusive procedure</p>

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		<p>categories to group procedures a patient might have had during hospitalization.</p> <p>Admissions are eligible for inclusion in the measure if:</p> <ul style="list-style-type: none"> a. Patient is aged 18 years or older <p>Rationale: Pediatric patients have substantially different illnesses, comorbidities and outcomes compared to an adult population.</p> <ul style="list-style-type: none"> b. Patient is alive upon discharge <p>Rationale: Patients who die during the initial hospitalization cannot be readmitted.</p> <ul style="list-style-type: none"> c. Patient is not transferred to another acute care hospital upon discharge <p>Rationale: In an episode of care in which patient is transferred among hospitals, responsibility for the readmission is assigned to the final discharging hospital. Therefore these intermediate admissions within a single episode of care are not eligible for inclusion.</p> <p>Note that a readmission within 30 days will also be eligible as an index admission, if it meets all other eligibility criteria. This allows our measure to capture repeated readmissions for the same patient, whether at the same hospital or another.</p>
Exclusions	Exclude hospital stays where the Index Admission Date is the same as the Index Discharge Date and any inpatient stay with a discharge date in the 30 days prior to the Index Admission Date.	We exclude from the measure all admissions for which full data are not available or for which 30-day readmission by itself cannot reasonably be considered a signal of quality of care. <p>Exclusions:</p> <ul style="list-style-type: none"> 1. Admissions for patients without 30 days of post-discharge data <p>Rationale: This is necessary in order to identify the outcome (readmission) in the dataset.</p> <ul style="list-style-type: none"> 2. Admissions for patients lacking a complete enrollment history for the 12 months prior to admission <p>Rationale: This is necessary to capture historical data for risk adjustment.</p> <ul style="list-style-type: none"> 3. Admissions for patients discharged against medical advice (AMA)

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		Rationale: Hospital had limited opportunity to implement high quality care. 4. Admissions for patients to a PPS-exempt cancer hospital Rationale: These hospitals care for a unique population of patients that is challenging to compare to other hospitals. 5. Admissions for patients with medical treatment of cancer (See Table 3 in Section 2a1.9) Rationale: These admissions have a very different mortality and readmission profile than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions. (Patients with cancer who are admitted for other diagnoses or for surgical treatment of their cancer remain in the measure). 6. Admissions for primary psychiatric disease (see Table 4 in Section 2a1.9) Rationale: Patients admitted for psychiatric treatment are typically cared for in separate psychiatric or rehabilitation centers which are not comparable to acute care hospitals. 7. Admissions for “rehabilitation care; fitting of prostheses and adjustment devices” Rationale: These admissions are not for acute care or to acute care hospitals. Additionally, in the all-payer testing, we excluded obstetric admissions because the measure was developed among patients aged 65 years or older (approximately 500,000).
Exclusion Details	Exclude the hospital and inpatient stays for the following reasons. - Inpatient stays with discharges for death - Acute inpatient discharge with a principal diagnosis for pregnancy or for any other condition originating in the perinatal period in for the following ICD-9CM codes Pregnancy: 630-679, V22, V23, V28	Denominator exclusions are identified based on variables contained in the Standard Analytic File (SAF) or Enrollment Database (EDB). 1. Lack of enrollment in Medicare FFS for 30 days post-discharge is identified by patient enrollment status in Part A FFS claims using CMS’ EDB; the enrollment indicators must be appropriately marked for the month(s) which falls within 30 days of hospital discharge date.

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
	Conditions originating in the perinatal period: 760-779, V21, V29-V39	2. Lack of continuous enrollment in Medicare FFS for 12 months prior to index hospital stay is determined by patient enrollment status in Part A FFS using CMS' EDB; the enrollment indicators must be appropriately marked for each of the 12 months prior to the index hospital stay 3. Discharges AMA are identified using the discharge disposition indicator within the SAF. 4. PPS-exempt cancer hospitals are identified by their Medicare provider ID. 5. Table 3 indicates all cancer discharge condition categories excluded from the measure. 6. Table 4 indicates all psychiatric discharge condition categories excluded from the measure. 7. Admissions for "rehabilitation care; fitting of prostheses and adjustment devices" are identified by principal diagnosis codes (ICD-9 codes) included in CCS 254 In addition, in-hospital deaths are identified using the discharge disposition vital status indicator in the SAF and transfers to other acute care facilities are identified in the claims when a patient is discharged from an acute care hospital and admitted to another acute care hospital on the same day or next day. Table 3: Cancer discharge condition categories excluded from the measure AHRQ CCS//Description//Number of Admissions 42//Secondary malignancies//45,319 19//Cancer of bronchus; lung//30,292 45//Maintenance chemotherapy; radiotherapy//21,522 44//Neoplasms of unspecified nature or uncertain behavior//10,160 17//Cancer of pancreas//8,462 38//Non-Hodgkin`s lymphoma//7,977 39//Leukemias//7,809 14//Cancer of colon//6,121 40//Multiple myeloma//4,624

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		35//Cancer of brain and nervous system//3,561 16//Cancer of liver and intrahepatic bile duct//3,491 13//Cancer of stomach//3,467 29//Cancer of prostate//3,100 15//Cancer of rectum and anus//3,030 18//Cancer of other GI organs; peritoneum//2,974 12//Cancer of esophagus//2,533 11//Cancer of head and neck//2,515 27//Cancer of ovary//2,081 33//Cancer of kidney and renal pelvis//1,863 32//Cancer of bladder//1,807 24//Cancer of breast//1,682 43//Malignant neoplasm without specification of site//1,451 25//Cancer of uterus//1,132 36//Cancer of thyroid//879 21//Cancer of bone and connective tissue//763 41//Cancer; other and unspecified primary//674 20//Cancer; other respiratory and intrathoracic//632 23//Other non-epithelial cancer of skin//593 26//Cancer of cervix//586 28//Cancer of other female genital organs//326 34//Cancer of other urinary organs//301 37//Hodgkin`s disease//236 22//Melanomas of skin//212 31//Cancer of other male genital organs//34 30//Cancer of testis//4 //Total//182,213 Table 4: Psychiatric discharge condition categories excluded from the measure AHRQ CCS//Description//Number of Admissions 657//Mood disorders//7,874 659//Schizophrenia and other psychotic disorders//7,849 651//Anxiety disorders//3,153 670//Miscellaneous disorders//1,315 654//Developmental disorders//594

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		650//Adjustment disorders//399 658//Personality disorders//127 652//Attention-deficit, conduct, and disruptive behavior disorders//119 656//Impulse control disorders, NEC//27 655//Disorders usually diagnosed in infancy, childhood, or adolescence//16 662//Suicide and intentional self-inflicted injury//10 //Total//21,483
Risk Adjustment	Indirect standardization, using logistic regression Uses the CC and HCC models to identify comorbidities and attaches weights to each statistically significant comorbidity by product line and age grouping. We estimated a stepwise logistic regression. The binary dependent variable was coded 1 for index hospital stays that had a subsequent readmission within 30 days, and 0 otherwise. The independent variables in the models were: - age-gender cohort: Commercial: male 18-44, female 18-44, male 45-54, female 45-54, male 55-64 (reference group), female 55-64. In year 1, the model for Medicare used: Medicare 18 and older: male 18-44, female 18-44, male 45-54, female 45-54, male 55-64, female 55-64. male 65-74 (reference group), female 65-74, male 75-84, female 75-84, male 85+, female 85+. In year 2, the model for Medicare will use: male 65-74 (reference group), female 65-74, male 75-84, female 75-84, male 85+, female 85+. - Major surgery: 1=index hospital stay was for major surgery (see code list in algorithm); 0, otherwise. - Discharge Clinical Condition (CC) from the HCC classification system: 1=index hospital stay was for the CC; 0, otherwise. Note: each index hospital stay is coded into exactly one CC and is based only on the primary diagnosis. - Comorbid Hierarchical Clinical Condition (HCC): 1=index hospital stay had the associated comorbidity (HCC) indicated through any diagnosis on a face to face claim/encounter	Hierarchical logistic regression models are used to model the log-odds of readmission within 30 days of discharge, as a function of patient-level demographic and clinical characteristics and a random hospital-level intercept. This model specification accounts for within-hospital correlation of the observed outcomes and models the assumption that underlying differences in quality among the health care facilities being evaluated lead to systematic differences in outcomes. In brief, the approach simultaneously models two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals [1]. At the patient level, each model adjusts the log-odds of readmission within 30-days of discharge for age and selected clinical covariates. The second level models the hospital-specific intercepts as following a normal distribution. The hospital intercept represents the underlying hospital specific risk of readmission, after accounting for patient risk. If there were no differences among hospitals, then after adjusting for patient risk, the hospital intercepts should be identical across all hospitals. We use a fixed, common set of variables in all our models for simplicity and ease of data collection and analysis. However, we estimate a hierarchical logistic regression model for each specialty cohort separately, and the coefficients associated with each variable may vary across specialty cohorts. To group ICD-9-CM codes into comorbid risk variables, we use CMS

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
	for the 12 months prior to the index hospital stay discharge date; 0, otherwise.	<p>Condition</p> <p>Category (CMS-CCs) groups, the grouper used in previous CMS risk-standardized outcomes measures [2]. See Table 5 for the final list of comorbid risk variables. The models also include a condition-specific indicator for all condition categories with sufficient volume (defined as those with more than 1,000 admissions nationally each year for Medicare FFS data) as well as a single indicator for conditions with insufficient volume in each model.</p> <p>Table 5: Final comorbid risk variables</p> <p>Risk Variable Group Label//CMS-CCs [2]//Description// "X" if not adjusted for if only present on index admission (complication)</p> <p>Age// n/a// Age (-18)//</p> <p>Cond. Ind.// n/a// Condition indicator (AHRQ CCS)//</p> <p>rv1// 1, 3-5// Severe infection//</p> <p>rv1//1// HIV/AIDS//</p> <p>rv1//3// Central nervous system infection//</p> <p>rv1//4// Tuberculosis//</p> <p>rv1//5// Opportunistic infections//</p> <p>rv2// 6, 111-113// Other infectious disease & pneumonias//</p> <p>rv2//6// Other infectious disease//x</p> <p>rv2//111// Aspiration and specified bacterial pneumonias//x</p> <p>rv2//112// Pneumococcal pneumonia, emphysema, lung abscess//x</p> <p>rv2//113// Viral and unspecified pneumonia, pleurisy//x</p> <p>rv3// 7// Metastatic cancer/acute leukemia//</p> <p>rv4// 8, 9// Severe cancer//</p> <p>rv4//8// Lung, upper digestive tract, and other severe cancers//</p> <p>rv4//9// Other major cancers//</p> <p>rv6// 10, 11, 12// Other major cancers//</p> <p>rv6//10// Breast, prostate, colorectal and other cancers and tumors//</p> <p>rv6//11// Other respiratory and heart neoplasms//</p>

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		rv6//12//Other digestive and urinary neoplasms// rv9// 15-20, 119, 120//Diabetes mellitus // rv9//15//Diabetes with renal manifestation// rv9//16//Diabetes with neurologic or peripheral circulatory manifestation// rv9//17//Diabetes with acute complications//x rv9//18//Diabetes with ophthalmologic manifestation// rv9//19//Diabetes with no or unspecified complications// rv9//20//Type I diabetes mellitus// rv9//119//Proliferative diabetic retinopathy and vitreous hemorrhage// rv9//120//Diabetic and other vascular retinopathies// rv10// 21//Protein-calorie malnutrition// rv11// 25, 26//End-stage liver disease// rv11//25//End-stage liver disease// rv11//26//Cirrhosis of liver// rv12// 44//Other hematological disorders// rv14// 51-52//Drug and alcohol disorders// rv14//51//Drug/alcohol psychosis// rv14//52//Drug/alcohol dependence// rv15// 54-56, 58, 60//Psychiatric comorbidity// rv15//54//Schizophrenia// rv15//55//Major depressive, bipolar, and paranoid disorders// rv15//56//Reactive and unspecified psychosis// rv15//58//Depression// rv15//60//Other psychiatric disorders// rv18// 67-69, 100-102, 177, 178//Hemiplegia, paraplegia, paralysis, functional disability// rv18//67//Quadriplegia, other extensive paralysis// rv18//68//Paraplegia// rv18//69//Spinal cord disorders/Injuries// rv18//100//Hemiplegia/hemiparesis// rv18//101//Diplegia (upper), monoplegia, and other paralytic syndromes//

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	New Candidate Standard 1768: Plan all-cause readmissions	New Candidate Standard 1789: Hospital-wide all-cause unplanned readmission measure (HWR)
		rv18//102//Speech, language, cognitive, perceptual// rv18//177//Amputation status, lower limb/amputation// rv18//178//Amputation status, upper limb// rv19// 74//Seizure disorders and convulsions// rv20// 80//CHF//x rv21// 81-84, 89, 98, 99, 103-106//Coronary atherosclerosis or angina, cerebrovascular disease// rv21//81//Acute myocardial infarction//x rv21//82//Unstable angina and other acute ischemic heart disease//x rv21//83//Angina pectoris/old myocardial infarction// rv21//84//Coronary atherosclerosis/other chronic ischemic heart disease// rv21//89//Hypertensive heart and renal disease or encephalopathy// rv21//98//Cerebral atherosclerosis and aneurysm// rv21//99//Cerebrovascular disease, unspecified// rv21//103//Cerebrovascular disease late effects, unspecified// rv21//104//Vascular disease with complications//x rv21//105//Vascular disease//x rv21//106//Other circulatory disease//x rv24// 92, 93//Specified arrhythmias// rv24//92//Specified heart arrhythmias// rv24//93//Other heart rhythm and conduction disorders// rv26// 108//Chronic obstructive pulmonary disease// rv27// 109//Fibrosis of lung or other chronic lung disorders// rv29// 130//Dialysis status//x rv30// 148-149//Ulcers// rv30//148//Decubitus ulcer //x rv30//149//Decubitus ulcer or chronic skin ulcer// rv31// 2//Septicemia/shock//x rv32// 22-23//Disorders of fluid, electrolyte, acid-base// rv32//22//Other significant endocrine and metabolic

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		<p>disorders//x rv32//23//Disorders of fluid/electrolyte/acid-base//x rv33// 47//Iron deficiency//x rv34// 79//Cardio-respiratory failure or cardio-respiratory shock//x rv39// 131//Acute renal failure//x rv40// 32//Pancreatic disease// rv41// 38//Rheumatoid arthritis and inflammatory connective tissue disease// rv42// 77//Respirator dependence/tracheostomy status// rv43// 128, 174//Transplants// rv43//128//Kidney transplant status// rv43//174//Major organ transplant status// rv44// 46//Coagulation defects and other specified hematological disorders// rv45// 158//Hip fracture/dislocation//</p> <p>References 1. Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226. 2. Pope, G., et al., Principal Inpatient Diagnostic Cost Group Models for Medicare Risk Adjustment. Health Care Financing Review, 2000. 21(3): 26. See attachments for detailed risk model (Technical Report, Section 3.1, Tables 9-13), and frequencies of comorbid risk variables in all-payer data (All-Payer Memo Tables 7-16)</p>
Stratification	<p>The measure includes a table that stratifies the five reporting data elements by age and gender. The five elements are:</p> <ol style="list-style-type: none"> 1. Count of Index Stays 2. Count of 30-Day Readmissions 3. Average Adjusted Probability 4. Observed Readmission (Numerator/Denominator) 5. Total Variance <p>The age stratifications are: Commercial: 18-44, 45-54, 55-64, Total</p>	N/A

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	Medicare: 65-74, 75-84, 85+., Total The measure is also stratified by gender.	
Type Score	Rate/Proportion and Count: The Counts are the number of index hospital stays (denominator) and stays with a subsequent 30-day readmission (numerator). The Rate/Proportions are the average adjusted probability of readmission (expected rate) and the observed rate of readmission (numerator / denominator).	A standardized risk ratio (SRR) for each hospital and each cohort is estimated using a separate hierarchical logistic regression model for that cohort. The five SRRs, weighted by volume, are then combined into a single score which is the risk-standardized hospital-wide readmission ratio. To improve interpretation, this ratio is then multiplied by the overall national raw readmission rate for all index admissions in all cohorts to produce the risk-standardized hospital-wide readmission rate (RSSR).
Algorithm	Look at denominator details, numerator details and the risk adjustment methodology for the measure logic in sections 2a1.7 and 2a1.13. The calculation for continuous enrollment is as follows: Step 1: Determine the eligible population. For commercial health plans, ages 18-64 as of the Index Discharge Date. For Medicare and Special Needs Plans, ages 18 and older as of the Index Discharge Date. Step 2: Determine number discharges meeting the denominator criteria as specified in Section 2a1.7 above. Step 3: Determine the number of patients who meet the numerator criteria as specified in section 2a1.3 above. The numerator includes all patients in the denominator population who had acute inpatient stays with an admission date on or between January 1 and December 31 of the measurement year. NQF #1768 Plan All-Cause Readmissions See Guidance for Definitions of Rating Scale: H=High; M=Moderate; L=Low; I=Insufficient; NA=Not Applicable 14 Step 4: Determine the number of exclusions Step 3 as specified in section 2a1.8. Patients with hospital stays where the Index Admission Date is the same as the Index Discharge Date and any inpatient stay with a discharge	Models for each specialty cohort are specified and estimated, using a separate hierarchical logistic regression model for that cohort. Each model is then used to calculate a standardized risk ratio (SRR) for each hospital which contributes index admissions to that model. These SRRs, weighted by volume, are then pooled for each hospital to create a composite hospital-wide SRR. For each specialty cohort within a hospital, the numerator of the SRR (“predicted”) is the number of readmissions for patients within the specialty cohort within 30 days predicted on the basis of the hospital’s performance with its observed case mix, and the denominator (“expected”) is the number of readmissions expected for patients within the specialty cohort on the basis of the nation’s performance with that hospital’s case mix. This approach is analogous to a ratio of “observed” to “expected” used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital’s performance given its case-mix to an average hospital’s performance with the same case-mix. Thus, an SRR less than 1 indicates lower-than-expected readmission or better quality and an SRR greater than 1 indicates higher-than-expected readmission or worse quality. These SRRs are then pooled for each hospital to create a composite hospital-wide SRR. This pooled SRR is the

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	<p>date in the 30 days prior to the Index Admission Date are exclusions.</p> <p>Step 5: Calculate the rate</p> <p>The risk adjustment calculation is:</p> <p>Surgeries:</p> <p>Determine if the member underwent surgery during the inpatient stay. Download the list of codes from the NCQA Web site for the surgery codes for risk adjustment and use it to identify surgeries. Consider an IHS to include a surgery if at least one procedure code is present from any provider between the admission and discharge dates.</p> <p>Discharge Condition:</p> <p>Assign a discharge Clinical Condition (CC) category code to IHS based on its primary discharge diagnosis. For acute-to-acute transfers, use the transfer's primary Discharge diagnosis. Exclude diagnoses that cannot be mapped.</p> <p>Comorbidities: This is determined by performing the following steps:</p> <p>Step 1: Identify all diagnoses for face-to-face encounters during the classification period. Exclude the primary discharge diagnosis on the IHS.</p> <p>Description // CPT // UB Revenue</p> <p>Outpatient // 92002,92004, 92012, 92014, 98925-98929, 98940-98942, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456 // 051x, 0520-0523, 0526-0529, 057x-059x, 082x-085x, 088x, 0982, 0983</p> <p>Nonacute Inpatient // 99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337 // 0118, 0128, 0138, 0148, 0158, 019x, 0524, 0525, 055x, 066x, 1001, 1002</p> <p>Acute Inpatient // 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291 // 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154,</p>	<p>geometric mean of the specialty cohort SRRs, weighted by the number of admissions in the specialty cohort, and the pooled SRR is then multiplied by the overall crude readmission rate to produce the risk standardized readmission rate (RSRR) for reporting.</p> <p>Please see attachment (Technical Report, Section 2.6) for more details on the calculation algorithm.</p>

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	<p>0159, 016x, 020x, 021x, 072x, 080x, 0987 ED // 99281-99285 // 045x, 0981</p> <p>Step 2: Assign each diagnosis to one comorbid Clinical Condition (CC) category using Table CC – Comorbid. Exclude all diagnoses that cannot be assigned to a comorbid CC category. For members with no qualifying diagnoses from face-to-face encounters, skip to the Risk Adjustment Weighting section. All digits must match exactly when mapping diagnosis codes to the comorbid CCs.</p> <p>Step 3: Determine HCCs for each comorbid CC identified. Refer to Table HCC – Rank. For each stay’s comorbid CC list, match the comorbid CC code to the comorbid CC code in the table, and assign:</p> <ul style="list-style-type: none"> - The ranking group - The rank - The HCC <p>For comorbid CCs that do not match to Table HCC – Rank, use the comorbid CC as the HCC and assign a rank of 1.</p> <p>Note: One comorbid CC can map to multiple HCCs; each HCC can have one or more comorbid CCs.</p> <p>Step 4: Select only the highest ranked HCC in each ranking group using the Rank column (1 is the highest rank possible).</p> <p>Drop all other HCCs in each ranking group, and de-duplicate the HCC list if necessary.</p> <p>Example: Assume a stay with the following comorbid CCs: CC-15, CC-19 and CC-80 (assume no other CCs).</p> <ul style="list-style-type: none"> • CC-80 does not have a map to the ranking table and becomes HCC-80 • HCC-15 is part of Ranking Group 1 and HCC-19 is part of Ranking Groups Diabetes 1-Diabetes 4. Because CC-15 is ranked higher than CC-19 in Ranking Group Diabetes 1, the comorbidity is assigned as HCC-15 for Ranking 	

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	<p>Group 1. Because CC-19 is ranked higher in Ranking Groups Diabetes 2-4, the comorbidity is assigned as HCC-19 for these ranking groups.</p> <p>The final comorbidities for this discharge include HCC-15, HCC-19 and HCC-80.</p> <p>Example: NQF #1768 Plan All-Cause Readmissions See Guidance for Definitions of Rating Scale: H=High; M=Moderate; L=Low; I=Insufficient; NA=Not Applicable</p> <p>15</p> <p>Ranking Group // CC // Description // Rank // HCC NA // CC-80 // Congestive Heart Failure // NA // HCC-80</p> <p>Diabetes 1 // CC-15 // Diabetes With Renal or Peripheral Circulatory Manifestation // 1 // HCC-15 Diabetes 1 // CC-16 // Diabetes With Neurologic or Other Specified Manifestation // 2 // HCC-16 Diabetes 1 // CC-17 // Diabetes With Acute Complications // 3 // HCC-17 Diabetes 1 // CC-18 // Diabetes With Ophthalmologic or Unspecified Manifestation // 4 // HC-18 Diabetes 1 // CC-19 // Diabetes without Complications // 5 // HCC-19</p> <p>Diabetes 2 // CC-16 // Diabetes With Neurologic or Other Specified Manifestation // 1 // HCC-16 Diabetes 2 // CC-17 // Diabetes with Acute Complications // 2 // HCC-17 Diabetes 2 // CC-18 // Diabetes With Ophthalmologic or Unspecified Manifestation // 3 // HCC-18 Diabetes 2 // CC-19 // Diabetes Without Complication // 4 // HCC-19</p> <p>Diabetes 3 // CC-17 // Diabetes With Acute Complications // 1 // HCC-17 Diabetes 3 // CC-18 // Diabetes With Ophthalmologic or Unspecified Manifestation // 2 // HCC-18</p>	

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	<p>Diabetes 3 // CC-19 // Diabetes Without Complication // 3 // HCC-19</p> <p>Diabetes 4 // CC-18 // Diabetes With Ophthalmologic or Unspecified Manifestation // 1 // HCC-18</p> <p>Diabetes 4 // CC-18 // Diabetes Without Complication // 2 // HCC-19</p> <p>Step 5: Identify combination HCCs.</p> <p>Some combinations suggest a greater amount of risk when observed together. For example, when diabetes and CHF are present, an increased amount of risk is evident. Additional HCCs are selected to account for these relationships.</p> <p>Compare each stay's list of unique HCCs to those listed as combinations and assign any additional HCC conditions. For fully nested combinations (e.g., the diabetes/CHF combinations is nested in the diabetes/CHF/renal combination), use only the more comprehensive pattern. In this example, only the diabetes/CHF/renal combination is counted.</p> <p>For overlapping combinations (e.g., the CHF, COPD combination overlaps with the CHF/renal/diabetes combination), use both sets of combinations. In this example, both CHF/COPD and CHF/renal/diabetes combinations are counted.</p> <p>Based on the combinations, a member can have none, one or more of these added HCCs.</p> <p>Example: For a stay with comorbidities HCC-15, HCC-19 and HCC-80 (assume no other HCCs), assign HCC-901 in addition to HCC-15, HCC-19 and HCC-80. This does not replace HCC-15, HCC19 or HCC-80.</p> <p>Example: Combination: Diabetes and CHF Comorbid HCC // Comorbid HCC // Comorbid HCC // Combination HCC HCC-15 // HCC-80 // NA // HCC-901</p>	

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	<p>HCC-16 // HCC-80 // NA // HCC-901 HCC-17 // HCC-80 // NA // HCC-901 HCC-18 // HCC-80 // NA // HCC-901 HCC-19 // HCC-80 // NA // HCC-901</p> <p>For each IHS, use the following steps to identify risk adjustment weights based on presence of surgeries, discharge condition, comorbidity, age and gender. Note: The final weights table will be released on November 15, 2011.</p> <p>Step 1: For each IHS with a surgery, link the surgery weight.</p> <p>NQF #1768 Plan All-Cause Readmissions See Guidance for Definitions of Rating Scale: H=High; M=Moderate; L=Low; I=Insufficient; NA=Not Applicable</p> <p>16</p> <p>For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 2: For each IHS with a discharge CC Category, link the primary discharge weights. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 3: For each IHS with a comorbidity HCC Category, link the weights. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 4: Link the age and gender weights for each IHS. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older: For commercial product lines:</p> <p>Step 5: Identify the base risk weight. For Medicare product lines ages 18-64: For Medicare product lines ages 65 and older:</p>	

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	<p>For commercial product lines:</p> <p>Step 6: Sum all weights associated with the IHS (i.e., presence of surgery, primary discharge diagnosis, comorbidities, age, gender and base risk weight).</p> <p>Step 7: Use the formula below to calculate the adjusted probability of a readmission based on the sum of the weights for each IHS.</p> <p>Adjusted probability of readmission = $(e^{(\sum \text{Weights for IHS})}) / (1 + e^{(\sum \text{Weights for IHS})})$</p> <p>OR</p> <p>Adjusted probability of readmission = $[\exp(\text{sum of weights for IHS})] / [1 + \exp(\text{sum of weights for IHS})]$</p> <p>Note: "xp" refers to the exponential or antilog function.</p> <p>Step 8: Use the formula below and the adjusted probability of readmission calculated in Step 7 to calculate the variance for each IHS.</p> <p>Variance = Adjusted probability of readmission x (1 – Adjusted probability of readmission)</p> <p>Example: If the adjusted probability of readmission is 0.1518450741, then the variance is $0.1518450741 \times 0.8481549259 = 0.1287881476$.</p>	
Data Source	Administrative claims	Administrative claims
Level of Measurement /Analysis	Health Plan	Facility
Care Settings	Behavioral Health/Psychiatric : Inpatient, Hospital/ Acute Care Facility	Hospital/ Acute Care Facility